

12th Health Sciences Research Assembly

December 14 - 18, 2020

INAUGURAL SESSION

Wednesday, December 16, 2020 | 8:00 am

Virtually Via Zoom

Moderator: Dr Syed Asad Ali

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|---------|--|------------------------|
| 8:00 am | Recitation from Holy Qur'an | |
| 8:05 am | Introduction and Overview of Research at AKU Faculty of Health Sciences
Dr Syed Asad Ali, Chair, 12 th Health Sciences Research Assembly | |
| 8:15 am | Remarks by
Dr Rozina Karmaliani, Dean, School of Nursing & Midwifery | |
| 8:20 am | Overview of Research Groups
Research Groups' Presentations (8 minutes each)
1. Health Systems Research
2. Maternal and Child Nutrition Research
3. Communicable Disease - COVID-19 Research
4. Community-Based Newborn Care | - Dr. Tazeen Saeed Ali |
| 9:00 am | Remarks by
Dr. Carl Amrhein, Provost and Vice President Academic, Aga Khan University | |
| 9:05 am | Overview of Research Abstracts
and Virtual Exhibition Portal demo | - Dr Imran Nisar |
| 9:15 am | FHS Awards for Research Excellence 2020
<ul style="list-style-type: none">• Outstanding Faculty Researcher Awards• Outstanding Junior Faculty Researcher Awards• Outstanding Resident/Fellow Researcher Award• Outstanding Students Researcher Award | - Dr Mohammad Wasay |
| 9:25 am | Launch of
Dr Aleem Saeed and Dr Kulsum Aleem Qureshi Fund for Medical Discovery | |
| 9:35 am | Remarks by
Dr. Firoz Rasul, President, Aga Khan University | |
| 9:40 am | Concluding remarks by
Dr Adil H. Haider, Dean, Medical College | |

Themes

1.0 Cancer

2.0 Cardiometabolic Disease

3.0 Neuroscience and Mental Health

4.0 Reproductive, Maternal, Neonatal, Child Health

5.0 Communicable Disease

6.0 Trauma and Emergencies

7.0 Others

Message from Chair, Organising Committee

The Health Sciences Research Assembly (HSRA) is a regular academic event, which provides a platform and an opportunity to the medical and nursing fraternities to share their ongoing or completed research work. Over the last several years, HSRA has proven instrumental in fostering and underpinning research culture at Faculty of Health Sciences, Karachi Campus and has guided numerous new multidisciplinary and interdisciplinary collaborations.

In order to continue sharing our on-going and completed research work with great synergy, for exchange of ideas and dissemination of work in progress and for providing greater opportunities for collegial work across disciplines and specialties, the next HSRA, which will be 12th in the series, has been scheduled for December 14-18, 2020.

The event encourages compliance on ethics in research; therefore, as with previous years, only those research studies, which have appropriate ethics clearance, and those that were exempted from ethical clearance, will be allowed for submission.

There will be brief presentations by AKU's distinguished academic leadership, followed by the opening of the research poster exhibition. We are enthusiastically anticipating more than 500 posters for exhibition from multidisciplinary clinical to translational research from all departments. This year's event will also feature presentations by the FHS research groups and FHS Research Awards.

We look forward to the active participation of our faculty, students and staff in this event! Watch this space for more details

Dr Syed Asad Ali
Chair, Organising Committee

Organising Committee
12th Health Sciences Research Assembly
December 14 and 18, 2020

- Dr Syed Asad Ali , Associate Dean, Research (Chair, Organising Committee)
- Dr Mohammad Wasay, Professor, Medicine
- Dr Nida Najmi, Assistant Professor, Obstetrics & Gynaecology
- Dr Nosheen Nasir, Assistant Professor, Medicine
- Dr Shireen Najam, Instructor, Psychiatry
- Dr Wafa Aftab, Senior Instructor, Community Health Sciences
- Dr Saara Muddasir, Assistant Professor, Biological and Biomedical Sciences
- Dr Sibtain Ahmed, Senior Instructor, Pathology and Laboratory Medicine
- Dr Asim Hafiz, Assistant Professor, Oncology
- Dr Imran Nisar, Assistant Professor, Paediatrics and Child Health
- Dr Rubia Farid, Senior Instructor, Family Medicine
- Dr Shiraz Hashmi, Senior Instructor, Surgery
- Dr Kulsoom Fatima, Assistant Professor, Radiology
- Dr Tazeen Saeed Ali, Associate Professor and Assistant Dean, SoNaM
- Janelle Dias, Assistant Manager, Communications, Dean's Office
- Muhammad Irshad, Assistant Manager, Conference Secretariat
- Asad Yaqoob, Conference Secretariat

Secretarial and Logistic Support

- Mr Khawaja Hateem
- Mr Manzoor Yaseeni

1.1

OBSTRUCTION OF THE RIGHT VENTRICULAR OUTFLOW TRACT BY AN UNUSUAL MALIGNANCY

Hassan Khan Niazi, Saadia Abbas, Ali Aahil Noorali, Mohammad Bin Pervez, Saulat H. Fatimi
Medical College and Department of Surgery, Aga Khan University

Introduction: Primary malignant neoplasms are rarely found and understood, with sarcomas being the usual offenders. A cardiac sarcoma obstructing the right ventricular outflow tract (RVOT) leading to pulmonary stenosis is an extremely rare manifestation, and there has only ever been one similar case reported in the literature to date.

Case Presentation: A 62-year-old male presented with exertional dyspnea, pedal edema, decreased appetite and weight loss of 9kgs over the last six months. Examination revealed a faint ejection systolic murmur over the pulmonary valve area and mild pitting edema. Echocardiography showed mildly dilated right atrium and ventricle, severe tricuspid regurgitation, and pulmonary artery hypertension. An interval PET scan revealed a hypermetabolic focus over the right ventricular wall with an SUV of 6.4, confirming the diagnosis of primary pleomorphic sarcoma. The patient underwent a complete resection of the 20x20 mm mass which had caused the destruction of the entire valve and noteworthy stippling in the region. Histopathology and immunohistochemistry revealed a highly malignant pathophysiology. Following surgery, the patient was started on adjuvant chemotherapy. Subsequent PET scan was clear with complete symptomatic resolution but no weight gain. Discussion Cardiac sarcomas present a significant diagnostic challenge, because the non-specific symptoms mimic a variety of other cardiac and non-cardiac diseases. Furthermore, they also present a therapeutic challenge because complete resection of the tumor without critically reducing cardiac function is difficult.

Conclusions: A thorough understanding of cardiac sarcomas sets the ground for early diagnosis and intervention, both of which are instrumental to ensuring a greater survival chance for the patient.

Keywords: Sarcoma, RVOT, Cardiothoracic

1.2

LEFT PULMONARY ARTERY ANEURYSM SECONDARY TO METASTATIC LUNG CARCINOMA: A CASE REPORT

Kaleem Sohail Ahmed, Muhammad Abdullah Javed, Muhammad Bin Pervez, Saira Fatima, Saulat H. Fatimi
Medical College, Departments of Surgery and Pathology & Laboratory Medicine, Aga Khan University

Introduction: Aneurysms are characterized by focal dilation of the blood vessel wall due to weakening. Involvement of two layers of the vessel wall is classified as a pseudoaneurysm while involvement of all three layers is called a true aneurysm. The aneurysm with an associated neoplastic lesion is rare, but the few reported cases have been described with pulmonary artery pseudoaneurysm as opposed to a true aneurysm. **Case:** We report the case of a 53-year-old gentleman presenting with dry cough and low-grade fever. He had previously been in his usual state of health until one week prior, when he developed low-grade fever, chest pain and cough and significant weight loss. On examination, he was tachycardic and had mild shortness of breath, with decreased air entry on the left. His CT scan was suggestive of two pulmonary artery aneurysms, 7.7x4.0cm and 7.4x8.0cm, surrounding thrombosed sections of the left pulmonary artery. He underwent elective left pneumonectomy, and tissue biopsy revealed a poorly differentiated malignant neoplasm most likely to be a high-grade sarcoma or sarcomatoid carcinoma.

Discussion: In the past pseudoaneurysms have been diagnosed in patients with bronchial

carcinoma, squamous cell carcinoma of the lung and angiosarcoma, while true aneurysms have typically been reported in patients with ipsilateral non-small cell lung cancer.

Conclusion: Our report varies from this pattern in that it presents two true left pulmonary artery aneurysms of a patient with metastatic sarcoma of the lung, a connotation that has previously not been reported to the best of our knowledge.

Keywords: Pulmonary Artery Aneurysm, Pulmonary Artery Pseudoaneurysm, Lung Sarcoma

1.3

PULMONARY ADENOID CYSTIC CARCINOMA PRESENTING LATE WITH INTRAPERICARDIAL EXTENSION

*Manzar Abbas, Usama Qamar, Faiqa Binte Aamir, Syeda Maria Ahmad Zaidi, Haseeb Rahman, Saulat H. Fatimi
Medical College and Department of Surgery, Aga Khan University*

Adenoid Cystic Carcinoma (ACC), a subtype of adenocarcinoma, is a rare presentation of lung cancer. Moreover, its metastasis to the left atrium is scarcer. It's a salivary gland-type malignant neoplasm accounting for only 0.04-0.2% of all primary lung tumors. The most common site of occurrence is the airway. The objective of this clinical case report is to highlight this unusual scenario to help the surgeons to ensure they do not miss out on extensions of the cancer. A 33-year-old male with no known comorbid presented to the hospital with cough and chest pain for four years and hemoptysis which started a few days ago. He was diagnosed for TB seven years back and was successfully treated. Based on the clinical presentation, CT scan study and bronchoscopy biopsy report, a clinical diagnosis of adenoid cystic carcinoma was made. Right posterolateral thoracotomy and right pneumonectomy with

partial resection of the left atrium was done. Histopathology analysis of the excised tissue revealed tumor to be 4.5x3.5x3 cm but non-invasive (T2b), no lymph node involvement (N=0) and no metastasis (M=0). Due to the very rare presentation, its clinicopathological features, treatment and long-term survival have not been fully elucidated. Although a few studies have reported the one- and three-year survival rate to be approximately 71.8% and 37.8% respectively.

Keywords: Neoplasm, Resection, Atypical

1.4

A GIANT MATURE MEDIASTINAL TERATOMA IN A 10-YEAR-OLD-BOY

*Muhammad Nabeel Safdar, Abdul Rehman, Ali Aahil Noorali, Muhammad Bin Pervez, Saulat Hasnain Fatimi
Medical College and Department of Surgery, Aga Khan University*

Introduction: Pluripotent cells can give differentiate into teratomas, which are benign tumors (having cells from different germ layers) usually found in young and middle-aged adults. This report presents the case of a 10-year-old boy who presented with a mature mediastinal teratoma with significant vascular growth.

Case Presentation: The patient presented with chest pain and cough for approximately one year. On examination, he had dullness on percussion and decreased breath sounds at the left side of the chest. CXR demonstrated a giant opacity in the left hemithorax with signs of calcifications and CT scan showed that the mass, measuring 115x92mm, had displaced structures to the right side of the chest. A median sternotomy with complete resection of the tumor was performed, along with repair of diaphragm and recreation of the pericardial wall. Histopathological analysis showed an encapsulated nodular mass having a multi-loculated cyst along with bony, cartilaginous and

hemorrhagic areas derived from all three germ cell layers.

Discussion: Although rare, extragonadal teratomas may occur in the mediastinum and cause symptoms such as dyspnea due to mass effect. Fortunately, these tumors are usually benign and can be surgically resected successfully, with the preferred imaging modality being CT with IV contrast. Post-operative care for three months is similar to that for any non-cardiac surgery; however, atelectasis is a common post-operative complication and can develop into pneumonia if not treated aggressively.

Conclusion: Mediastinal teratomas are clinically relevant should be included in the differentials upon encountering a mass in the thoracic region, even though their occurrence is very rare.

Keywords: Teratoma, Mediastinal Neoplasms, Sternotomy

1.5

SUCCESSFUL RESECTION OF A GIANT PLEUROPULMONARY BLASTOMA IN A YOUNG CHILD – A CASE REPORT.

Sara iqbal, Saulat H. Fatimi
Department of Surgery, Aga Khan University

Primary lung tumors in pediatrics are relatively rare with Pleuropulmonary Blastoma (PPB) accounting for 0.25-0.50% cases only. These are highly aggressive embryonal neoplasms of the lung parenchyma and pleural surfaces that are a part of DICER-1 gene disorders. We report the case of a giant PPB weighing approx. 1 kilogram that was successfully resected from a young boy. Very few cases have been reported in literature documenting wide excisions of such rare and massive tumors in respect to the small body surface area of a child. Our patient is a 5 year old boy, weighing 15 kgs, with insignificant past medical history, who presented with fever, cough and dyspnea for 3 months. On radiological imaging, he had a huge, non-homogenous mass occupying the right

hemothorax causing right lung collapse and mediastinal shift. Initial ultrasound guided biopsy of the mass had shown germ cell tumor with rhabdomyoid differentiation. On posterolateral thoracotomy, we encountered a massive (28 x 19 cm, weighing 1000mgs) encapsulated mass arising from posterior segment of right lung upper lobe and occupying the entire right hemithorax. It was adherent to the chest wall and right lung upper lobe. Complete surgical resection of the mass along with upper lung lobe with negative margins was carried out. Histopathology was consistent with Pleuropulmonary Blastoma Type III. PPB are sarcomatous tumors exclusive to children with 93% cases at 10cm in size, neoadjuvant chemotherapy should precede surgical resection and adjuvant chemotherapy.

Keywords: Pleuropulmonary blastoma, pediatric, lung cancer

1.6

RUPTURED MEDIASTINAL MATURE TERATOMA PRESENTING AS RECURRENT PLEURAL EFFUSIONS – A CASE REPORT

Sara Iqbal, Usama Qamar, Manzar Abbas,
Saulat H. Fatimi
Department of Surgery and Medical College, Aga Khan University

Germ cell tumors comprise 5-10% of all mediastinal masses with anterior mediastinum as the most common extra-gonadal site of presentation. Out of these, approx. 70-80% are mature teratomas containing tissues derived from 2 out of 3 germ cell layers (endoderm, mesoderm and ectoderm). Usually, these tumors are identified incidentally on radiological imaging and are often asymptomatic. However, they may very rarely rupture into adjacent lung, pleural cavity and pericardial cavity to produce symptoms resembling pneumonia, pleuritis or pleural effusions. We present the case of a young female who presented to us complaining of fever and dyspnea for 2 months with CT Chest suggestive of left loculated pleural

effusion. However, her symptoms persisted after a thoracotomy and decortication. Repeat CT Chest 3 weeks later revealed a left hemithoracic mass for which she underwent a redo left posterolateral thoracotomy. Intra-operatively, we resected a huge (10.5x7.5x5.5cm), encapsulated, globular, pus and hair filled mass in the left perihilar region between pericardium medially and left phrenic nerve laterally. Histopathology was consisted with mature cystic teratoma containing skin and adnexae, bone, cartilage, skeletal muscle and bowel epithelium. Although rare, mature teratomas rupture by releasing proteolytic enzymes that destroys the tumor wall and can cause extensive necrosis and inflammation of surrounding viscera. The similarity in clinical presentation to a recurrent pleural effusion and pneumonia can lead to incorrect and delayed diagnosis of a mediastinal teratoma. Hence, possibility of a ruptured teratoma should always be kept in mind as a differential diagnosis of loculated pleural effusion

Keywords: Mature Teratoma, Empyema Thoracis, Mediastinal Mass

1.7

MEDIASTINAL PARAGANGLIONOMA OF THE AORTOPULMONARY SUBTYPE – A SURGICAL CHALLENGE

*Sara Iqbal, Nabeel Safdar, Zuha Faiz, Yasir Bilal Khan, Saulat H. Fatimi,
Department of Surgery and Medical College,
Aga Khan University*

Paraganglionomas are rare neuroendocrine tumors arising from chromaffin paraganglionic cells outside adrenal medulla and represent a complex entity for surgical resection if it develops within the mediastinum owing to its important anatomical relations. We represent the case of a young male with history of carotid body tumor excision who now presented with an aortopulmonary paraganglionoma and underwent a successful resection with wide negative margins off cardiopulmonary bypass.

Careful preoperative planning, close attention to major vascular structures surrounding the tumor and hemodynamic optimization intraoperatively are factors promoting adequate management and long-term survival.

Keywords: paraganglionoma, mediastinal neoplasm, Surgery

1.8

THE MANY FACES OF GLIOBLASTOMA: PICTORIAL REVIEW OF ATYPICAL IMAGING FEATURES

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Laboratory Medicine, Aga Khan University*

Glioblastoma is an aggressive primary central nervous system tumour that usually has a poor prognosis. Generally, the typical imaging features are easily recognisable, but the behaviour of glioblastoma multiforme (GBM) can often be unusual. Several variations and heterogeneity in GBM appearance have been known to occur. In this pictorial essay, we present cases of pathologically confirmed GBM that illustrate unusual locations and atypical features on neuroimaging, and review the relevant literature. Even innocuous-looking foci, cystic lesions, meningeal-based pathology, intraventricular and infra-tentorial masses, multifocal/multicentric lesions and spinal cord abnormalities may represent GBM. We aim to highlight the atypical characteristics of glioblastoma, clarify their importance and list the potential mimickers. Although a definitive diagnosis in these rare cases of GBM warrants histopathological confirmation, an overview of the many imaging aspects may help make an early diagnosis.

Keywords: glioblastoma, neuroradiology, atypical

1.9

NF-KB-MEDIATED IL-8 EXPRESSION IN NEUTROPHIL RECRUITMENT IN HEAD AND NECK SQUAMOUS CELL CARCINOMA

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Departments of Biological & Biomedical Sciences and Pathology & Laboratory Medicine, Aga Khan University

Introduction: The immune system plays a pivotal role in identification and clearance of tumour cells, but can also be counterproductive and enhance tumour progression. Presence of neutrophils in solid tumours, including the sixth most common cancer globally - head and neck squamous cell carcinomas (HNSCC), is associated with poor prognosis. IL-8 and GM-CSF, whose secretion is regulated by NF- κ B, are pro-inflammatory cytokines that promote extravasation of neutrophils into tissue and play an important role in the proliferation, invasion, and metastasis of HNSCC.

Objective: The role of neutrophils in HNSCC and the possible molecular mechanisms of pro-tumour neutrophil recruitment is being investigated. **Methods and results:** IL-8 and GM-CSF released at various time points by FaDu (ATCC® HTB-43™) was measured by ELISA. Conditioned media from FaDu cells had consistently high levels of IL-8 expression (115 - 117pg/ μ L) at 6 – 72 hours. GM-CSF was not significantly expressed in the FaDu conditioned media; even with increasing cell density, the mean expression remained 0.142pg/ml. IL-8 expression decreased in a dose-dependent manner after 30 minutes and 1 hour treatment of the NF- κ B inhibitor, BAY 11-7082, as compared to control. Expression of phosphorylated I κ B α decreased in a time and dose dependent manner in the total cell lysates, while total I κ B α was largely unchanged, indicating inhibition of the NF- κ B pathway by BAY11-7082. Expression of phosphorylated NF- κ B also decreased as compared to control

and in a time dependent manner at 10 μ M BAY-11-7082 treatment in total cell lysates. In nuclear extracts, a dose-dependent decrease in phosphorylated NF- κ B expression was observed at 30 minutes and over time points at 10 μ M drug concentration.

Conclusion: FaDu cells derived from hypopharyngeal squamous cell carcinoma release IL-8, but not GM-CSF. The NF- κ B signaling pathway appears to be involved in the release of IL-8, a cytokine that is in turn likely to be involved in recruitment of neutrophils to the cancer site.

Keywords: HNSCC, Neutrophils, NF κ B

1.10

OUTCOME OF CONCOMITANT CHEMORADIATION WITH TEMOZOLOMIDE FOLLOWED BY TEMOZOLOMIDE IN PATIENTS WITH GLIOBLASTOMA MULTIFORME

Adnan Abdul Jabbar, Adeeba Zaki, Muhammad Areeb Ashfaq, Samina Hirani, Khadija Abid, Rameez Samar
Departments of Oncology, Surgery and Medicine, Aga Khan University

Background: Glioblastoma is the most common primary brain tumor in adults. The current standard of care is multimodality approach comprising of maximal safe surgical resection, post operative radiation therapy and concurrent and adjuvant temozolomide (TMZ). In this study results of concomitant chemoradiation with 5 days of temozolomide followed by temozolomide has been reported.

Objective: To determine Progression free survival (PFS) and overall survival (OS) in patients receiving concomitant chemoradiation (CCRT) with five days of temozolomide (TMZ) followed by monthly TMZ in newly diagnosed GBM at a tertiary care center in Pakistan.

Methods: Patients with newly diagnosed glioblastoma after surgical resection or biopsy were assigned to received concomitant chemoradiation with temozolomide (75mg/m²) 5 days per week on days of radiation. After a 4 week break, patient then received monthly temozolomide (150-200mg/m²) 5- day schedule every 28 days. **Results:** From 2011 to 2015, total 58 newly diagnosed patients of GBM presented at the Oncology department of Aga Khan University hospital were included. The mean of the study sample was estimated as 54.02±10.58 years. The median follow-up time was 11 months ranging from 0 to 60 months, median OS is estimated as 21 months (95% CI=16.47-25.52) and median PFS is estimated as 7 months (95% CI=3.68-10.31). The OS and PFS time with respect to gender, age, GBM resection and KPS status were statistically insignificantly different (p>0.05). In the study period 33 patients died (56.9%), 11 survived (19%) and 14 lost to follow-up (24.1%).

Conclusion: This study confirmed that the survival rate was higher in patients who underwent maximum safe resection (subtotal and gross total resection) and had KPS

Keywords: Glioblastoma, Karnofsky Performance Status, Temozolomide

1.11

ARE CLINICOPATHOLOGIC FEATURES OF INVASIVE BREAST CANCER AT INITIAL DIAGNOSIS PREDICTIVE OF METASTATIC DISEASE?

Basim Ali, Fatima Mubarik, Nida Zahid, Abida K. Sattar

Departments of Biological and Biomedical Sciences, Surgery and Medical College, Aga Khan University

Background/Objective: The NCCN, ASCO and ESMO recommend radiological imaging to stage symptomatic patients and those with clinical stage III breast cancer. Despite these guidelines, physician variability in obtaining metastatic workup has been reported often resulting in

overutilization of diagnostic tests, with false positive results warranting additional workup, delay in care and an increase in health care costs. We sought to identify clinicopathological features at diagnosis that could be predictive of metastatic disease to guide future testing.

Methods: Breast cancer patients, diagnosed from January 2014 to December 2015 were identified from a prospectively maintained institutional database. Patient variables collected included demographics, pathology, receptor profiles, clinical TNM staging and rates of upstaging to stage 4 disease. Frequencies were calculated for categorical variables. Nonparametric statistical analyses using Pearson's χ^2 test were performed using SPSS, version 22.0. P value less than 0.05 was considered significant. **RESULTS:** 378 patients met inclusion criteria. Overall 70/378 (18.5%) had metastatic disease at presentation. With advancing clinical stage, both tumor size and nodal status independently as well as when combined as per the AJCC 8th edition criteria, resulted in a higher and statistically significant rate (p<0.001) of upstaging to M1 disease. No upstaging was seen in patients with stage 1 disease. Of the 107 stage IIA patients 6/107 (5.6%), while 19/102 (18.6%) of Stage IIB and 40/120 (33.3%) of stage III were upstaged to M1 once staging imaging was obtained. Age and hormone receptor status did not independently appear to have a statistically significant effect on upstaging to stage IV disease. Majority of tumors (39.6%) were Grade II and were associated with the highest proportion of upstaging (p=0.02).

Conclusion: Advancing clinical stage at presentation, consisting of tumor size and nodal status, was predictive of upstaging to M1 disease in patients with invasive breast cancer. The higher rate of upstaging in grade II versus grade III tumors warrants further study to explore variability in grade interpretation or a subset of more aggressive tumors within grade II.

Keywords: Invasive breast cancer, metastatic workup, upstaging

1.12

FOLLICULAR VARIANT OF PAPILLARY THYROID CARCINOMA: STERNAL RESECTION TO TREAT RECURRENT AGGRESSIVE BONE METASTASIS

Humza Thobani, Mohammad bin Pervez, Ali Aahil Noorali, Manzar Abbas, Saulat Fatimi Medical College and Department of Surgery, Aga Khan University

Introduction: Follicular Variant of Papillary Thyroid Carcinoma (FV-PTC) is a type of differentiated thyroid carcinoma. Bony metastasis is extremely rare, with greatly increased morbidity and mortality, and debulking/resection is often the best treatment.

Case Presentation: We report a case of a 55 y/o female presenting with a bony mass in her anterior chest since 1.5 years, associated with 1 month history of dysphagia and 4 months of left arm stiffness. History revealed she had a thyroid lobectomy 20 years prior due to goiter (reason unknown). She was clinically euthyroid. Bone-scan showed osteolytic lesions in the sternum, manubrium and left proximal humerus. Thyroid-scan showed remnants of thyroid glandular tissue with ectopic growth at the sites mentioned above. CT scan revealed a large heterogeneous soft tissue mass with a central necrotic focus involving the entire sternum. TSH and T4 were normal but thyroglobulin was >6000ng/ml. A complete thyroidectomy and concomitant complete sternectomy with reconstruction using polypropylene mesh was performed under general-anesthesia. Histopathology revealed FV-PTC. Further treatment with Radio-Active Iodine therapy and EBRT for palliation. Patient is alive and well on 1 year follow-up. Bone-scan showed no recurrence of sternal lesion, however lesion at humerus was persisting.

Discussion: Review of Literature identified 16 cases of Thyroid CA metastasis to sternum, of which only 1 (ours) was identified as FV-PTC. We discuss an updated table on the reconstruction methods used for sternectomies

due to Thyroid CA – Modified from Yanagawa et al. Journal of Thoracic Oncology.

2009;4:1022-5 Conclusion: Sternal resection is a useful therapy for FV-PTC sternal metastasis

Keywords: Thyroid Carcinoma, Sternal Metastasis, FV-PTC

1.13

MALE BREAST CANCER: EXPERIENCE OF A LOW MIDDLE INCOME COUNTRY TERTIARY CARE HOSPITAL OVER THREE DECADES

Muhammad Tayyab Siddiqui, Sana Zeeshan, Fatima Shaukat, Departments of Surgery and Oncology, Aga Khan University

Introduction: Male breast cancer (MBC) is a rare disease, accounting for < 1% of all malignancies in males. Due to the rarity of disease and limited data, no contemporary data regarding MBC exists in Pakistani population, we sought to review our data in terms of clinic-pathologic features, treatment and survival

Methodology: Medical records at AKUH were reviewed from 1988-2018 Results A total of 42 MBC presented to our center & we analyzed 38 patients as data was missing for remaining 4 patients. The median age at diagnosis was 63 years. The most common presenting complaint was lump in 35 (92.1%) patients, with palpable ipsilateral axillary lymph node in 33 (86.8%) patients. All patients had biopsy proven breast carcinoma in which 33 (86.8%) were invasive ductal carcinoma (IDC). Majority of the patients were luminal A (73.7%) and presented with locally advanced disease with 13 (34.2%) as stage III, while 8 (23.7%) patients presented with upfront metastatic disease. Mastectomy was performed on 28 patients while 4 patients underwent breast conservation surgery for (3 DCIS, 1 stage I). Adjuvant hormonal was given in 17 (55%) patients and 13 (34%) patients received adjuvant radiation to chest wall / breast with mean dose of 60Gy in 30 fractions. overall survival rate was 36% (14 patients) & median

survival was 36 months. 3-year OS was 29.2%, 5-year OS was 8.3%, 10-year OS was 4.2%. 3-year Disease free survival (DFS) was 34.2%, 5 and 10 year DFS was 7.9% and 2.6% respectively. 16 patients (55.2%) patients had recurrence out of which 2 were local & 14 had distant recurrences

Conclusion: Even though breast cancer occurs uncommonly in men, its management remains complex and unclear. Male breast cancer presentation is different than females and due to lack of data, they are managed on the lines of female breast cancer. Therefore, future research will be necessary to establish the most appropriate therapies

Keywords: Male Breast Cancer, Breast Conserving Surgery, Radiation

1.14

ASSESSING NURSES' KNOWLEDGE AND SKILLS ON IDENTIFICATION AND MANAGEMENT OF CYTOTOXIC INDUCED EXTRAVASATION IN ONCOLOGY DAY CARE IN A TERTIARY CARE HOSPITAL- VIA CLINICAL AUDIT.

Afsheen Amin, Samrina Imran, Arifa Aziz, Nadia Ayoub

Department of Oncology, Aga Khan University

Background and Objective: Incidences of extravasations are being monitored as a key quality indicator in oncology areas, however to work more towards precision, a need for assessment of knowledge and hands on capacity of nurses in identifying and early managing of cytotoxic extravasation was identified. Clinical Audit was identified as a strategy for this assessment, so with the help of existing best practice institutional guidelines, checklist was being developed; piloted was done on oncology nurses who are working in Day Care Oncology Unit, and validity was gained. A clinical audit was performed from 10th July, 2017 to 4th August, 2017, in which initial observation was made on nurses' assessment of 48 cytotoxic administration follow-up patients. In second

phase, staffs were being asked to demonstrate management of extravasation on dummy as per the policy. Pre audit patient satisfaction was taken in 2017, 2018, 2019 and 2020 and their results were compared with the post audit interventions. Beside, incidences of extravasation was also been monitored every year and was compared with the trends. *Results:* Results of 2020 data shown that 99.5% nurses have the knowledge of extravasation with its prompt intervention and 99% patient satisfaction were achieved which actually shows the biggest achievement in dealing immunocompromised patients. Beside, our incident rate were also got down in 2019 and 2020.

Conclusion: A strong need for hands on training for extravasation assessment and management was being identified for oncology nurses in 2017. Therefore video and simulated based learning in terms of checking back flow of central lines can be taken as a strategy for training of oncology nurses on rare occurring situations like extravasation. Evaluation was done in 2017 of patient satisfaction which was better than the pre audit results. In 2018, patient satisfaction was shown in decreasing trend while carrying out the post audit interventions because of increased number of incidents. In 2019 and 2020 patient satisfaction were remained static and number of incidences was also found in lower trend because new interventions has been applied and taken care.

Keywords: Extravasation

1.15

IMPACT OF COVID-19 ON DAYCARE ONCOLOGY NURSING STAFFING AT AGA KHAN UNIVERSITY HOSPITAL, KARACHI AND DEVISING A NEW GUIDELINES FOR MAKING ZERO EXPOSURE

Afsheen Amin, Samrina Imran, Arifa Aziz
Department of Oncology, Aga Khan University

Background and Objective: Covid-19 has become a pandemic which has affected overall population. The hospital staffs has become more

affected with this pandemic while dealing with patients to whom they don't know that are COVID-19 positive. We have dealt with such conditions in Daycare Oncology Unit at Aga Khan University Hospital in which unit has suffered a lot with the staffing crunch due to exposure with positive patients. In the beginning, all health care personals were instructed to wear face mask and gowns as safety measures and were also educated to check for few of the points which makes a linked with COVID-19 symptoms. From the month of April 2020 till June 2020, Daycare Oncology Unit underwent in severe staff deficiency. Out of 27 staffs, total of 6 (22%) staffs were found COVID-19 positive and 17 (63%) staffs were quarantined intermittently due to exposure with positive patients. In such crisis, Oncology management has planned to review the guidelines with infection control to make the exposure zero for which few interventions and recommendations have been applied like one day prior confirmation calls to patients and asking for the symptoms, putting a screening desk on entrance of Ibn-e Zohar building, screening at assessment room, making a mandate to patient and attendant for wearing mask, upgrading of PPE (gowns, gloves, mask, face shields), usage of N95 mask for any aerosol generating procedures, N95 mask fit testing by Oncology Nursing Staffs and fixing of nurse patient assignments for a week.

Results: After applying all the safety checks, it has been observed that no exposure has been taken place after the month of June 2020 in Daycare Oncology Unit. Our 100% of the staffs have been involved in patient care which increases staff satisfaction and reduces their burden, beside we have also achieved patient satisfaction to 98%.

Conclusion: There was a strong need identified to make some guidelines for oncology staff and patients because oncology staffs are working on immunocompromised patients and we valued our internal and external customers. Beside, infection control follows different guidelines for

them for resumption of work (two consecutive negative results). Therefore, to make the exposure Zero many interventions have been incorporated and implemented. Initially we have found many challenges in terms of staffing crunch and staff fixed assignments. But as soon situation was found under controlled, we have regained our staffs along their and patient satisfaction.

Keywords: Covid, Daycare Oncology Unit

1.16

OVERVIEW OF THE MUTATIONAL LANDSCAPE IN PRIMARY MYELOFIBROSIS AND ADVANCES IN NOVEL THERAPEUTICS

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Primary Myelofibrosis is a BCR-ABL negative myeloproliferative neoplasm with a variety of hematological presentations, including thrombosis, bleeding diathesis and marrow fibrosis. It is estimated to have an incidence of 1.5 per 100,000 people each year. Although JAK2 or MPL mutations are seen in PMF, several other mutations have recently been documented, including mutations in CALR, epigenetic regulators like TET, ASXL1, and 13q deletions. The identification of these mutations has improved the ability to develop novel treatment options. These include JAK inhibitors like ruxolitinib, heat shock protein-90 inhibitors like ganetespib, histone deacetylase inhibitors including panobinostat, pracinostat, vorinostat and givinostat, hypomethylating agents like decitabine, hedgehog inhibitors like glasdegib, PI3K, AKT and mTOR inhibitors like everolimus as well as telomerase inhibitors like imtelstat. Research on novel therapeutic options is being actively pursued in order to expand treatment options for primary myelofibrosis however currently, there is no curative therapy

other than allogenic hematopoietic stem cell transplantation (ASCT) which is possible in select patients.

Keywords: Primary Myelofibrosis, Thrombocytosis, Myeloproliferative Disorders

1.17

A DETECTION OF CARCINOGENIC ALKALOIDS IN SMOKELESS TOBACCO (BETEL NUTS)

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Objectives: the aim of this study is to detect the presence of carcinogenic components present in betel nuts (Pepsi betel nuts and 7up betel nuts most commonly consumed types) Introduction: Cancer is the most leading cause of mortality and morbidity worldwide. Few deliberate acts of human makes them more susceptible to develop carcinomas. For instance, chewing smokeless tobacco like betel nuts are more likely to cause oral cancer because it contains carcinogenic alkaloids like arecoline. Which has been identified as cytotoxic to the periodontal ligament and periodontal fibroblasts and it causes breakdown resulting in a lichenoid lesion. Oral cancer (squamous cell carcinoma) is the second most common form of cancer in Karachi, Pakistan.

Methodology: we purchased betel nuts from local market of Karachi, these are sold under brand name of peps and 7up. After that we performed experiment to find out the alkaloids present in betel (7up and Pepsi betel nuts). 100g of crushed gutka (7up), 500 ml water and 3 drops of HCL were mixed in a test tube and this solution was filtered. 10 ml of the filtered solution was taken in 20 test tubes and 10 ml of Wagner reagent (20g iodine, 60g potassium iodide, 1000 ml water) was mixed with it. Likewise, same procedure was repeated with 20 test tubes containing 100g of gutka (Pepsi). Mayer's reagent (13.6g of mercuric chloride, 50g of potassium iodide, and 1000ml of water)

was added as a precipitating agent. Results: after adding Wagner's reagent to the test tubes a reddish brown color appeared which showed the presence of carcinogenic alkaloid. With Mayer's reagent white creamy precipitates were formed which confirmed the presence of alkaloids. Precipitates were kept in microwave oven for 20 minutes and then weighed. We obtained on average of 0.7252g of alkaloids in 100g of Pepsi betel nuts and 0.5565g of alkaloids in 100g of 7up betel nuts.

Conclusion: From this, we can conclude that betel nuts contains carcinogenic components that leads to oral cancer. the population who is using betel nuts is at higher risk of developing oral cancer. *Keywords:* carcinogens, alkaloids, oral cancer, betel nuts

Keywords: carcinogens, Alkaloids, oral cancer

1.18

IMPACT OF INTRAOPERATIVE FLUID ADMINISTRATION ON ASSOCIATED OUTCOMES IN HEAD AND NECK CANCER FREE FLAP SURGERY AT A TERTIARY CARE HOSPITAL

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Background: Radical head and neck dissection with a free flap is an extensive procedure comprising of a resection and a reconstructive phase. Anaesthetic care has a fundamental role in the intraoperative management by regulation of hemodynamics and regional blood flow with intravenous fluids. Prolonged surgery for head and neck cancer involves large fluid shifts and blood loss.

Objective: To evaluate the impact of intraoperative fluid administration and its correlation with the postoperative medical and surgical complications in head and neck cancer free flap surgeries. *Methodology:* A

retrospective review of all patients underwent free flap procedures for head and neck cancer between January 2014 and December 2018 was conducted. Medical records, including anaesthetic charts, were reviewed to determine the intra-operative fluid status, post-operative complications, and in-hospital mortality.

Results: Total 271 patients had surgery and 224 were included for final analysis. 47 patients were excluded due to preoperative radiotherapy, age greater than 65 years and some files were not available. Average total intraoperative fluid was 4800 ml. Ringer's Lactate was the most given intravenous fluid. Medical complications including Acute kidney injury was more in comparison to surgical complications (56 vs. 18). Five patients had surgical re-exploration within 48 hours. Others include flap fistula, flap dehiscence and flap failure that were not significant. No patient had mortality during same admission *Discussion:* The main finding in this review is that patients at our institution underwent H&N surgery with free flap reconstruction receive less fluid than usually reported in the literature. Patient demographics, anaesthesia & surgery duration, total fluid use and type of fluid had no significant impact on patients with or without complication.

Conclusion: In our study, we did not find statistically significant frequency of flap related complications associated with amount and type of intraoperative fluid administration in free flap H&N cancer surgery

Keywords: Head and Neck Neoplasms, Crystalloid Solutions, Free tissue flaps

1.19

ACUTE DERMATITIS IN ADULT FEMALE PATIENTS RECEIVING HYPO FRACTIONATED RADIATION THERAPY FOR BREAST CANCER

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BACKGROUND AND AIMS: Radiotherapy (RT) is the mainstay of treatment in breast cancer patients. Radiation treatment paradigm has been shifted towards hypo fractionated RT. This study aims to determine severity of acute dermatitis in patients receiving hypo fractionated RT for breast cancer at AKUH.

METHOD: Patients with biopsy proven IDC or DCIS referred by breast surgeon or medical oncologist for radical radiotherapy, will be enrolled in the study after informed consent. Physical assessment of patients for evaluation of severity of radiation dermatitis will be done at first week, last week and on first follow up after 1 month of completion of RT according to The RTOG/EORTC criteria.

RESULTS: We identified 92 patients from Jan 2019 to June 2019. Mean age was 53.1 years. All patients were discussed in breast oncology tumor board before being referred for radiation treatment. Out of 92 patients 44(48%) patients treated for right breast cancer and 48(52%) patients for left breast cancer. Most of the treated patients had clinical stage 3(51) while others were stage 2(36), stage 1(2) and stage 0(3). Surgery performed were mastectomy in 59 patients and breast conserving surgery in 33 patients. Histology was IDC (95%) and DCIS (3%) and LCIS (2%). Most of the patients receive chemotherapy 96%. Radiation technique was IMRT (47.8%) and 3DCRT (52.2%). Most of the patients experienced no toxicity i.e. 59% while grade I toxicity was observed in 29% patients and 11% grade 2 toxicity was observed. Only 1% of patients experienced grade III skin toxicity.

CONCLUSION: Hypo fractionated radiation therapy is beneficial because of the shorter overall treatment time which reduces the socioeconomic burden, not only for patients but also for radio therapeutic institutions. Further building upon this data base will help find outcome related to disease control and late effects in relation to the dose of radiation therapy.

Keywords:breast cancer, hypofractionated, dermatitis

1.20

ACUTE ORAL MUCOSITIS OCCURRING DURING HYPOFRACTIONATED RADIATION TREATMENT IN SQUAMOUS CELL CARCINOMA OF ORAL CAVITY

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OBJECTIVE: To determine the frequency and severity of acute oral mucositis in patients receiving hypo-fractionation radiation therapy for oral cavity in adults.

METHODS: thirty nine patients with histologically proven oral cavity, receiving radiation therapy via hypo fractionated schedule were enrolled in the study based upon the inclusion and exclusion criteria. Patients were evaluated before; during and after completion of treatment by the investigator for the frequency and severity of acute oral mucositis based upon the toxicity scale developed through World Health Organization, Radiotherapy Therapy Oncology Group and National Cancer Institute Common Toxicity Criteria version 3.0.

RESULTS: The frequency of oral mucositis at 1st week is 30% (12 patients) with grade I severity only. During last week, the frequency rose up to 100% (all 39 patients) with variable severity including grade II in 62% (24 patients) and III 38 % (12 patients). None of the patient had grade I OR IV severity. During 1st follow up, done to assess delayed oral mucositis; we observed 69% (27 patients) had oral mucositis in which grade III oral mucositis were in 10% (4 patients) of total patients. While grade II in 18% (7 patients) and grade I in 41% (16 patients) which are considered as settling toxicity after 4 weeks' time period.

CONCLUSION: The frequency of acute oral mucositis in patients undergoing hypo fractionated radiation therapy schedule for oral cavity cancers was found to be 100%. Incidence of grade III toxicity is lower in our population but with similar delayed recovery. There were no grade IV oral mucositis at any time or toxicity related break in our population making it an acceptable schedule for oral cavity cancer who are treated in adjuvant setting

Keywords:hypo fractionated schedule, oral mucositis, oral cavity

1.21

RADIOTHERAPY PRACTICE FOR PEDIATRIC CNS TUMORS: EXPERIENCE OF TERTIARY CARE HOSPITAL

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BACKGROUND AND AIMS: The burden of paediatric CNS tumours requiring radiotherapy in developing countries is poorly understood and there is limited data availability of radiotherapy experience for pediatric CNS tumors in our part of the world. This study aims to improve collaboration between radiation oncologist and other specialists by reviewing pediatric CNS radiotherapy practices at the Aga Khan University Hospital, Karachi through our experience.

METHOD: Hospital information management system (HIMS), cancer registry and radiation oncology record system were searched to identify children aged up to 18 years of age and received radiation therapy to CNS on the pediatric protocol. Data was collected for age, diagnosis, site, dose and other parameters related to radiation therapy.

RESULTS: We identified 88 patients treated on pediatric protocol for primary CNS tumors from January 2009 till December 2019. Mean age was 11.3 years. There were 60 (68%) males and 28 (32%) female patients. All the patients were

discussed in pediatric neuro oncology tumor board before being referred for radiation treatment. General anaesthesia was used to treat 18(20%) children. A total of 51 (58%) children received RT to the partial brain, 1 patient received whole-brain RT while 36(40%) children received CSI (craniospinal irradiation). Histologies associated with patients receiving CSI were medulloblastoma 29 (80%), ependymoma 3(10%), pineoblastoma 2(5%) and PNET 2 (5%). Partial brain RT were delivered to histologies including diffuse astrocytic and oligodendroglial glioma 41(72%), ependymoma 7(20%), other astrocytic tumors 2(5%), and germ cell tumors 1(3%). One patient with CNS lymphoma received whole-brain RT. Total RT dose was 59.4Gy with dose range of CSI in between 50.4-59.4 Gy. Most of the patients had their systemic treatment at our hospital or the other major pediatric oncology centre.

CONCLUSION: Radiation therapy has been and will continue to be a critical component of the multidisciplinary approach required in the care of children with CNS tumors. Further building upon this data base will help find outcome related to disease control and late effects in relation to the extent of disease, dose of radiation therapy and treatment site

Keywords: paediatric, CNS, Radiotherapy

1.22

PREVENTION OF ORAL MUCOSITIS WITH CRYOTHERAPY IN ADULT PATIENTS UNDERGOING HEMATOPOIETIC STEM CELL TRANSPLANTATION

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Background: Nowadays cancer has become one of the major problems of developing countries in the healthcare system. Despite innumerable new therapeutic techniques, high-dose chemotherapy following stem cells transplantation remains the best options for patients. These days, there are

two methods to perform a bone marrow transplant procedure namely allogeneic and autologous stem cells transplant. Nearly fifteen thousand people worldwide have been treated with bone marrow transplantation. Most of the hematological malignancies are cured by Stem cell transplantation. Oral mucositis remain major cause of morbidity following stem cell transplant. Oral mucositis is described as ulceration and inflammatory reactions in oral mucosa resulted from cytotoxic effects of chemotherapy on the epithelial cells of mucosa. Oral mucositis is reported as one of the most devastating side effects of Chemotherapy and often described as distressing complication of chemotherapy. Break in oral mucosa results in disruption of micro flora thus increasing the risk of infection during neutropenic phase. Studies suggest that 50–80% of patients who have received high-dose chemotherapy as conditioning for hematopoietic stem cell transplant suffered from Oral mucositis (OM). Evidences suggest that Cryotherapy i.e. the use of ice chips on the oral mucosa during the administration of chemotherapeutic agents significantly helps reduce the incidence and severity of mucositis related to chemotherapy. The use of cryotherapy is based on the assumption that ice-induced vasoconstriction will reduce blood flow to the oral mucosa resulting in lower local concentrations of chemotherapeutic agents. Oral Cryotherapy reduces the risk of infection, the need of total parental nutrition, decreases the number of hospital days and improve patient's nutritional status. In comparison with other approaches and means, oral Cryotherapy is a readily applicable and cost-effective method in clinical settings. Characteristics like high safety, easy availability, low cost and less side effects makes its wide application advisable in clinical settings. **Aim:** This study aims to reduce the incidence and severity of mucositis using oral cryotherapy in patients undergoing stem cell transplant.

Method: A Retrospective/Prospective descriptive study was carried out. The study involved 22 adult patients who underwent autologous and allogenic stem cell transplant from August 2019 to July 2020. Oral cryotherapy consists of ice chips, ice cream and popsicles that were provided upon patient preferences. Oral cryotherapy was initiated 30 minutes before, during and 1 to 2 hours post chemotherapy infusion. Along with cryotherapy patients were doing regular mouth care with mouthwashes. Oral Mucositis was evaluated post-transplant starting from day +1 till the day of discharge. Mucositis was measured using WHO mucositis scale and was documented. **Results:** Results indicated that 80% of the patients didn't develop any mucositis, 15% developed grade I mucositis and remaining 5% developed grade I-II mucositis. In addition to that, over the past two years the use of TPN has significantly decreased i.e. in 2018 TPN use was 81% which has now to 26% in 2020.

Conclusion: Oral Cryotherapy is an inexpensive, with rarer side effects and easy method in decreasing the incidence and severity of mucositis. It reduces the risk of infection, usage of Total parental nutrition, improves oral intake, decrease length of stay and total cost of the stay. The BMT nurses have a crucial role in the application and success of cryotherapy.

Keywords: Stem cell Transplant, Cryotherapy, Oral Mucositis

1.23

GALLBLADDER CANCER (GBC) MUTATION ON KRAS, P53, RB, AND P16

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Introduction: Gallbladder cancer (GBC) is a highly malignant neoplasm with underdeveloped preoperative diagnostic precision and poor prognosis. The etiology of GBC is largely

unknown, but several risk factors have been proposed including cholelithiasis, infections, female gender, genetic and epigenetic factors. Cholelithiasis is a well-established risk factor and seems to correlate the stone size and duration of symptoms with GBC. Other significant risk factors include structural abnormalities in gallbladder and biliary tree, mutations in the KRAS and TP53 genes.

Study Design: Ovid-MEDLINE, PubMed, CINHALL and Google Scholar databases were searched using keywords gallbladder carcinoma, neoplasia, tumour, tumor, adenocarcinoma, biliary tract carcinoma, gene mutations, KRAS, p53, RB, and p16. Ten out of 470 research articles were finally included.

Results: It was observed that loss of heterogeneity and mutations in KRAS, p53, p16 and RB involve in the disruption of cell cycle leading to continuous cell division and cancer.

Conclusions and limitation: Cancer has a great psychological and financial impact on patients, not to mention morbidity and mortality. A better understanding of the genetic and epigenetic factors responsible for cancer may be pertinent for diagnosis, prognosis and treatment. Gallbladder cancer is an understudied entity, particularly within Pakistan. This study will bring together a multidisciplinary team from AKU and make a significant contribution to the literature on gallbladder, paving the way for future extramural funding applications.

Keywords: cancer, Gall Bladder, KRAS

1.24

SOLITARY BRAIN METASTASIS: A RARE INITIAL PRESENTATION OF PROSTATE

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Cerebral metastasis as an initial clinical presentation of prostate carcinoma is extremely rare. Usually, patients have widespread

metastasis in the body before presenting with brain metastasis. In the absence of extensive metastasis, especially without bony metastasis, only brain metastasis is an unusual presentation of the disease. We report a case of a 59-year-old patient who presented with a lack of concentration and decreased vision. Magnetic resonance imaging (MRI) of the brain revealed a large right parietal-occipital space-occupying lesion. He underwent surgery and the pathological diagnosis of the tumor turned out to be metastatic prostate carcinoma. Further evaluation by a whole-body computed tomography (CT) scan revealed an enlarged prostate with no other metastatic deposit and a mildly raised level of prostate-specific antigen (PSA). It was possible for us to provide this patient with multi-modality treatment with the help of multidisciplinary tumor board meetings. Further studies addressing the biological as well as clinical characteristics of prostate carcinoma with this rare metastatic presentation will help us to define prognostic factors and therapeutic intervention and will help us to understand the basis of this unique presentation without bone metastasis.

Keywords: brain metastasis, prostate carcinoma, radiation therapy

1.25

EXTRAPULMONARY INFLAMMATORY MYOFIBROBLASTIC TUMOURS OCCURRING AT UNUSUAL LOCATIONS: A REPORT OF 30 CASES.

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Objectives: To describe the clinicopathological features and occurrence of IMT in unusual locations. Materials and methods 55 cases of IMT were retrieved from the archives of section of Histopathology at The Aga Khan University Hospital between years 2006-2019. Out of these, 30 cases involved quite unusual sites. The diagnoses were made on both morphological and

IHC findings. The H&E slides were evaluated for characteristic findings along with features of malignant behavior including increased mitoses, quality to invade and nuclear pleomorphism. The relevant IHC stains performed were CKAE1/AE3, ASMA, ALK protein, Desmin, CD34, S100 and CD117. FISH analysis for ALK gene rearrangement had been done on two of the cases. Clinical data was obtained from histopathological reports and additional details such as treatment and follow up were obtained by calling the patients. *Results:* The unusual tumor sites described in the study were abdominal wall(n=2) kidney(n=3) eye (n=1) orbit (n=2) intracranial but extra-axial (n=2) and rest included cheek, parotid gland, oropharynx, epiglottis, supraclavicular area, hypochondrium, vocal cord, liver, adrenal gland, urinary bladder, popliteal fossa and big toe. Out of these 30 studied patients 14 were female and 16 were male. Ages ranged from 01-64 years with mean age of 21 years. Specimen were received either as trucut biopsies or in multiple pieces. Some of them were in the form of excised nodular masses. The IHC stains were CKAE1/AE3(n=19) ASMA(n=30) ALK protein(n=30) Desmin (n=21) CD34(n=13) S100(n=23) CD117(n=12). Follow up of 13 patients was attainable. Of these, 6 found to have expired of their disease. Of the remaining 7 patients, 3 were alive with recurrence. Of the 4 patients who were alive at the time of followup without recurrence, 3 received chemo and radiotherapy while 1 was treated by resection alone.

Conclusion: Inflammatory myofibroblastic tumor (IMT) is an uncommon neoplasm with intermediate behavior. It is a locally aggressive tumor with rare occurrence of malignant change. Although the lung is the best known and most common site, inflammatory myofibroblastic tumor occurs in diverse extrapulmonary locations and in any age group. It should be suspected clinically when a spindle cell lesion with marked inflammation arises at unusual sites in body specially in children and young adults.

Long-term follow up with serial imaging techniques may be recommended for possible local aggressive behavior and recurrence.

Keywords: IMT, IHC, ALK, ASMA,,CKAE1/AE3

1.26

PATIENT DELAY IN BREAST CANCER DIAGNOSIS IN TWO HOSPITALS IN KARACHI, PAKISTAN: PREVENTIVE AND LIFE-SAVING MEASURES NEEDED

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Purpose: Patients with breast cancer in Pakistan commonly present with advanced disease. The objectives of this study were to evaluate the frequency and length of delays in seeking medical consultation and to assess the factors associated with them. *METHODS* Four hundred ninety-nine patients with newly diagnosed breast cancer were enrolled and interviewed over the period from February 2015 to August 2017. Information on sociodemographic factors, delay to medical consultation, stage of breast cancer at presentation, and tumor characteristics of the breast cancer were collected through face-to-face interviews and medical file review.

Results: The mean (standard deviation) age of patients with breast cancer was 48.0 (12.3) years. The mean (standard deviation) patient delay was 15.7 (25.9) months, with 55.2% of women detecting a breast lump but not seeking a medical consultation because of a lack of awareness about the significance of the lump. A total of 9.4% of the women decided to seek treatment initially using complementary and alternative medicine and traditional treatment; 9.4% of the women presented to a health care provider with a breast lump but no action was taken, and they were wrongly reassured about the lump without mammography or biopsy. For

26% of the women, the delay in presentation was caused by anxiety, fears and misconceptions regarding diagnosis and treatment, and other social factors including possible adverse effects on their relationship with their husband. Multivariable analysis showed a strong association of lower socioeconomic status (odds ratio [OR], 8.11 [95% CI, 2.46 to 26.69]) and late stage of breast cancer (OR, 4.83 [95% CI, 1.74 to 13.39]) with a patient delay of ≥ 3 months.

CONCLUSION Patient delay is a serious problem in Pakistan. There is an urgent need for intensive and comprehensive breast cancer education that addresses the myths and misconceptions related to breast cancer.

Keywords: breast cancer, delay, socioeconomic status

1.27

MODIFIED ALTERNATE HEALTHY EATING INDEX-2010 AND BREAST CANCER RISK IN THE PAKISTANI POPULATION

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Background: The correlation of increased breast cancer incidence with rapid changes in dietary intake over the past twenty years suggests that diet may have an essential role in this increased breast cancer incidence and therefore could be a significant modifiable risk factor for reducing it.

Methods: To determine any relationship between diet and the incidence of breast cancer in Pakistan, Alternate Healthy Eating Index 2010 was modified according to the particular cultural patterns of diet in the Pakistani population. A matched case-control study in two major hospitals of Karachi Pakistan, AKUH and KIRAN was conducted to evaluate the association between the modified AHEI 2010

and its component scores with breast cancer risk among women visiting two tertiary care hospitals of Karachi, Pakistan. A total of 411 cases between 18 years and 75 years of age with a confirmed diagnosis of the first primary in situ or invasive breast cancer and 784 controls individually matched both to the hospital, and aged-matched (+/- 5 years), were enrolled. Results: The modified AHEI 2010 score was significantly associated with breast cancer (p

Keywords: breast cancer, Diet, refined grains

1.28

A DOSIMETRIC COMPARISON BETWEEN THREE CRANIOSPINAL IRRADIATION TECHNIQUES

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medulloblastoma and some rarer tumors with signs of leptomeningeal spread. A combination of two lateral opposed photon beams for the brain, matched to one or more posterior photon fields to treat the spine. This approach results in dose inhomogeneity, especially at the beam junctions, and a significant dose anterior to the spinal target volume. Conventional techniques (3D-CRT) for craniospinal irradiation (CSI) are still widely used. The present study attempts to compare different dosimetric indices as well as dose to organs of advanced radiotherapy techniques with the conventional radiation therapy technique.

Keywords: CSI, IMRT, VMAT

1.29

FLUDARABINE-BASED SALVAGE THERAPY FOR REFRACTORY/RELAPSED ACUTE LEUKEMIAS: A SINGLE CENTER EXPERIENCE

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Objective: To evaluate the efficacy and toxicity profile of the fludarabine based regimen in refractory/ relapsed cases of acute leukaemia, a cohort retrospective study in which medical records were searched between January 2015 to November 2020 at a tertiary care center in Karachi, Pakistan.

Methods: 39 patients with refractory/relapsed acute leukaemia were randomly selected who were either given FLAG-IDA or FLA-IDA (without G-CSF). Fludarabine was given at 30mg/m² (day 1-5) and cytarabine (AraC) 2 g/m² for 5 days, idarubicin 8 mg/m² for 3 days, and granulocyte colony stimulating factor G-CSF 5 micro g/kg from day 1 till neutrophil recovery (ANC >1.0 x 10⁹/l) in one set of patients. Complete remission was evaluated by bone marrow examination on day 28-post chemotherapy.

Results: 18 patients were treated with FLA-Ida and 21 patients were treated with FLAG-Ida. Patients did not differ in age, sex, primary diagnosis, history of refractory disease, clinical risk stratification, cytogenetic analysis or molecular genetic risk. Complete remission (CR) was achieved in (51%) patients. Three (7%) patients died of post chemotherapy complications and one patient failed to achieve remission. On logistic regression, not having a molecular genetic risk factor (FLT3 for AML and BCR ABL for ALL) was the only significant predictor of complete remission. Four patients among those who achieved remission underwent allogeneic stem cell transplant. Seven patients are still in CR after a median follow up of 8 months (range 3-18). Major complications encountered were nausea, vomiting, febrile neutropenia, anemia and transient hepatic toxicity. Groups did not significantly differ in post-therapy outcomes or toxicity profile, except FLA-Ida has a significantly higher proportion of hepatotoxicity than FLAG-Ida (p = 0.006) post-therapy. There was no significant effect of treatment regime on survival up to Day 90 (p = 0.839)

Conclusion: We did not find a considerable and statistically significant difference comparing FLA-IDA and FLAG-IDA, so both appear equally efficacious and safe. Good efficacy and manageable toxicity profile are the ideal properties of this regimen and should be considered to salvage patients until new therapies in development are available.

Keywords: Acute Leukemia, Relapse, Fludarabine

1.30

OUTCOME OF PATIENTS WITH PRIMARY AND SECONDARY HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS BASED ON H SCORE: A RETROSPECTIVE ANALYSIS FROM A TERTIARY CARE CENTER

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Introduction: Hemophagocytic lymphohistiocytosis (HLH) is a progressive and potentially life-threatening disorder secondary to abnormally increased activity of immune system with release of inflammatory cytokines. It is broadly classified into primary and secondary HLH.

The objective of our study was to determine the outcome of primary and secondary HLH in pediatric and adult patients based on H score and treatment modality.

Material and methods: This was retrospective analysis done over a ten-year period at Aga Khan University Karachi, Pakistan. Variables to be analyzed included age, gender and history of death in sibling. We should H score for disease classification and clinical and laboratory findings which were required to fulfill the H Score diagnostic criteria e.g. history of intake of

immunosuppressive drugs, body temperature, hepatomegaly, splenomegaly or both as hepatosplenomegaly, cytopenias, serum ferritin, triglyceride, fibrinogen, glutamic oxaloacetic transaminase and hemophagocytosis on bone marrow aspirate and biopsy were also recorded. Continuous variables were summarized as median and categorical variables as frequencies and percentages. Categorical variables were compared by using chi-square test and Fisher Exact test. Significance of different variables between primary and secondary HLH was calculated by using independent-samples t-test. A p-value of 500ng/ml). The significant laboratory parameters in this group were ferritin and fibrinogen. The overall survival in primary HLH was approximately 44%. In the secondary HLH group, viral infections were the most common etiology and ferritin was a significant laboratory parameter in this group as well. The overall survival in secondary HLH was 60%. The overall survival of both groups combined was 53%. Treatment modality in primary group was mainly HLH-2004 protocol while patients with secondary HLH mostly received steroids. **Conclusion:** Primary HLH should be considered in any pediatric patient who presents with pancytopenia and hepatosplenomegaly. In centers where genetic testing is not available, H score along with serum ferritin and fibrinogen can be used for disease classification. The overall survival in our patients with HLH was 53%.

Keywords: HLH, Hscore, Primary and Secondary

1.31

IMPORTANCE OF CONCURRENT CHEMO-RADIO THERAPY IN ADULT BRAIN TUMOR PATIENTS: A DATA ANALYSIS

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Background: Neuro-oncology (Brain Tumor) patients one of the treatment option is concurrent chemo-radiation which needs to be started after

6 weeks of surgery. It is recommended to start 1st radiotherapy within 6-8 weeks of surgery. Delay in the treatment can result in progression of the disease.

Objective: This study will highlight average time interval period between simulation and 1st radiotherapy. Data Collection: Initial patient who are planned for CCRT will be following for tracking the time period between simulation and 1st radiotherapy.

Result: The data has been collected in the year 2019. Now, its in the process of analyzation and conclusion.

Keywords: Concurrent chemo-raidotherapy, Brain tumors, adult

1.32

UNIQUE SOCIODEMOGRAPHIC AND EPIDEMIOLOGIC FACTORS ASSOCIATED WITH BREAST CANCER AMONG YOUNG PAKISTANI WOMEN

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Background: Pakistan is facing an increase in breast cancer incidence over the past few decades with limited health budget. Methods: a case-control study consisting of 411 cases and 784 controls matched on + 5 years' age group and study site, was conducted in two hospitals of Karachi to evaluate the risk factors associated with breast cancer among Pakistani women.

Results: Mean age of women at the age of breast cancer diagnosis was was 46.1 years (SD + 11.7 years). Multivariable conditional logistic regression analyses identified three factors that were associated with the risk of breast cancer among women in Karachi : breast cancer was highest among women with education level of less than grade 8 (OR= 2.17, 95% CI= 1.49-3.16, p

Keywords: breast cancer, risk factor, socioeconomic status

1.33

SPONTANEOUS SPLENIC RUPTURE – AN UNCOMMON COMPLICATION OF CHRONIC MYELOMONOCYTIC LEUKEMIA

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Chronic Myelomonocytic Leukemia (CMML) is a blood malignancy that presents with splenomegaly in up to 40% of the patients; however, a pathological splenic rupture is very rare. We describe a 50-year-old male, who presented to emergency room with hypovolemic shock secondary to pathological splenic rupture. Patient underwent emergency laparoscopic splenectomy and stabilized. During the stay at hospital, his complete workup revealed the diagnosis of Chronic Myelomonocytic Leukemia. Although splenomegaly is common in CMML, it rarely result in its rupture and so this complication is often overlooked. This case is reviewed in the light of handful cases described in medical literature.

Keywords: CMML, Splenic rupture, leukemia

1.34

FABRICATION OF JIG TO MAINTAIN THE RICE BOLUS UNIFORMITY IN TISSUE DEFICIT REGIONS OF TBI PATIENT

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Abstract Background: The total body irradiation is the conditioning regime prior to the bone marrow transplant preparation. The QA team observed inconsistencies of the treatment setup in the head & Neck (H&N) and leg regions which deviated from the in vivo film dosimetry

measure doses. Objectives: The aim of current experiment was to use jig to hold rice bolus in the head & neck region of TBI treatment setup to enhance and improve the dose uniformity. By these modifications in the setup, it is hypothesized that an increase in the uniformity of bolus in H&N and in between legs and which will improve dose uniformity.

Methods and Materials: The jig of acrylic material was made with the dimension of 42 cm x 29 cm x 28 cm based on the previous treated patient H&N separation record. It was designed in such a manner that the size can be adjusted to any desired separation. The two bags of nylon were also made to hold the rice in the H&N, and legs region. The entire setup was used for trial basis on a humanoid phantom. The two treatment fractions were delivered along with EBT3 in vivo dosimetry to verify the setup reproducibility and consistency in results. Discussion: The EBT3 results showed that a significant improvement in rice bolus uniformity and setup reproducibility. The doses in intra fraction deviated up to $\pm 3\%$ from the previous highest deviation of $\pm 7\%$ from the predicted doses.

Conclusion: The induction of jig into treatment setup improves the setup along with reproducibility but increase the setup time which is compensate by treatment quality improvement. The results were in good agreement with the acceptance value with the deviation of $\pm 10\%$ as per international guidelines.

Keywords: TBI, BMT, Radiotherapy

1.35

SPECTRUM OF KILLER-CELL IMMUNOGLOBULIN-LIKE RECEPTORS GENOTYPE IN ACUTE MYELOID LEUKEMIA

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Introduction: Killer-cell immunoglobulin-like receptors (KIR) are regulatory molecules found on the surface of natural killer (NK) cells. A repertoire of inhibitory KIRs (2DL1, 2DL2, 2DL3, 2DL4, 2DL5, 3DL1, and 3DL2) and activating KIRs (2DS1, 2DS2, 2DS3, 2DS4, 2DS5, 3DS1) enable NK cells to detect tumor cells. KIR genes have been shown to have a higher incidence in hematological malignancies and the data continues to evolve.

Objective: The aim of this study was to identify KIR genotype profile of AML cells harboring specific cytogenetic and genetic abnormalities.

Methods: Genomic DNA was isolated from peripheral blood mononuclear cells of patients diagnosed with AML (N=23). PCR with sequence-specific primers (PCR-SSP) was used for KIR genotyping. Results: Acute Promyelocytic Leukemia (APML) with t(15;17) (N=10): APML showed presence of all inhibitory receptors but few activating receptors (2DS1, 2DS2, 2DS4). AML-trisomy 21, -monosomy 7, -t(8;21) and -t(7;11) (N=1 Each) : These cases showed presence of 2DL2 and 2DL4 inhibitory receptors. 2DL1, 2DL3 and 2DL5 were found in 75% of cases while 3DL1 and 3DL2 were present in 50% of cases. Activating receptor 2DS4 was detected in all cases while 2DS2 and 2DS3 were found in 50% of cases. Only one sample showed presence of 2DS1 and 3DS1. 2DS5 was not found in any case. AML with Complex Karyotype (N=2): These cases showed minimal presence of inhibitory-(2DL4 and 2DL5) and activating-(2DS1, 2DS5 and 3DS1) receptors. AML with FLT-ITD and Nucleophosmin-1 Mutation: Presence of few inhibitory-(2DL2 and 2DL5) and activating-(2DS2, 2DS4 and 2DS5) receptors was found in this case.

Conclusion: APML reveal an increase repertoire of KIR genes. AML with other genetic and

cytogenetic abnormalities was to found have relatively infrequent presence of activating and inhibitory KIRs. Interestingly, this is contrary to the KIR genotypic profile of 78 healthy adults from Karachi published previously.

Keywords: Killer-cell immunoglobulin-like Receptors, Acute Myeloid Leukemia, PCR with sequence-specific primers

1.36

ADVANCE IMAGE ANALYSIS AS A PROGNOSTIC TOOL FOR CANCER THERAPIES

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International Agency for Research on Cancer (IARC) predicts increase in cancer incidence cases and deaths by it in next two decades. To cope up this accelerating increase in number of cancer patients globally, there is vital need of development and implementation of advance diagnosis and treatment methods. In this study, we proposed the development of clinical decision support system with application of radiomics i.e. utilization of patient imaging data to extract texture features and used them to predict clinical outcomes. Two cohorts of patients from cervix and head-and-neck cancer have been selected. Standardized computed tomography (CT) images will be used for volume of interest delineation and segmentation. Texture features will be extracted from contoured volumes and stored in a data base. Statistical treatment of data will be performed and feature with high prognostic power will be used for development of model. This model will be useful in selection of treatment strategy for cancer patients.

Keywords: Radiomics, Texture Features, CT

1.37

USE OF ANTIBIOTIC PROPHYLAXIS IN PATIENTS UNDERGOING MASTECTOMY WITHOUT RECONSTRUCTION, A SURVEY

OF SURGEONS' PROPHYLACTIC ANTIBIOTIC PRESCRIBING PRACTICE IN PAKISTAN

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Introduction and Objective: Surgical site infections (SSI) after breast surgery may range from 1-26% which is high for surgeries that are considered “clean procedures”, as defined by the Centers for Disease Control and Prevention (CDC) wound classification system. Level I evidence indicates that perioperative prophylactic antibiotics (PPA) lead to lower rates of SSI for general operations. International guidelines from the American Society of Breast Surgeons and the American Association of Plastic Surgeons recommend a single pre-op prophylactic dose of antibiotics but lack focus on post-op prophylaxis and there are no national guidelines in Pakistan. This survey is conducted to study current prophylactic antibiotic prescribing practice patterns of breast surgeons in Pakistan, in patients undergoing mastectomy without reconstruction. The purpose of this survey was to determine the patterns of perioperative antibiotic prophylaxis.

Methods: A cross-sectional online survey was created using google forms and delivered through online social media. Surgeons whose practice involved performing breast surgeries were targeted. Those who consented to participate filled a 16 item, de-identified, validated, a survey that focused on the participant's type of practice, region, experience, and their routine of prescribing pre and post-op antibiotic prophylaxis in patients undergoing mastectomy with and without reconstruction with indwelling drains.

Results: The majority of the respondents self-identified as fellowship-trained breast/surgical oncologists (68%). Though 75% of the respondents prescribed pre-operative antibiotic prophylaxis, post-operatively there was a wide-spread variation in practices (see Figure 1). 32%

of the respondents use only a single pre-operative dose of antibiotics and no prophylaxis post-operatively while 24% continue postoperative prophylaxis for 24 hours.

Furthermore, 24% of the respondents use a post-operative antibiotic, only in those they consider high risk along with a pre-operative dose.

Figure. 1 In patients undergoing mastectomy WITHOUT IMMEDIATE RECONSTRUCTION, regarding the CONTINUATION of prophylactic antibiotics.

Conclusion/Recommendation: The majority of the surveyed Pakistani surgeons performing mastectomies showed evidence-based practice while prescribing pre-operative prophylaxis. However, post-operatively, there is wide-spread practice variation. This calls for a need to develop evidence-based guidelines through a randomized control trial, to see if there is any benefit in continuing antibiotic prophylaxis beyond the first preoperative, prophylactic antibiotic dose in those, undergoing mastectomy without reconstruction and with indwelling drains.

Keywords: Antibiotic prophylaxis, post-operative, mastectomy

2.1

A NOVEL SOLUTION TO A CLASSICAL PROBLEM: SUCCESSFUL TREATMENT OF COMPLETE VALVE EXCISION FOR TRICUSPID VALVE ENDOCARDITIS USING A NEOVALVE FASHIONED FROM AUTOLOGOUS PERICARDIUM

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Tricuspid valve endocarditis is a challenging pathology and accounts for less than one-third of the cases of endocarditis. The use of intravenous antibiotics is the first line treatment. Surgical intervention is necessary in prolonged right sided heart failure despite medical therapy, hemodynamic instability, recurrent pulmonary septic emboli, septic shock, abscess formation and failure of antimicrobial therapy to control the infection. The challenge is working in an infected field and the use of autologous pericardium is a potential solution. We demonstrate a case of a 50-year-old male with a history of IV drug abuse treated in AKUH for tricuspid valve endocarditis using an autologous pericardium. The valve was completely excised and was replaced using a neo valve fashioned completely from autologous pericardium with positive post-surgical outcomes providing a better alternative to the use of mechanical prosthesis in patients with tricuspid valve infective endocarditis.

Keywords: Tricuspid Valve Endocarditis, Autologous pericardium, treatment

2.2

ASSOCIATION OF PRE-OPERATIVE NEUTROPHIL-TO-LYMPHOCYTE RATIO WITH OUTCOMES OF SURGICAL CORONARY REVASCULARIZATION.

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Introduction: Atherosclerosis, the leading cause of coronary artery disease, is a chronic

inflammatory process in which immune mechanisms interact with metabolic risk factors and propagate lesions in the arterial tree. Neutrophilia and lymphopenia are the novel inflammatory markers and represent uncontrolled atherosclerosis. Their predictive power has been combined into Neutrophil-to-Lymphocyte (NLR) ratio. Considering the scarce literature regarding NLR with cardiac surgical population, we hypothesized that elevated pre-operative NLR is associated with poor outcomes after Coronary artery bypass graft surgery (CABG).

Materials and Methods: This prospective cohort study was conducted at our section from April, 2018 - Oct, 2019. We enrolled 272 patients undergoing isolated, elective CABG into the study and collected data on their preoperative, intraoperative and postoperative variables through chart review. NLR was calculated through routine preoperative CBC. Patients were followed for occurrences of 30-day mortality and morbidities. Statistical analysis was performed using Student T-test for quantitative and Chi square test for qualitative variables to test the group differences, ROC curves were plotted to determine association between composite outcomes and NLR while p-value ≤ 0.05 was considered statistically significant.

Results: Out of 272 patients, majority were males, had NYHA class II symptoms and with LVEF $> 50\%$. Mean preoperative NLR was calculated as 2.3 ± 1.1 . A composite of morbidity and mortality occurred in 98 (36.0%) patients; with prolonged hospital LOS as the most common morbidity (51 [18.8%]) while 7 (2.6%) patients died within the 30-day period post-CABG. After statistical analysis, no association was seen between NLR with early outcomes after CABG (NLR 2.3 ± 1.1 Vs 2.3 ± 1.0 [p 0.994]).

Conclusion: NLR has no association with morbidity and mortality after CABG in elective, low risk population. Larger, multicenter studies in relatively high risk population are required to

investigate the effectiveness of NLR in the cardiac surgical population.

Keywords: Neutrophil-T0-Lymphocyte Ratio, Cabg, Morbidity And Mortality

2.3

ASSOCIATION OF PRE-OPERATIVE PLATELET-TO-LYMPHOCYTE RATIO WITH OUTCOMES OF SURGICAL CORONARY REVASCULARIZATION

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Introduction: Atherosclerosis, the leading cause of coronary artery disease, is a chronic inflammatory process in which immune mechanisms interact with metabolic risk factors and propagate lesions in the arterial tree. Thrombocytosis and lymphopenia are the novel inflammatory markers and represent uncontrolled atherosclerosis. Their predictive power has been combined into Platelet-to-Lymphocyte (PLR) ratio. Considering the scarce literature regarding PLR with cardiac surgical population, we hypothesized that elevated pre-operative PLR is associated with poor outcomes after Coronary artery bypass graft surgery (CABG).

Materials and Methods: This prospective cohort study was conducted at our section from April, 2018 - Oct, 2019. We enrolled 272 patients undergoing isolated, elective CABG into the study and collected data on their preoperative, intraoperative and postoperative variables through chart review. PLR was calculated through routine preoperative CBC. Patients were followed for occurrences of 30-day mortality and morbidities. Statistical analysis was performed using Student T-test for quantitative and Chi square test for qualitative variables to test the group differences, ROC curves were plotted to determine association between composite outcomes and NLR while p-value \leq 0.05 was considered statistically significant.

Results: Out of 272 patients, majority were males, had NYHA class II symptoms and with LVEF > 50%. Mean preoperative PLR was calculated as 117.2 ± 53.0 . A composite of morbidity and mortality occurred in 98 (36.0%) patients; with prolonged hospital LOS as the most common morbidity (51 [18.8%]) while 7 (2.6%) patients died within the 30-day period post-CABG. After statistical analysis, no association was seen between PLR with early outcomes after CABG (PLR 119.1 ± 53.2 Vs 113.9 ± 52.8 [p 0.413]).

Conclusion: PLR has no association with morbidity and mortality after CABG in elective, low risk population. Larger, multicenter studies in relatively high risk population are required to investigate the effectiveness of PLR in the cardiac surgical population.

Keywords: Platelet-To-Lymphocyte Ratio, Cabg, Morbidity And Mortality

2.4

CARDIOVASCULAR EFFECTS OF AQUEOUS-METHANOLIC EXTRACT OF ALCEA ROSEA IN EXPERIMENTAL ANIMALS

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Introduction: Hypertension is a significant health care challenge. Its prevalence is on the rise due to lack of compliance to current management providing a rationale for the search of new treatments. *Objective:* This study was undertaken to explore the cardiovascular effects of aqueous-methanolic extract of Alcea rosea (Ar.Cr) and to investigate its potential use as an anti-hypertensive agent.

Methods: Aortae from Sprague-Dawley rats were placed in 5 ml and 15 ml isolated tissue bath assemblies respectively, filled with Krebs' buffer (37°C) bubbled with carbogen and

connected to a force transducer and PowerLab attached with a computer. All the graphing, calculations and statistical analyses were performed using Graph-Pad Prism software version 4.00 for Windows.

Results: When tested on phenylephrine (PE, 1 μ M) and K⁺ (80 mM)-induced vasoconstriction, Ar.Cr caused a concentration-dependent relaxation and also caused a suppression of PE (1 μ M) control peaks in Ca⁺⁺ free medium. On the baseline of rat thoracic aortae, the plant extract caused vasoconstriction, which was partially phentolamine-sensitive.

Conclusions: These data indicate that the plant extract exhibits vaso-dilatory and vaso-constrictive properties. The vasodilator effect of the plant extract is mediated through inhibition of Ca⁺⁺ influx via membranous Ca⁺⁺ channels as well as Ca⁺⁺ release from intracellular stores. Future studies are required to further elaborate the blood pressure lowering activity of the plant.

Keywords: Alcea rosea, antihypertensive, Ca⁺⁺ antagonist

2.5

PHARMACOLOGICAL BASIS FOR THE MEDICINAL USE OF AMOMUM SUBULATUM IN HYPERTENSION

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Introduction: Hypertension is globally considered as the main cause of cardiovascular diseases, with every third adult suffering from this disease. Currently, anti-hypertensive treatment is expensive with many side-effects and there is a lack of patient compliance towards multiple drug therapy. Therefore other options like herbal medicines deserve scientific investigation to be considered as alternative therapy.

Objective: The current study was designed to establish the underlying mechanism of anti-hypertensive activity of Amomum subulatum with respect to its cardio suppressant and vasodilator activities.

Methods: Aqueous-methanolic (30:70) crude extract was prepared from the seeds of Amomum subulatum (As.Cr). Aortae from Sprague-Dawley rats and spontaneously beating atria from guinea pigs were placed in isolated tissue bath assembly, filled with Krebs's buffer (37°C) bubbled with carbogen and connected to a force transducer and PowerLab attached with a computer. All the graphing, calculations and statistical analyses were performed using Graph-Pad Prism software version 4.00 for Windows.

Results: On spontaneously beating guinea pig atria, As.Cr showed inhibition of force as well as rate, thus showing negative inotropic and chronotropic effects. In isolated rat aortic ring preparations, when tested on phenylephrine (PE, 1 μ M) and K⁺ (80 mM)-induced vasoconstriction, As.Cr caused a concentration-dependent relaxation and also caused a suppression of PE (1 μ M) control peaks in Ca⁺⁺ free medium. These effects were similar to Verapamil, a known Ca⁺⁺ antagonist which indicates calcium channel blocking activity.

Conclusions: Amomum subulatum produces both cardio-suppressant and vasodilator effects, mediated possibly through Ca⁺⁺ antagonism which provides a sound argument for the medicinal use of the plant in hypertension.

Keywords: Amomum subulatum, antihypertensive, Ca⁺⁺ antagonist

2.6

CARDIO-SUPPRESSANT AND CALCIUM CHANNEL BLOCKING ACTIVITIES OF AQUEOUS FRACTION OF ALCEA ROSEA EXTRACT

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Introduction: Hypertension is a chronic cardiovascular disorder with injurious consequences. Mostly lifelong therapy is the only management strategy leading to lack of compliance resulting in high prevalence. Searching for new treatments is thus warranted.

Objective: This study was aimed to investigate the traditional use of *Alcea rosea* as an anti-hypertensive agent by testing the aqueous fraction of its crude extract (Ar.Cr-aq) on various experimental animal models.

Methods: Spontaneously beating atria from guinea pigs and aortae from Sprague-Dawley rats were placed in isolated tissue bath assembly, filled with Krebs's buffer (37°C) bubbled with carbogen and connected to a force transducer and PowerLab attached with a computer. All the graphing, calculations and statistical analyses were performed using Graph-Pad Prism software version 4.00 for Windows.

Results: Ar.Cr-aq produced cardio-suppressant effect in spontaneously beating right atria isolated from guinea pig. It equally inhibited the force as well as the rate. When tested on phenylephrine (PE, 1 μ M) and K⁺ (80 mM)-induced vasoconstriction, Ar.Cr-aq caused a concentration-dependent relaxation similar to that produced by verapamil which is a well-known Ca⁺⁺ channel blocker.

Conclusions: The cardio-suppressant and vasodilator effects of the aqueous fraction of methanolic extract of *Alcea rosea* are possibly mediated through calcium channel antagonism which provides pharmacological basis for its use in the management of hypertension.

Keywords: *Alcea rosea*, antihypertensive, Ca⁺⁺ antagonist

2.7

PHARMACOLOGICAL BASIS FOR THE MEDICINAL USE OF PUNICA GRANATUM IN HYPERTENSION

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Introduction: Hypertension is a chronic disease with detrimental outcomes. The management requires lifelong therapy. Its prevalence is on the rise due to lack of compliance to current management providing a justification for the search of new treatments.

Objective: The aim of this study was to investigate the traditional use of *Punica Granatum* as an anti-hypertensive agent by testing its crude extract (Pg.Cr) on various animal models.

Methods: Aortae from Sprague-Dawley rats and spontaneously beating atria from guinea pigs were placed in isolated tissue bath assembly, filled with Krebs's buffer (37°C) bubbled with carbogen and connected to a force transducer and PowerLab attached with a computer. All the graphing, calculations and statistical analyses were performed using Graph-Pad Prism software version 4.00 for Windows. **Results:** On spontaneously beating guinea pig atria, Pg.Cr showed partial inhibition of force as well as rate, thus showing negative inotropic and chronotropic effects. In isolated rat aortic ring preparations, when tested on phenylephrine (PE, 1 μ M) and K⁺ (80 mM)-induced vasoconstriction, As.Cr caused a concentration-dependent partial relaxation and also caused a suppression of PE (1 μ M) control peaks in Ca⁺⁺ free medium. These effects were similar to Verapamil, a known Ca⁺⁺ antagonist which indicates calcium channel blocking activity.

Conclusions: *Punica Granatum* produces both cardio-suppressant and vasodilator effects, mediated possibly through Ca⁺⁺ antagonism

which provides a sound argument for the medicinal use of the plant in hypertension.

Keywords: Punica Granatum, antihypertensive, Ca⁺⁺ antagonist

2.8

WHAT MOTIVATES SMOKING CESSATION? A CROSS-SECTIONAL STUDY IN A LOWER-MIDDLE-INCOME COUNTRY

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Introduction: In Pakistan, the lack of structured smoking cessation interventions such as cessation-clinics and behavioral therapy means that quitting is a greater challenge to the individual smoker. This study aimed to assess motivations for smoking cessation among successful former smokers in Pakistan.

Methods: A cross-sectional survey was conducted at four tertiary care hospitals in Karachi among patient attendants. The inclusion criteria was a past history of smoking (≥ 1 year) and > 7 months since cessation.

Results: 190 former smokers (mean age 36.7 ± 13.4 years), 92.1% males, were included in this study. Respondents had smoked for an average of 11.8 ± 9.77 years, with most (68.9%) having smoked ≤ 10 cigarettes per day before quitting. Most respondents reported having quit abruptly (61.6%), while the rest gradually reduced their daily cigarette use. Only 25 (13.2%) respondents reported having used a smoking cessation aid, with the commonest of these being nicotine replacement therapy ($n = 18$; 72.0%). Motivations included to improve one's own health (71.6%), due to repeated promptings by family (31.1%) and doctors (11.1%). Indeed, 32.1% of respondents reported having suffered from a smoking-related illness. Common social

cues encouraging quitting included peer pressure to quit (23.3%) and social avoidance by non-smokers (14.7%). On multivariable logistic regression adjusted for age, gender and monthly family income, successful smoking cessation on one's first attempt was associated with being married (OR: 3.239 [95% CI: 1.593-6.585]), employing an abrupt cessation mode of quitting (4.144 [2.512-6.836]), the belief that smoking contradicted ones view of being caring and responsible (2.697 [1.533-4.745]), and telling oneself that one has the willpower to quit (1.635 [1.027-2.604]).

Conclusion: Major motivations for smoking cessation included self-health improvement, and promptings by family and doctors. Will-power to quit, peer-pressure to quit smoking and social avoidance by non-smokers also play a role in motivating quitting.

Keywords: Smoking Cessation, Tobacco, Tobacco Control

2.9

DISSECTING THE LAYERS OF THE THROMBUS ARCHITECTURE...A TECHNIQUE!

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Introduction: Thrombus is an abnormal clot that forms and circulates within a vessel. Previously, it was considered a blob of platelets upheld by fibrin meshwork. With recent advances in basic and translational research, the concept of thrombus has evolved and so should be the techniques to study them. Thrombus is now classed as a dynamic modality with an architectural organization that is influenced by shear stress of the flowing blood along with the activation status of circulating platelets. Activation status is marked by platelet shape change, a discoid rested presence to a fully activated spread form; orchestrated by the underlying actin cytoskeleton. The modality to

explore the thrombus and to dissect the actin cytoskeletal mechanistic, ingenuities a platelet specific technique that envisages platelet activation in different layers of the thrombus. The assay focuses on formation of different actin structures; namely stress fibres (formed in a completely spread platelet) and actin nodules (present in the pre-spread form) (Figure 1).
Figure 1: Actin cytoskeletal structures of platelets

Objective: To setup a platelet specific technique that assesses morphology of thrombus organization.

Methods: Platelets of healthy human volunteers were isolated. These platelets were allowed to spread on fibrinogen, for different time points i.e. 5, 15, 25, 35 and 45 minutes, that depicted platelet aggregation within a thrombus. The cells were fixed, permeabilize and stained to visualize via fluorescent microscopy.

Results: Analyzing the time profile of in-vitro platelet spreading, an increase in stress fibres with a concomitant decrease in actin nodules was observed. Platelets (70%) had fully spread by 25 minutes and attained a maximal surface area which continued upto 45 minutes (last tested timepoint). Recommendation: This technique could be deployed to screen natural and synthetic compounds which could impact platelet activation and influence thrombus formation.

Keywords: Platelets, Thrombus Formation, Actin Cytoskeleton

2.10

A REPURPOSED MEDICATION TO LIMIT THROMBUS FORMATION!

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Introduction: Thrombus is an abnormal clot that forms and circulates within a vessel. Advances in basic and translational research

conceptualized an architectural organization of a thrombus that has a dynamic modality with an architectural organization that is influenced by shear stress of the flowing blood along with the activation status of circulating platelets. Activation status is marked by platelet shape change from a discoid presence to a fully activated spread form, orchestrated by the underlying actin cytoskeleton. What if the platelet perspective of a 'suicidal fragment in circulation' be a reversible phenomenon? What if the cytoskeleton of these activated platelets be reversed? What if this platelet reversal be brought about by a healthy endothelium. To explore these pathogenic modalities platelet spreading assay was employed that envisage the consequences borne by cardio metabolic complications of myocardial infarction, deep venous thrombosis, stroke etc.

Objective: To visualize the impact of cAMP elevating agent on platelet activation and thrombus formation.

Methods: Platelets of healthy human volunteers were isolated. These platelets were treated for 10 minutes at different doses of cAMP elevating agents (an FDA approved medication). These treated platelets were then allowed to spread on fibrinogen coated slides for 45 minutes. The cells were fixed, permeabilized and stained to visualize via fluorescent microscopy.

Results: The observed results shows a dose dependent response on the actin cytoskeletal changes in the spreading platelets. An increase in the platelets having reduced stress fibers with a concomitant increase in actin nodules was noted. The average platelet spreading area denoted by the ratio of surface area over adhesion; was declined that followed suit to drug concentration.

Conclusion: Platelet cAMP elevation decreases its basal activation status thereby declining the avid response to formation of unwanted thrombi. This hints for a possible clinical implication steering the cardiovascular and thrombotic pathogenic milieu.

Keywords: Platelets, Thrombus Formation, cAMP

2.11

DEVELOPMENT OF MYOCARDIAL INFARCTION EXPERIMENTAL MODEL IN BALB/C MICE.

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Introduction: Acute myocardial infarction is the most severe manifestation of ischemic heart diseases. The loss of myocardial cells replaced by fibrotic scar leads to reduced cardiac output, adverse remodeling and ultimately heart failure. The process involves a series of events including irreversible cell damage, oxidative stress, inflammation, fibrosis, and ventricular remodeling. Development of such model is important for the study of pathological processes such as production of oxygen species, neutrophils recruitment and complement activation that modulate MI induced tissue damages.

Methodology: We developed a surgical model of myocardial infarction to study the pathological processes after MI. Animal was anesthetized, intubated and fixed into position on the operating pad. Ventilator was attached to maintain and monitor continuous oxygen supply. Body temperature was monitored and maintained within a set limit. ECG leads were fixed to record ECG changes continuously during surgery. The chest was opened, ribs retracted, the pericardium was removed and left anterior descending artery (LAD) was identified and ligated. Occlusion was confirmed by observing immediate blanching of the left ventricle (LV) post ligation. An accompanying ECG recording showed characteristic ST-elevation, which further confirmed ischemia. The chest was closed, animal extubated and shifted to recovery cage. Mouse was monitored for a week and euthanized for samples collection. Plasma was collected into EDTA

tubes and hearts were collected in formalin and later embedded, sliced and stained with H&E stain to observe histological changes.

Results: Mice ECG during surgical procedure confirmed the successful LAD occlusion by observing ST elevation. Gross examination showed prominent area of scar development on the anterior ventricular wall. Formalin fixed paraffin embedded heart sections confirmed the presence of fibrosis in heart tissues. **Conclusion:** The described method represents an operative approach to study myocardial infarction in mice that mimics considerable pathological effects of cardiac dysfunction in human patients.

Keywords: Myocardial infarction, Fibrosis, Ischemia

2.12

ACUTE CORONARY SYNDROME AND USE OF BIOMASS FUEL AMONG WOMEN IN RURAL PAKISTAN: A CASE-CONTROL STUDY.

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Objectives: Three billion people use biomass fuel for cooking and heating globally. We assessed the association between acute coronary syndromes (ACS) and use of biomass fuel for cooking.

Methods: We conducted a case-control study among women living in defined areas that were served by two tertiary care hospitals. A total of 364 women admitted to cardiac care units with ACS were compared with 727 controls, individually matched for age, who were inpatients at the same hospitals with a miscellany of diagnoses. Exposure to biomass fuel and other risk factors was ascertained through a questionnaire and assessed by conditional logistic regression. **RESULTS:** After adjustment, risk of ACS was elevated in women who had ever used biomass for cooking. In comparison with never users, the odds ratio for

those who currently cooked with biomass was 4.8 (95% confidence interval 1.7, 13.8). However, among those who had ever used biomass, there was no decline in risk with time since last exposure.

Conclusions: The study found increased risk of ACS from use of biomass for cooking. However, full benefits from interventions may not accrue in short term.

Keywords: Biomass fuel, Acute coronary syndrome, women

2.13

CORONARY HEART DISEASE, HYPERTENSION AND USE OF BIOMASS FUEL AMONG WOMEN: COMPARATIVE CROSS-SECTIONAL STUDY.

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Department of Community Health Sciences, Aga Khan University

Objectives: To explore the associations of hypertension and coronary heart disease (CHD) with use of biomass fuel for cooking.

Methods: Comparative cross-sectional study. Rural villages in Sindh, Pakistan. Women aged ≥ 40 years who had used biomass fuel for cooking for at least the last year (n=436), and a comparison group (n=414) who had cooked only with non-biomass fuel during the last year were recruited through door-to-door visits. None of those who were invited to take part declined. Hypertension was determined from blood pressure measurements and use of medication. CHD was assessed by three measures: history of angina (Rose angina questionnaire), previous history of 'heart attack', and definite or probable changes of CHD on ECG. Potentially confounding risk factors were ascertained by questionnaire and anthropometry. Associations of hypertension and CHD with use of biomass and other risk factors were assessed by logistic regression, and summarised by ORs with 95% CIs.

Results: After adjustment for potential confounders, there was no association of hypertension (OR: 1.0, 95% CI 0.8 to 1.4) angina (OR: 1.0, 95% CI 0.8 to 1.4), heart attack (OR: 1.2, 95% 0.7 to 2.2) or ECG changes of CHD (OR: 0.8, 95% CI 0.6 to 1.2) with current use of biomass for cooking. Nor were any associations apparent when analyses were restricted to long-term (≥ 10 years) users and non-users of biomass fuel.

Conclusions: A linked air monitoring study indicated substantially higher airborne concentrations of fine particulate matter in kitchens where biomass was used for cooking. It is possible that associations with CHD and hypertension were missed because most of the comparison group had used biomass for cooking at some time in the past, and risk remains elevated for many years after last exposure.

Keywords: Coronary heart disease, Hypertension, Biomass fuel

2.14

INCIDENCE AND PREDICTORS OF POSTOPERATIVE ATRIAL FIBRILLATION AFTER CORONARY ARTERY BYPASS SURGERY, AT AGA KHAN HOSPITAL KARACHI, PAKISTAN.

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Introduction: Postoperative atrial fibrillation (POAF) in Coronary Artery Bypass Surgery (CABG) and is significantly associated with increased morbidity, prolonged hospital stay, higher cost of care. We aimed to determine the incidence of POAF and its predictors in patients undergoing isolated CABG at our institution.

Material Methods: A prospective observational study was conducted during January, 2017 to December 2018. Patients with permanent pacemaker, redo CABG and already had atrial

fibrillation were excluded. Analysis was done in SPSS version 23. Statistical group difference was computed by independent t-test and chi-squared. Univariate and Multivariate logistic regression applied to determine independent factors of POAF. A p value of <0.05 was considered significant.

Results: A total of 807 Isolated CABG procedures were performed during study period, the incidence of POAF estimated to be 93 (11.5%). At univariate analysis, a subset of Age ≥ 60 years showed a trend of acquiring risk of POAF, however it did not attain statistical significance. History of MI, low ejection fraction, and intra-operative use of blood product showed an association with POAF, however loss its significance after adjustments. Multivariate model showed BMI as independent risk factor. Perioperative beta blockers use have a protected effect. Those who had POAF stayed longer in hospital. Morbidity and mortality was comparable however incidence of permanent stroke, [2 (2.2%) vs. 3 (0.4 %), $p=0.045$], and heart block [5 (5.4%) vs. 10 (1.4%), $p=0.008$] were significantly high in POAF population. **Conclusion:** The incidence of POAF is found to be substantial and comparable to the Caucasian population. Elderly aged 60 years and above, obese people are at higher risk of acquiring POAF, and predict prolonged LOS. Perioperative use of beta blockade showed a protective effect on the outcomes; however other regimen should also be considered to prevent POAF to avoid prolonged LOS and associated increased cost

Keywords: Atrial Fibrillation,,Postoperative,, CABG

2.15

UTILIZATION AND OUTCOMES OF NON-INVASIVE VENTILATION-NIV (BIPAP) IN POST-CARDIAC SURGERY AT A TERTIARY CARE HOSPITAL IN KARACHI

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Background: The open-heart surgery (OHS) remains the most frequent indications for invasive and non-invasive ventilation (NIV) mainly due to respiratory complications such as atelectasis, pleural effusions and infections. This will increase use of NIV which eventually increase risk of morbidity and mortality. Careful pre-operative risk-stratification and post-operative compliance to standards of care ensure effective resource allocation in critical care units. We aimed to explore the indications and outcomes of NIV in patients undergoing OHS.

Methods: A retrospective analytical study conducted on consecutively recruited patients during January-December 2018 at Cardiothoracic Surgery, AKUH, Karachi. Pre and perioperative variables were extracted from patients file using a structured Performa. Analysis done on SPSS version 22. Student t-test or chi-square tests applied to assess differences between BiPAP vs Non-PIPAP use. A p-value <0.05 considered significant.

Results: A total 612 OHS patients recruited. Gender distribution male [(94 (73.4%) vs. 375 (77.5)], type of procedures and priority of surgery were comparable in both the group. About 2/3rd of BIPAP indicated in hypoxic patient followed by Atelectasis. BIPAP group were younger [47.6 ± 25.5 vs 56.8 ± 11.7 years]. Ever tobacco use, 28.1% vs 19.0%, COPD, 29.7% vs 18.8%, PCO₂ 47.8 ± 10.2 vs 44.3 ± 7.0 and PO₂ 71.7 ± 26.3 vs 111 ± 43.3 , overall morbidity, CICU and hospital length of stay were significantly high in BIPAP group, (p for all variables were <0.05. Frequency of mortality was though high in BIPAP group but did not attain statistical significance, ($p=0.074$).

Conclusion: Use of NIV is substantial and has clinical and cost implications. Tobacco use and COPD, length of CICU and hospital stay and

overall morbidity were high in BIPAP group. Eventually increase in overall direct medical expenditures and resources. Compliance to standardized clinical algorithms, could restrain irrational BIPAP use by controlling risk of respiratory failure resulting from post-surgical pain, immobility and chest physiotherapy

Keywords: Open Heart Surgery, Non Invasive Ventilation, , BIPAP, Respiratory Failure

2.16

DUAL TOBACCO USE: PREVALENCE & DETERMINANTS IN URBAN & RURAL COMMUNITIES OF PAKISTAN

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Introduction Smoked tobacco and smokeless tobacco use is one of the leading causes of premature disease, disability and death. Both are associated with heart disease, cerebrovascular disease and different types of cancers. Little is known about the factors that are associated with dual tobacco (DT) use in Pakistan.

Objectives This study aims to understand the factors associated with consumption of dual tobacco use in the adult population of urban and rural communities of Pakistan.

Methods Users were categorized as never, single and dual users of tobacco products. Frequencies and percentages for tobacco use were reported using a 95% CI. Multivariable analysis was done using multinomial logistic regression and adjusted odds ratios were reported using a 95% CI with a p-value of <0.05 taken as significant.

Results The overall prevalence of DT use was found to be 33.2% and that of ST use was 11.9%. The odds of DT use (AOR: 5.96, 95% CI: 4.46-7.97, P-value: 0.0001) and ST use (AOR: 1.98, 95% CI: 1.36-2.89, P-value: 0.0001) were significantly higher among the rural community as compared to the urban community. Being male (DT: AOR: 2.69, 95%

CI: 1.87-3.85, P-value: 0.0001 and ST: AOR: 5.10, 95% CI: 3.11-8.35, P-value: 0.0001), having no schooling (DT: AOR: 2.82, 95% CI: 1.72-4.64, P-value: 0.001 and ST: AOR: 2.18, 95% CI: 1.19-4.0, P-value: 0.001), being a skilled worker (DT: AOR: 1.49, 95% CI: 1.02-2.2, P-value: 0.004 and ST: AOR: 1.86, 95% CI: 1.15-3.02, P-value: 0.004) were significantly associated with both DT and ST use.

Conclusion The prevalence of dual tobacco was found to be quite high. The determinants of both dual and single tobacco use were found to be similar that is residing in a rural community, male gender, less education and being a skilled worker

Keywords: DT: Dual tobacco use, ST: Single tobacco use, Determinants

2.17

INCREASED SERUM VITAMIN D LEVEL IN PRIMARY HYPERPARATHYROIDISM; AFTER IBRANDONATE INTAKE

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A 86 year old lady presented with complain of shortness of breath for one day ,relative constipation for one week and generalized weakness for one month along with drowsiness which had been increased at time of presentation. On examination, Glasgow Coma Scale [GCS]score was 11/15. Arterial blood gas done immediately showed hypercapnia and serum electrolytes showed hypercalcemia .Non-invasive ventilation applied and intravenous hydration initiated which later changed into forced diuresis due to fluid overload. Work up for hypercalcemia showed raised primary hyperparathyroidism with isolated increased in vitamin D. On evaluation of previous medical history she was on calcium and vitamin D supplements since 12 years . Last vitamin D checked 5 months back which was 21 mol/l and ibrandonate prescribed 150 mg tablet per oral in a month, which she took regularly as prescribed.

After adequate forced diuresis , hypercalcemia resolved. She became clinically improved with GCS 15/15 and on room air before discharge after adequate treatment of her underlying pneumonia.

Keywords: Vitamin D, Ibrandonate, primary hyperthyroidism

3.1

PATERNAL POSTPARTUM DEPRESSION AND ITS ASSOCIATION WITH MATERNAL DEPRESSION IN PAKISTAN

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Background: Postpartum depression can result in devastating effects for the parents and family. Postpartum depression has historically been associated primarily with mothers. Recently, there is an increasing interest about depression in fathers. Paternal depression is a neglected area in Pakistan, where socio-demographic factors are very different. The aim of my study was to determine the frequency of paternal post-partum depression and its association with maternal depression.

Method: A cross-sectional study was conducted from November 2018 to May 2019. Two hospitals were selected, one each from Karachi and Gilgit-Baltistan, Pakistan. Participants were enrolled from family medicine, gynecology and pediatrics clinics. Single father and those having existing psychiatric illnesses were excluded. Depression was assessed in both the parents during 0-12 months after child birth using a validated tool i.e. Edinburgh Postnatal Depression Scale.

Result: A total of 186 participants were enrolled (148 from Karachi and 38 from Gilgit). Paternal postpartum depression was found to be 23%, while maternal postpartum depression was 43.5%. On multivariate regression, maternal post-partum depression was found to be associated with paternal postpartum depression (OR: 2.847, CIs: 1.074 - 7.548).

Conclusion: Paternal postpartum depression is common in our local settings, and is associated with maternal postpartum depression.

Keywords: Paternal, postpartum, Depression

3.2

PREVALENCE OF DEPRESSION, ANXIETY AND PSYCHOSOCIAL SUPPORT AMONG TRANSFUSION DEPENDENT THALASSEMIA MAJOR PATIENTS

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Background: Thalassemia are inherited blood disorders characterized by defective hemoglobin synthesis. Several factors drastically affect the quality of life of Thalassemia patients (TP) including severe anemia, frequency of transfusions and adverse effects of chelation therapy. Therefore, naturally TP have a greater predisposition towards anxiety and depression because of several psychosocial problems like separation from family, restricted social activities, death anxiety and physical and facial deformities.

Materials and Methods: We conducted a cross sectional study in Karachi on a sample of 400 TP, aged between 8-18, using three sets of questionnaires on demographic data, anxiety and depression and Psychosocial support (PSS) respectively.

Results: The HADS (Hospital anxiety and depression scale) was subdivided into anxiety and depression. The depression scale showed that 238 (59.5%) patients were normal, 118 (29.5%) was borderline and 44 (11%) were abnormal cases i.e. showed signs of depression. The anxiety scale showed that 130 (32.5%) patients were normal, 93 (23.3%) were borderline and 177 (44.3%) were abnormal cases. The MSPSS (Multidimensional scale of perceived psychosocial support) which was further subdivided into friends, family and others. For the category of friends, the results showed that 177 (29.3%), 184 (46%) and 99 (24.8%) patients reported low, moderate and

high support respectively. The category of family showed that 1 (0.3%), 24 (6%) and 375 (93.8%) showed low, moderate and high support respectively. The category of others showed a frequency of 260 (65%), 60 (15%) and 80 (20%) patients showed low, moderate and high support respectively.

Conclusion: We concluded that title and objective was significantly true and anxiety was found greater than depression in TP. Patients mostly received strong PSS from their families. Furthermore, hospitals and clinical centers must play an active role in providing both physical and mental support to TP along with efficient medical facilities.

*Keywords:*Thalassemia, Anxiety, Depression

3.3

STRESS AND ANXIETY AMONG GENERAL DENTAL PRACTITIONERS, SPECIALIST DENTAL PRACTITIONERS AND DENTAL SURGERY ASSISTANTS IN TREATING DENTAL PATIENTS DURING THE CORONAVIRUS PANDEMIC: A CROSS SECTIONAL SURVEY

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Introduction and Objective: Dental professionals are at great risk of contracting the coronavirus infection. The objectives of this study were to assess stress and anxiety among dental professionals and which dental procedures cause the greatest amount of stress and anxiety during the coronavirus pandemic. *Methods* This cross-sectional survey was conducted by requesting voluntary participation by dental healthcare workers through our e-form which consisted of our self-developed questionnaire, the Perceived Stress Scale (PSS), and Generalized Anxiety Disorder Scale (GAD). Simple and multiple linear regression analysis was used to assess dental procedures and other factors associated with stress among participants. A p-value ≤ 0.05 was considered as statistically significant.

Results: This survey included 85 participants (32 males, 53 females) with a mean age of 31.6 ± 6.0 yrs. Significant associations were found between severe stress for scaling ($p < 0.001$, $p < 0.001$), complex fillings ($p < 0.001$, $p < 0.001$), RCTs ($p = 0.001$, $p = 0.001$), crown and bridge work ($p < 0.001$, $p < 0.001$), denture work ($p = 0.001$, $p = 0.001$), simple extractions ($p = 0.043$, $p = 0.043$), third molar extractions ($p < 0.001$, $p < 0.001$), surgical procedures ($p < 0.001$, $p = 0.001$), implant placements ($p = 0.001$, $p = 0.022$), and PSS and GAD scores, respectively.

Conclusions: Dental healthcare workers have severe stress and anxiety with elective dental procedures. Dental emergencies should take precedence and elective dental treatment should be deferred. Psychological support for dental healthcare professionals should be made accessible.

*Keywords:*Stress, Anxiety, Dental Professionals

3.4

A RANDOMIZED CLINICAL TRIAL OF CHAMOMILE AND SAFFRON TEA AS AN ADJUVANT THERAPY FOR DEPRESSION

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Background: The prevalence of diabetes associated depression is increasing worldwide and several efforts are underway for depression. It is observed that people show more inclination towards herbal treatments based on their beliefs and recent research also shows medicinal effects of nutraceuticals herbal products towards improved neurotransmission and neuroprotection. The present clinical trial was done to study the two well-known herbs saffron and chamomile as an adjuvant therapy for depression. *Aim:* The present study was a single blind, randomized trial, designed to observe the effects of chamomile and saffron on patients

with mild to moderate depression using PHQ9 scale.

Methodology: A total of 50 patients after obtaining written consent, were selected for the study and divided into test and control groups. All participants were asked to complete the PHQ9 questionnaire and their blood samples were collected for fasting blood glucose (FBS) analysis before and after the trial. Herbal tea containing saffron 1 mg/kg/day and chamomile 20 mg/kg/day was provided for oral intake to all test subjects for a period of 4 weeks along with their prescribed medicines, however, the control subjects were advised to take only their routine medication. *Result:* The results showed a significant difference in the management of depression and diabetes between the test and control participants. A significant improvement in the FBS levels and in mood through PHQ9 scale assessment was observed in the test subjects compared to controls.

Conclusion: The present trial shows medicinal benefits of nutraceuticals as antidiabetic and antidepressant with improvement in PHQ9 scoring. This study showed promising role of herbs saffron and chamomile towards management of diabetes associated mood disturbances.

Keywords: saffron, chamomile, diabetes, PHQ9, depression

3.5

THE POTENTIAL ROLE OF NUTRACEUTICALS IN MITIGATION OF NEUROPSYCHOLOGICAL DEFICITS

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Background: Neuropsychological disorders especially depression, anxiety and memory loss are the most frequent disorders associated with diabetes mellitus (DM) and other metabolic disorders. These disorders interfere with

metabolism of neurotransmitters acetylcholine (ACh) and butyrylcholine (BCh), eliciting neuropsychiatric problems. *Aim:* The purpose of the present study was to evaluate the beneficial effects of nutraceuticals herbs *Crocus sativus* (CS) and *Matricaria chamomilla* (MC) commonly known as saffron and chamomile on acetylcholinesterase and butyrylcholinesterase activity, the degradation enzymes of ACh and BCh in vitro as well as in vivo (brain) of diabetic male albino Wistar rats.

Methodology: Body weight, food and water intake was monitored daily. Behavioral tests for anxiety, memory and depression were done through elevated plus maze test (EPMT) and Light and Dark box test (LDBT), Open field test (OFT), Novel Object Recognition test (NORT) and forced swim test (FST) on 11th day post induction of diabetes through single intraperitoneal streptozotocin injection at 60mg/kg body weight. After behavioral tests, the rats were decapitated for brain excision for biochemistry analysis. Statistical analysis was done through One-Way ANOVA using SPSS 22.0 and $p > 0.05$ was considered significant.

Results: Results showed significant increase in food and water intake while body weight remained the same. Significant activity of herbal treated rats was observed in OFT, FST, NORT, LDBT as compared with controls. The herbs also showed significant decrease in the concentrations of butyrylcholinesterase and acetylcholinesterase in brain as compared to the control rats.

Conclusion: It was concluded that nutraceuticals play a potential role in alleviation of neuropsychological deficits in DM and related disorders. *Keywords:* Neuropsychological deficits, acetylcholinesterase, butyrylcholinesterase, diabetes mellitus, streptozotocin

Keywords: Neuropsychological deficits, diabetes mellitus, streptozotocin

3.6

PREVENTIVE EFFECTS OF CHAMOMILE AND SAFFRON ON DIABETES ASSOCIATED ADHD LIKE SYMPTOMS

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Background: Attention deficit attention disorder (ADHD) is a neurological condition associated with hyperactivity, impulsivity and inattention that mostly occur in childhood that often persist in adulthood. The children with diabetes are more prone to ADHD with the functional and structural abnormalities of PFC and dysregulation of dopaminergic and noradrenergic receptors. Traditionally many herbs were used in the treatment of ADHD like symptoms. In modern sciences the herbs can be used in different forms like decoction or extractions. The current study was conducted to investigate the preventative effects of water decoction extract of saffron, chamomile and their combination against diabetic associated ADHD like symptoms.

Methodology: Thirty male rats were divided in to 5 groups including health control (HC), diabetic control (DC) and water decoction test groups of Saffron (5mg/kg), Chamomile(15mg/kg) and Saffron + chamomile (5+15 mg/kg) in this study. The rats were treated for 21 days. Then behavior analysis was done and animals were sacrificed for the biochemical parameters. Novel object recognition test and Open field test were used for the memory testing, locomotion and anxiety. Moreover, Dopamine and Norepinephrine were done on brain samples.

Results: Statistical analysis was done by using One-way ANOVA. Amongst all the groups combination of saffron and chamomile showed significantly increase dopamine and NE level ($p<0.05$) as compared to DC. Memory and

cognition level was also significantly increased ($p<0.05$) in treated groups as compared to DC.

Conclusion: The results revealed the increase regulation of dopamine and NE in prefrontal cortex in combo treated rats which manifests the lower ADHD symptoms in rats. The combination of saffron and chamomile also play the important role in the treatment of psychological deficits. Hence these herbs have potential positive role in the treatment of diabetic associated ADHD symptoms.

Keywords: ADHD, , Diabetes, Saffron and Chamomile

3.7

INTRODUCING DEVELOPMENTAL MILESTONES AND SOCIO-EMOTIONAL BEHAVIOR IN HOSPITALIZED CHILDREN

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Background: Early childhood development like emotional, physical and social behavior is strongly associated with the parental knowledge and attitude about child's developmental and social emotional problems. It is the most important knowledge parents can have for the young children towards their emotional and social behavior and well-being.

Objective: To assess the parental knowledge and attitude regarding their child development and socio-emotional issues.

Methods: Patients of age 1 to 60 months from Paediatric Department of Aga Khan University were selected. The survey of well-being of young children (SWYC) tool was used to screen developmental, socio-emotional behavior and family risks in children. Parents were assessed on their knowledge and attitude and child development and social emotional behavior using KAP questionnaire. Results: Total 190 children and their parents were selected from general paed ward at Aga Khan University

during October to December 2019. Out of total, 107 (56.3%) children were at risk regarding development and behavior. According to the parents, overall children with knowledge regarding physical, mental and development was 19%. The sub domains of SWYC like DM was 31%, PSC was 28%, POSI was 3%, PC was 18% PD was 13% and EC was 21% that shows parent perception about child development. Overall parental knowledge regarding development growth was 89% and maternal appropriate practice was done by 87%.

Conclusion: Parents need counseling regarding the developmental growth and social behavioral attitude for their children. We suggest appropriate knowledge and sessions for parents in neonate's nursery that would be beneficial for both parents and children. We also suggest some clinical session where parents can come for regular follow-ups to check their child's development and behavior.

Keywords: Developmental Milestones, Socio-emotional behavior, Family risk

3.8

DIAGNOSTIC AND MANAGEMENT CHALLENGES IN HUNTINGTON'S DISEASE IN A RESOURCE-LIMITED SETTING.

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Introduction: Huntington's disease (HD) is a rare, autosomal dominant, progressive neurodegenerative disorder with no cure. The worldwide prevalence of HD is 2.71 per 100,000. HD manifests with a triad of progressive motor, cognitive, and psychiatric symptoms. Psychiatric symptoms can be seen in 33-76% of patients including irritability, aggression, apathy, depression, anxiety, and psychosis. Psychotic symptoms mimicking schizophrenia are rare in HD and lead to diagnostic delays. There is no cure for HD and management is symptomatic, with extensive nursing support.

Method: A case report Case presentation: A thirty-nine-year-old female presented to the psychiatry clinic with a nine-year history of psychotic symptoms. For 2 years, the patient had progressive Activities of daily living (ADLs) decline. She developed slurred speech, broad-based gait, rhythmic involuntary movements of extremities with severe weight loss. The patient had a family history of death in the forties due to unknown reasons. The patient was vitally stable, emaciated, unkempt, and restless, not verbally responsive or following commands. Neurological examination showed muscle wasting, broad-based gait, and choreiform movements of the trunk and distal extremities. The patient was admitted to the psychiatry ward. A neurology consult was called. The clinical picture, family history, and MRI findings were highly consistent with HD (diffuse cerebral atrophy with bilateral caudate atrophy and bilateral ventricular dilation). Genetic testing and family counseling were done. The patient was managed on Olanzapine, fluoxetine, and clonazepam and discharged with informal home care due to financial constraints. On follow-up, the patient showed improvement in irritability, restlessness, psychosis, and showed a partial response to commands.

Conclusion: HD is a rare disease with diverse clinical manifestations. Unusual clinical presentations can lead to diagnostic delays. Patients with HD need regular nursing support, medical attention, and end of life care which becomes very challenging in resource-limited settings and leads to caregiver burden.

Keywords: Huntington's disease, Psychosis, Diagnostic challenges

3.9

INTEGRATING MENTAL HEALTH IN COVID-19 CRISIS; STAFF MENTAL HEALTH REFERRAL PATHWAY.

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Introduction: In 2020, WHO declared COVID-19 a pandemic. In Pakistan, the first case of COVID-19 was detected in February 2020 and the cases increased with time. There was an increased COVID-related influx in hospitals including Aga Khan hospital (AKUH). This increased staff COVID exposure, workload, and fear of contracting COVID-19. As seen worldwide, we anticipated a mental-health fallout in the Health care workers (HCWs). Therefore, the Department of Psychiatry (DOP) initiated a mental-health pathway for HCWs for COVID-related issues. The pathway was confidential and accessible to all HCWs

Method: Organization of delivery of Staff mental health services in COVID-19: The HCWs were provided with a helpline number, operational during working hours for COVID-related anxiety. The initial screening was done using a brief questionnaire on symptom severity, by a trained psychiatry nurse. For mild issues: We encouraged HCW to use self-help techniques (routine, exercise, self-help material, etc.). On follow-up; HCWs showing improvement were encouraged to continue the above advice. In the case of no improvement, faculty appointments were scheduled. For severe problems: HCWs were given urgent specialist, telepsychiatry appointments on the next working day. The faculty decided aftercare as per their clinical evaluation. All documentation was kept in separate folders to ensure staff confidentiality. The service was free of cost. Challenges: • Resistance to seek help and fear of stigma and confidentiality of HCWs. Some HCWs are utilizing the pathway for pre-existing mental health needs which is not our primary objective. Such HCWs are redirected to clinics as usual. • A limited number of trained mental health service providers.

Conclusion: Our staff mental health pathway was initiated in a crisis, with the expectation of optimistic staff outcome. We aspire to minimize the invisible burden of mental health illnesses on

our HCWs, support and build on their capabilities.

Keywords: staff mental health, Psychiatry, COVID-19

3.10

PSYCHOLOGICAL SEQUALAE OF COVID-19 ON HEALTH CARE WORKERS

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Background: In early 2020, WHO declared COVID-19 a pandemic which increased health-care demands worldwide. Health care workers (HCWs) are vulnerable to contracting COVID as they are essentially at the treatment frontline. In past pandemics, HCWs have reported stigma, fear and frustration following quarantine. Worldwide, HCWs have shown high rates of anxiety and depressive symptoms during the COVID-19 outbreak which can be alleviated by timely psychological interventions. Our study was aimed to assess the psychological impact of COVID-19 in HCWs.

Method: Cross-sectional survey. An online consent form and questionnaire were sent to: • All HCWs with an organizational e-mail address, working at AKUH, Stadium Road Campus since January 2020. • Data was analyzed on SPSS 19.0. **Performs and Tools:** • Demographic questionnaire • Perception of COVID-19 (self improvised) • GAD-7 scale • Impact of event scale (revised)

Results: A total of 560 responses were received. 71% of respondents were from clinical areas. Nearly 40% had been exposed to COVID & 6.8% had tested positive. 40% of respondents were 'strongly concerned' about contracting COVID. On GAD 7 scale 11% scored severe on anxiety scale. On IES-R, 20% scored high likelihood when screened for PTSD.

Conclusion: This cross sectional survey was carried out during the 1st peak of the pandemic during lock down & presents unique insights

into the psychological effects at that time. The authors acknowledge the limitation that only HCWs accessing AKU institutional email were sampled for the study, to allow for social distancing. Further research can address this limitation & look at the long term impact of the pandemic on all HCWs. The psychological effects are only beginning to emerge & studying the overarching effect of various factors such as resilience on the projected outcomes in context of the Pakistani society will provide useful insights on Pakistani HCWs collective psychological response to stressful situations.

Keywords: Psychological impact, COVID-19, Healthcare workers

3.11

ETIOLOGY OF NEW ONSET SEIZURE IN ADULT PATIENTS: AN EXPERIENCE FROM EMERGENCY DEPARTMENT OF A TERTIARY CARE CENTER

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Background: Seizures are a common presentation in the emergency department (ED) and account for 1%-2% of all ED visits, with 24% representing new onset seizures. This study aims to identify the etiology of new onset seizure in our ED as to improve knowledge among healthcare providers regarding diagnosis and management and hence improve the outcomes.

Methods: This is a retrospective study conducted at the Emergency Department of Aga Khan University hospital. All adult patients (>18yrs), presented to the ED from January 01, 2019 to June 30, 2020, with new onset seizure were included. Etiologies of seizure were classified as structural, neurological, infectious, systemic, metabolic and toxicological cause. The immediate outcomes were reported as hospitalization or discharge from the ED.

Results: Out of 198 patients most of them (44.4%) belong to middle age group (35 to 64 years). The most common type of seizure was generalized tonic clonic seizure (74.2%), followed by generalized tonic (12.1%) and simple partial seizure (7.5%). Out of total patients no cause was identified in eight patients (4%). Of the total confirmed causes of new onset seizures, structural lesions of brain were found to be the most common cause (37.8%), followed by neurologic (23.6%), infectious (4.2%), systemic (13%), metabolic (7%) and toxicologic (4%) cause.

Conclusion: The findings of this study emphasize the need for a local guideline regarding the investigation of new onset seizures in adults that would direct emergency physicians in respect of appropriate investigations, thus ensuring better quality patient care and, potentially, saving costs.

Keywords: Etiology, Newonset seizures, adult patients

3.12

BURDEN OF CARE IN AUTISM - A CROSS-SECTIONAL STUDY

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Objectives: Caregiving strain impoverishes the physical, psychological, emotional, and functional health of caregivers. It reflects their perceived level of distress associated with responsibilities and tasks. We wanted to study the frequency of caregiver strain in caregivers (guardian) of patients with Autism Spectrum Disorder (ASD) at tertiary care teaching hospital in Karachi, Pakistan. *Methods:* In this cross-sectional study, we recruited caregivers of 76 children already diagnosed with ASD. Using purposive sampling, a senior psychiatry resident interviewed the consenting participants and administered Caregiver Strain Questionnaire (CGSQ). The outcome was defined by overall, subjective, and objective strain and reported as a mean percentage in the low, moderate, and

severe categories. We looked at the differences between gender, education, occupation, living setup, income, medical expenditure, etc. The data was anonymously encoded to ensure confidentiality.

Results: In our study, 11.8% (n=9) participants reported severe overall caregiver strain while 47.4% (n=36) and 40.8% (n=31) reported moderate and low strain respectively. 59.2% (n=45) of the participants subjectively felt the strain to be of a moderate level. There was a statistically significant association (p-value 0.016) between female gender and subjective strain. Most of the female caregivers were mothers.

Conclusion: Taking care of a child with ASD involves unique challenges and requires support. Our study reinstates the presence of overwhelming strain particularly in the female caregivers. It further draws attention to the need for identification of factors playing behind the reported strain in a more diversified cohort. Based on this study we recommend that caregivers, particularly mothers, should be provided with a proper medium to channel their frustration when they feel overburdened, eventually leading to better patient outcomes.

*Keywords:*Caregiver, burden, autism

3.13

SAMIDORPHAN IN THE PREVENTION OF OLANZAPINE INDUCED WEIGHT GAIN: A NEW HOPE

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Schizophrenia is a disorder that involves chronic or recurrent psychosis and long-term decline in functionality. It affects nearly 21 million people worldwide, according to WHO and its prevalence in Pakistan is 1-2%. Olanzapine is an atypical antipsychotic with relative efficacy compared to first generation or other second

generation antipsychotics, leading to higher improvement in clinical outcomes of schizophrenia and diminished rates of treatment discontinuation. However its association with weight gain and adverse metabolic effects has affected physician prescription and patient adherence to OLZ treatment. Samidorphan is an opioid antagonist that acts as antagonist/weak partial agonist at μ receptors. Although unclear, studies have shown that endogenous opioids and μ receptors are involved in appetite control, carbohydrate and lipid metabolism. By antagonizing these receptors, Samidorphan can reduce Olanzapine-induced weight gain and food consumption. It would also cause less glucose uptake and lipid accumulation. A study was conducted in 2018 demonstrated that healthy males taking Olanzapine and gained strikingly less weight over the 21 day treatment period as compared to the healthy males taking Olanzapine alone. Therefore, the purpose of our study is to explore the role of Samidorphan in preventing Olanzapine induced weight gain, which would lead to more patient compliance, better clinical outcomes of schizophrenia and improved quality of life.

*Keywords:*samidorphan, olanzapine, weightgain

3.14

AUTISM: A MISSING PROTEIN IN BRAIN?

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Autism Spectrum Disorder is a complex, multifactorial, neurodevelopmental disorder, defined by the coalescence of impairments in social communication and interactions, along with restricted and repetitive behavioral patterns and interests. The p75 neurotrophin-receptor, or p75NTR, belongs to a family of tumor necrosis factor receptors that are vital for neuronal cell apoptosis and regulation in cell development. A mutation of this protein inevitably results in disrupted function of neurons. This has been

proven by scientists in Rutgers University-Newark, when they used genetically engineered mice without the p76NTR protein to show that these mice had a significantly larger number of neuronal cells than those with the protein. This in turn had an unfavourable impact on cerebellar function (balance, cognition and coordination, demonstrated by a deficit in delay eyeblink conditioning). According to the WHO, Autism affects one in 60 children worldwide. In Pakistan, statistics show that Autism affects 350,000 children, however, reliable population-based data is not available. Over the past two decades the prevalence of autism has increased significantly. Studies show that Autism has been refractory to many pharmacological treatments; a study done in 2015 on 135 people with ASD showed that over half of them became refractory to first line drug treatment.⁸ Since the exact etiology of Autism remains undetermined, studying the precise role of proteins like p75NTR could prove to be of the utmost benefit in the treatment of this complex disorder, and could potentially induce a paradigm shift in the approach and management of ASD.

Keywords: autism, missing protein, p75

3.15

QUETIAPINE INDUCED ATRIAL FIBRILLATION: A CASE REPORT

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Background: Quetiapine is a second-generation atypical antipsychotic drug commonly indicated for symptomatic treatment of schizophrenia, acute mania in patients with bipolar I disorder as well as treatment of major depression with other drugs. Quetiapine, like other atypical antipsychotics like clozapine, may have cardiac adverse effects. Quetiapine specifically is known to cause QT prolongation and ventricular arrhythmias. However, quetiapine resulting in

atrial fibrillation after rapidly increasing the dose has not been seen before.

Case: A 77-year-old lady known case of diabetes and hypertension presented to the emergency department with irrelevant talking, fear of death and visual hallucinations. With further detailed history, she was diagnosed as depression with psychosis. She was then admitted to the psychiatry ward and started on quetiapine 6.5mg and 25mg on her 1st day of admission. Day 2 of admission, she was very anxious, had crying spells and was not able to sleep, hence her dose of quetiapine was raised to 12.5mg and 75mg. Day 3, she developed signs of atrial fibrillation and cardiology was taken on board. Quetiapine was discontinued and she was shifted to the special care unit. Normal sinus rhythm was then achieved with amiodarone. Last follow up, she was doing well and vitally stable.

Conclusion: This is an unusual case showing the relationship between quetiapine and atrial fibrillation. Normally the risk of atrial fibrillation while using atypical antipsychotics increases if there is a previous history of cardiac disease. However, further studies regarding the onset of atrial fibrillation following rapid dosage change of quetiapine should be looked into to reduce further complications.

Keywords: Quetiapine, Atrial Fibrillation, psychiatry

3.16

HEMORRHAGE, CEREBELLAR HERNIATION AND CEREBRAL VENOUS THROMBOSIS IN A PATIENT WITH NAEGLERIA FOWLERI: A RARE PRESENTATION

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Background: Naegleria fowleri is known to cause Primary Amebic Meningoencephalitis (PAM) which is a highly fatal disease with only 7 survivors to date. Activities such as

swimming, diving, exposure to hot springs and facial contact with mud have been reported to cause PAM. Headache and hydrocephalus resulting in cerebellar herniation due to Naegleria has been reported in the past. However, a patient presenting with seizures, cerebral hemorrhage and cerebral venous thrombosis with cerebellar herniation have not been seen before. Case: A 26-year-old man presented with a 4-day history of high-grade fever, vomiting and altered level of consciousness and 2 episodes of generalized tonic-clonic seizures. A CSF detailed report showed reduced glucose and leukocytosis and CSF wet mount showed active amoebic movements suggestive of Naegleria fowleri. Real-time PCR for Naegleria fowleri was done in which DNA for Naegleria fowleri was detected. Treatment for primary amoebic meningoencephalitis (PAM) was started. However, GCS reduced, and he was transferred to ICU. Urgent MRI showed flow in bilateral anterior cerebral artery, middle cerebral artery and the internal carotid artery. Appearances were likely secondary to extremely sluggish flow/vasculitis phenomenon likely cerebral venous thrombosis (CVT) along with marked cerebellar tonsillar herniation. Patient expired the next day. Conclusion: This is an extremely unusual case of Naegleria fowleri presenting with hemorrhage, cerebellar herniation and cerebral venous thrombosis in a patient. The infection may trigger thrombosis directly by causing septic thrombosis or indirectly by precipitating thrombosis in patients already at risk of thrombosis due to predisposing thrombophilia. However, further studies regarding how this amoeba causes CVT must be looked into to reduce mortalities due to such infection.

Keywords: cerebral venous thrombosis (CVT), Naegleria fowleri, Primary Amebic Meningoencephalitis (PAM)

3.17

STRESS LEVELS AND BENEFIT OF COGNITIVE RESTRUCTURING IN POST-GRADUATE TRAINEES DURING COVID

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Background Mental health problems and distress have been reported during the COVID-19 pandemic especially in frontline healthcare personnel(1,2). Cognitive behavior therapy (CBT) has been cited to be an effective intervention for various sorts of trauma and distress(3). We planned to conduct group CBT sessions for our postgraduate trainees who reported stress in their personal and professional lives due to the pandemic. This study proposes to assess the level of stress and impact of brief CBT using the ABC model(4) in post graduate trainees at the Aga Khan University.

Methods A mixed method study design was used with convenience sampling of consenting participants from six post-graduate programs. Participants completed a stress scale, attended a CBT workshop and completed a reflective framework. A focus group discussion (FGD) was held one month after the workshop to see the delayed impact of the workshop. Results Scores from the stress scale were calculated and assigned categories of mild, moderate and severe. A documentary analyses of participant responses and the focus group discussion was done. A total of 27 postgraduate trainees from the six departments participated of which 19 were females. Twenty-four participants completed the stress scale having scores from 4 to 24, with 54% in the moderate stress range. The adversity brought on by the pandemic was divided in areas of social, professional and emotional. More than one-third (37%) reported difficulty at a social/relationship level family and friends. Almost 75% (74.1%) reported hardship at a professional level. Most reported the workshop to be a positive experience but

highlighted the need for further sessions for reinforcement.

Conclusion Group CBT is an important tool to process stress and can build resilience in professionals if practiced regularly. References
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Keywords: Stress, COVID-19, CBT

3.18

REPETITION OF SELF-HARM AND SUICIDE AFTER INDEX ATTEMPT: A PROSPECTIVE FOLLOW-UP STUDY IN KARACHI, PAKISTAN

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Introduction: Suicide is a global public health problem, with estimated 800,000 global deaths annually. Low and middle-income countries contribute 79% of all suicidal deaths. It is estimated that for every suicide there are at least 10-20 acts of self-harm (SH). Repetition rates are significantly lower in Asian countries than in Western high-income countries. To the best of our knowledge, there has been no study exploring repetition of self-harm or suicide

following an index attempt from Pakistan. The objective was to study incidences of reattempts of self-harm or completed suicide prospectively in patients who presented to Aga Khan University Hospital (AKUH), Karachi after an index episode of SH. Methods: All patients who presented to AKUH with an act of self-harm between January 2012 and December 2014 were included in the study. Follow up information was collected through face-to-face and telephone interviews, using a semi-structured questionnaire during April to September 2019. The primary outcome was self-harm reattempt. Data was analyzed using descriptive statistics.

Results: During the study period 274 patients presented to AKUH with a self-harm act. Follow up interviews could be completed with 210 (77%) patients. Among them, 28% (n= 59) were males and 72% (n=151) were females. Around half of the study participants (49%) were in the age group of <25 years. In the follow-up period, only two female patients reported self-harm reattempts. Of these, one reattempted thrice, by overdose of benzodiazepine and strangulating herself with ceiling (roof) fan. While other patient, reattempted once by strangulating herself with ceiling (roof) fan. There was no case of completed suicide. During the follow up period 18% (n=38) participants had some type of psychiatric illness.

Conclusion: The rate of repetition of self-harm or completed suicide appears to be much lower in Pakistan than in high-income Western countries. The reasons for this are not entirely clear. It is possible that culture-specific and religious protective factors may be playing a part. These need to be explored further. Secondary prevention including measures directed for prevention of repetition alone may not produce considerable impact in preventing suicidal behaviour, in the presence of lower repetition rates. There is need for more investment in primary prevention for suicidal behavior in Pakistan

Keywords: Self-harm, suicide, follow-up

3.19

ASSESSING THE EFFECTIVENESS OF AN ONLINE TRAUMA CURRICULUM: LESSONS FROM TEACHING PSYCHIATRY TRAINEES AT A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN.

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Objectives: Early childhood trauma can have adverse effects on brain development. This results in higher rates of mental health and medical problems in adults. Unfortunately, psychiatry trainees are not adequately trained in dealing with trauma survivors. Hence, we will describe an online trauma curriculum for psychiatry trainees and assess its efficacy.

Methods: This curriculum was taught to 08 psychiatry trainees. Socratic methods of teaching, which included critical thinking and questioning were implemented, and flipped classroom pedagogical approach was used. Brainstorming, role play, and case-based discussions were utilized to make online sessions more interactive. Assessment of knowledge and clinical skills were done through summative assessment consisting of multiple-choice questions. Qualitative feedback was also taken. Results: Most of the participants were able to exhibit good knowledge and skill set during their MCQs and communication skills assessment, after the module. However, discomfort was observed during role-play, where they seemed hesitant in inquiring about sexual abuse. In the feedback, the participants unanimously found the module to be helpful. They also liked the interactive nature of the sessions especially case-based discussions and role-play. They were able to learn new concepts and reflect on their communication skills needs.

Conclusions: Psychiatry training programs need to do more to enable trainees to assess trauma history in patients. Supervised interviewing and role-play are important tools to improve trauma

relevant communication skills. This curriculum shows that online training can help with clinical skill development along with improving knowledge when dealing with trauma survivors.

Keywords: trauma, curriculum, Psychiatry

3.20

TRAUMA AND POST TRAUMATIC GROWTH IN YOUNG SURVIVORS OF A TERRORIST ATTACK: AN EXPERIENTIAL ACCOUNT OF SUPPORTIVE INTERVENTIONS IN A TERTIARY CARE HOSPITAL IN PAKISTAN

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Introduction In the winter of 2014, four terrorists attacked a school in Khyber Pakhtunkhwa (KPK), resulting in more than a hundred students' death. Twenty-two survivors (aged 10–18 years) with physical injuries were admitted to a private hospital in Karachi for further surgical and psychological interventions. The aim of this paper is to share a retrospective experiential account of a trauma management plan, based on the bio-psycho-socio-spiritual model for young survivors of terrorism.

Method/Intervention In biological management, children with hyper-arousal symptoms and sleep disturbances were started on Prazosin and those meeting criteria for Post Traumatic Stress Disorders were started on Selective serotonin reuptake inhibitors. The Psychosocial interventions included individual therapy, physical therapy, family education, and music groups. Children and their families were also encouraged to draw on their religious support.

Results At the time of discharge, these children were evaluated through clinical interview to assess for improvement. A massive decrease in their hyper-arousal symptoms was seen as evidenced by improvements in their sleeping patterns, mood and behavior. Moreover, signs of psychosocial development based on the

principles of Post Traumatic Growth were visible. Our main limitations were the short period of time and a lack of follow up opportunity.

Conclusion This framework provides a basis to establish trauma services at tertiary care hospitals in developing countries like Pakistan where access to overall health care is limited and specifically psychiatric care is lacking in health care institutes.

Keywords: PTSD, young survivors, trauma

3.21

MULTIPLE SCLEROSIS: A REVIEW OF THE CLINICAL PRACTICE GUIDELINES

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Background: Neurological disorders are considered as one of the serious issues worldwide. While, many of the disorders have cures, there are still neurological diseases that lack of curative treatment. Multiple sclerosis is one of them. It doesn't have any cure, and therefore the prognosis of the disease is not so good. For this reason, the attention of the healthcare providers is mostly on the clinical management of the patients suffering from multiple sclerosis. The available literature for the clinical guidelines is into various dimensions, with a central focus to care the patients according to the evidence-based recommendations and rationales.

Methods: A narrative review methodology is used to identify, evaluate, and analyze the available clinical guidelines worldwide.

Results: In total, ten clinical guidelines were found out of which only two fulfilled the quality guideline criteria. A quality guideline is the one in which four components are present: systematic review, meta-analysis, expert feedback and levels of recommendations. Two out of ten clinical guidelines fulfilled the criteria of good quality assessment.

Conclusion: 2/10 clinical guidelines is a very low number which clearly indicates that there are many

gaps that need to be fixed in order to have a good pool of clinically evident recommendations.

Keywords: Multiple Sclerosis, clinical guidelines, GRADE

3.22

WELLNESS SERVICES: A NEED ASSESSMENT SURVEY FOR POST GRADUATE MEDICAL EDUCATION TRAINEES AT AGA KHAN UNIVERSITY HOSPITAL, PAKISTAN

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Introduction Postgraduate medical training is the time of formal medical education which facilitates the growth from graduating medical student to a practicing physician. Training is a stressful experience with significant amount of pressure as individuals have to balance their family and social responsibilities and at the same time acquire knowledge and skills to become a certified and competent specialist. The study aimed to assess the need of mental wellbeing services for post graduate medical (PGME) trainees working at the Aga Khan University Hospital in Karachi, Pakistan.

Methods A cross-sectional study was conducted among all PGME trainees working at Aga Khan University Hospital in Karachi, Pakistan. The study questionnaire was developed by the team of investigators. The data collection was done through online survey from April 2019 to May 2019 and it was analyzed using descriptive and inferential analysis.

Results Out of total 623 PGME trainees, 334 trainees completed the online survey (response rate of 53.61%). A total of 292 participants (87.4%) perceived a need for mental health services. The major stressors identified were increase work hours (77.8%), excessive workload (75.1%) and difficulty balancing

between work and personal life (72.8%). The Perceived obstacles of utilizing mental services included lack of protected time (69.8%), fear of consequences (36.8%), lack of confidentiality (36.5%) and stigma (32.9%). The study participants indicated various suggestions to reduce their stressors such as separate relaxation space in hospital (91.3%), appreciation gestures like encouraging emails (65%), mentoring programs (43.4%) and regular surveys about resident needs (39.8%).

Conclusion It is evident that innovative strategies to address trainees' mental health needs, looking at limitations of developing countries like Pakistan with large population and limited resources, need to be explored.

Keywords: PGME, Wellness, Pakistan

3.23

KNOWLEDGE AND ATTITUDE OF MENTAL HEALTH PROFESSIONALS ON TELEPSYCHIATRY/TELE THERAPY DURING CORONAVIRUS PANDEMIC IN PAKISTAN

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Introduction The concept of telepsychiatry is of great interest today due of COVID; however, it remains obscure in the developing countries like Pakistan. The use of technology in the health sector of Pakistan, like other developing countries, is in early phase. Healthcare professionals' awareness and perceptions of telehealth are important factors that can influence its future success. The objective of the study is to assess knowledge and attitude of telepsychiatry/teletherapy among mental health professionals during coronavirus pandemic in Karachi, Pakistan.

Methods A quantitative cross-sectional study was conducted among mental health professionals (Psychologists, Psychiatrists, Counselors, and mental health Nurses) working

at Psychiatry, AKU-Karachi; Institute of Clinical Psychology, University of Karachi; Institute of Professional Psychology, Bahria University Karachi; and Jinnah Postgraduate Medical Centre, Karachi. The data collection was done through online survey using structured questionnaire, from July 2020 to September 2020. The data was analyzed using descriptive statistics.

Results A total of 94 participants completed the survey. Among them, 28% (n= 26) were males and 72% (n=68) were females. Around half of the study participants (n= 49, 52%) were in the age group of 21-30 years. Around 61% participants had experience of telepsychiatry/therapy while 59% participants are currently involved in telepsychiatry/therapy during COVID pandemic. Out of total 94 respondents, 79% had good knowledge, 20% had average and 1% had low level of knowledge on telepsychiatry/therapy. With regard to attitude of mental health professionals on telepsychiatry/therapy, 47% participants had moderately favorable attitude, 39% had favorable while 14% had unfavorable attitude.

Conclusion The knowledge regarding telepsychiatry/therapy among mental health professionals in Karachi was found to be good. However, the attitude towards telepsychiatry/therapy was less favorable due to technical issues, ethical principles, and high rates of loss to follow-up.

Keywords: telepsychiatry, mental health professionals, knowledge and attitude

3.24

RISK FACTORS FOR ICU ADMISSION AND MORTALITY AMONG MENINGITIS PATIENTS: 10-YEAR EXPERIENCE FROM A QUATERNARY CARE HOSPITAL IN PAKISTAN

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Background: Meningitis is associated with significant mortality and high intensive care unit (ICU) admission rates. With limited resources, lower-middle-income countries require evidence-based utilization of hospital resources. For this purpose, we studied demographic and clinical characteristics of patients diagnosed with meningitis to identify predictors of inpatient mortality and ICU admission.

Methods: In this retrospective cohort study, we assessed adults (age ≥ 18 years) diagnosed with meningitis between July 2010 and June 2019 at Aga Khan University Hospital, Pakistan. Patients were identified using the institutional database of patient records. We assessed independent predictors of inpatient mortality and ICU admission using multivariable logistic regression analyses.

Results: A total of 929 patients (56.0% males) with median age 51 years were included. The most common etiology was bacterial meningitis (34.9%), followed by viral meningitis (15.2%). Majority infections were community-acquired (94.2%) while 5.8% were nosocomial cases. 139 patients had inpatient mortality and 161 patients required ICU admission. On multivariable regression analysis, ischemic heart disease, chronic kidney injury, encephalopathy, ICU admission, hydrocephalus, and longer length of stay were predictors of inpatient mortality while presentation with headache and altered sensorium and longer duration of antibiotic treatment were associated with reduced risk of inpatient mortality. Diabetes mellitus, presentation with seizure(s), imaging suggestive of meningitis, and longer length of hospital stay were predictive of ICU admission, while old age and presentation with headache were found to reduce the risk of ICU admission.

Conclusion: Meningitis is still linked to significant mortality and morbidity. Health care professionals should expect poorer outcome with diabetes mellitus, ischemic heart disease,

chronic kidney injury, concurrent diagnosis of encephalitis, ICU admission, hydrocephalus, longer length of hospital stay, presentation with seizure(s), and imaging suggestive of meningitis. This can improve management and resource utilization for meningitis, especially in a resource-limited setting.

Keywords: meningitis, encephalitis, sepsis

3.25

POTENTIAL ROLE OF DIETARY INTAKE IN MANAGEMENT OF AUTISM

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Introduction: Autism is lifelong neurobehavioral abnormalities that typically appear in early childhood manifesting as abnormalities in communicating and relationship formation due to deficient language and abstract concepts. Primarily it manifests the difficulties in speech, lack of participation in games and decreased social interaction.

Objective: An observational based study will be conducted on autistic children to compare their diet plan and their essentials including gluten-free, casein-free (GF/CF), carbohydrate low diet, xenobiotics, probiotics and multivitamin supplements.

Study Design: Autism children with age 1-2 will be recruited. In this study we will determine association of diet with their neurological symptoms. The child will monitor with their diets and will perform autism scale for behavioral analysis. **Expected Results:** Nowadays, dietary allergies are one of the leading cause of autism especially with protein rich diets like wheat that result in synthesis of antibodies that move across intestinal barrier and cause direct insult to brain wrecking neuronal activity that may lead to varying range of symptoms.

Conclusion: Therefore, gluten-free, casein-free (GF/CF), carbohydrate low diet, xenobiotics, probiotics and multivitamin supplements are recommended to boost immunity to bring betterment in the overall behaviour, language and activities of the autistic children.

Keywords: autism, dietary intake, Integration of therapies

3.26

PEDIATRIC POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME: IS THERE AN ASSOCIATION OF BLOOD PRESSURE WITH IMAGING SEVERITY & OTHER MR CHARACTERISTICS?

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Introduction/Objective: Posterior reversible encephalopathy syndrome (PRES) is relatively uncommon in pediatric patients; however its pathophysiology remains obscure. The aims of this study were to find an association or correlation between blood pressure (BP) and the imaging severity, presence of cytotoxic edema, hemorrhage and enhancement in pediatric PRES.

Methods: A retrospective cross-sectional evaluation of children diagnosed with PRES over a period of 10 years was performed. Radiological findings were reviewed along with the clinical profile and outcome. Imaging severity was categorized into mild, moderate and severe. Imaging pattern, enhancement, diffusion restriction and hemorrhage were assessed on MRI. Both association and correlation between variables were assessed using Chi-square test, and Cramer's V and Kendall's tau b respectively.

Results: 43 children were included, 20 were males and 23 were females with a mean age of 10.7 years. 23 (53.5%) children had Stage 2 hypertension (>95th percentiles according to

age, sex and height). Imaging showed parieto-occipital lobe involvement pattern in 42% cases, holo-hemispheric pattern in 30.2%, cerebellar involvement in 23.3% and superior frontal sulcus pattern in 2.3% of cases. 4.7% had hemorrhage, 25.6% had contrast enhancement and 27.9% cases had positive diffusion restriction (cytotoxic edema). No statistically significant association of imaging severity with BP ($P=0.33$), or association of BP with diffusion restriction ($P=0.48$), hemorrhage ($P=0.30$) and enhancement ($P=0.63$) was seen.

Conclusion: We did not find any statistically significant association or correlation of BP with imaging severity, hemorrhage, and diffusion restriction (cytotoxic edema) in pediatric patients with PRES. Further prospective studies are warranted.

Keywords: pediatric, PRES, hypertension

3.27

CLOZAPINE INDUCED OBSESSIVE COMPULSIVE SYMPTOMS; TREATED WITH AMISULPRIDE

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Introduction: Obsessive compulsive phenomena is poorly understood phenomenon, it gets even more challenging to determine the origin of obsessive compulsive symptoms. OCS might fall on the spectrum of positive symptoms of Schizophrenia or an adverse effect of antipsychotics medications, of which Second generation antipsychotics have been implicated. Clozapine, Risperidone and Olanzapine have been reported with most cases of Antipsychotics induced OCS. Treatment strategies have included targeting causal factors, which in case of Clozapine induced OSC, antiserotonergic effects might be potential cause, treatment with SSRI may be beneficial. SSRI resistant OCD, respond well with antipsychotic augmentation, pointing towards another mechanism involved in the pathophysiology. **Method:** A case report

Case Mr Z is 36 year old gentleman, south Asian, married, non-smoker. He has been diagnosed with Schizophrenia at the age of 30 years. His symptoms included Delusion of Paranoia, Delusion of Control and auditory hallucination. These symptoms have not improved on Antipsychotics, both monotherapy and combination therapy despite compliance. Patient was given trials of Haloperidol, Risperidone and, Olanzapine. He has been admitted thrice in acute psychiatric facility due to acute psychosis and suicidal behavior. He was diagnosed with treatment resistant Schizophrenia and was started on Clozapine. During his admission in which his Clozapine was titrated up to 500 mg per day. Psychotic symptoms improved gradually, however patient developed obsessive compulsive phenomenon, in which he felt compelled to pray after getting disrobed. Initially, he would perform these rituals around 1-2 per day, these would later occur multiple times through- out the day. Patient was started on Amsulpride, a second generation antipsychotic, on dose of 100 mg per day increased upto 200 mg per day. OCS improved gradually on Amisulpride

Conclusion: OCS is potentially challenging to treat, it becomes difficult to manage both psychotic symptoms. Data has been emerging, this needs more research and proper guidelines. Our case has reported effectiveness in treatment with Amisulpride.

Keywords: Obsessive compulsive symptoms, clozapine, schizophrenia

3.28

THE PATTERN OF IN-PATIENT PSYCHIATRY ADMISSION TO A GENERAL HOSPITAL IN KARACHI, PAKISTAN

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Background: Pakistan is a lower-middle-income country (LMIC) with limited resources. . Despite recent advances psychiatric services are still in-

adequate Majority of patients present to GPs, emergency, and alternate providers due to stigma, low awareness, and cost. Only 5-10% reach psychiatrists. This highlights the need for training of the medical practitioners for identification and timely referral to psychiatry. A review of referral patterns can identify and improve current deficits. Objectives: To describe the patterns of admissions in an inpatient psychiatric unit at AKUH and to use the data for training and education of medical and nursing staff.

Method: Data on all patients who were admitted or left against medical advice (LAMA) between January 2017 till December 2019 were analyzed. We reviewed records for demographic variables, admission, and referral details. Data were analyzed on SPSS 19.0

Results: Results of total 539 record shows, 58.4% were male with age from 11-80 years. The most common mode of referrals was ED (56.6%), followed by clinics (28.8%), and direct admissions (11.9%). Most referrals were between 1200-1600 hours (30.2%). The main reason for referrals and subsequent admissions were behavioral issues (44.2%), substance use (13.7%), and suicide attempts (6.1%). The most common psychiatric diagnosis was psychotic disorders (32.9%). The discharge was planned for 70.9% and 13.7% went LAMA, with 3.2% with no specific reason.

Conclusion: Mental health issues pose diagnostic and management challenges. Our study identified EDs and psychiatry clinics as the main source of admissions. It also highlights the scarcity of referrals from other inpatient units and probably missed referrals. Further research is required to look into the reasons. Hence, we recommend training of medical professionals to enable timely, appropriate referrals. There is also a need for screening pathways that can facilitate appropriate psychiatric referrals and good patient outcomes.

Keywords: Liaison psychiatry, inpatient referrals, Psychiatry

3.29

MPARESHAN APP: AN MHEALTH INTERVENTION TO IMPROVE PSYCHIATRIC COUNSELING SKILLS OF LADY HEALTH WORKERS IN A RURAL PAKISTANI DISTRICT

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Introduction: While most LMICs including Pakistan have underdeveloped specialist facilities for mental health, a number of trials from LMICs show that non-specialist Community Health Workers can manage patients effectively as front line providers. Project mPareshan aims to develop an mHealth strategy to allow Lady Health Workers (LHWs) and their Supervisors (LHSs) to assess, diagnose, and provide management services for mental health within the community.

Methods: This study employs mixed methods (surveys, FGDs, KIs) to assess the point prevalence of anxiety and depression among a sample of rural households and then determine feasibility of an mHealth strategy executed through LHWs and their LHSs to improve mental health service at community doorstep. Intervention arm LHWs will receive a cellular device, with the mPareshan application installed. This application will allow LHSs and LHWs to identify cases of anxiety and depression in their catchment households using PHQ-9 and GAD-7 scales. The app will permit taking psychiatric history, identifying danger signs, managing patients appropriately including provision of counseling skills by LHWs. Following the intervention, changes in participants' depression and anxiety scores will be measured. Control arm LHWs will receive the routine care and will be provided referral as appropriate. *Results:* It is expected that mPareshan app would significantly contribute to lay management of mental health issues in a rural setting. This would be reflected by increase in health worker knowledge and management skills for mental health disorders as

well as reduction in measures of anxiety and depression amongst identified cases.

Conclusion: While rural districts have a similar burden of mental health issues as urban centers, there are considerable barriers to access to mental healthcare. Novel implementation research strategies are required for building capacity within existing health infrastructure especially after COVID-19. Based on the findings a larger scale up will be proposed at the provincial level.

Keywords: mHealth, Mental Health, Community Health Workers

3.30

PREVALENCE OF IRRITABLE BOWEL SYNDROME IN PATIENTS WITH MAJOR DEPRESSIVE DISORDER IN QUETTA, PAKISTAN

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Introduction: Irritable bowel syndrome (IBS) is very common medical condition that results in long term disability. Around more than 70% of patients with IBS experience psychiatric comorbidities; however, little research has been conducted on prevalence of IBS in depressed patients in Pakistan. The objective of the study was to identify the prevalence of IBS among patients with Major depressive disorder (MDD) in Quetta, Pakistan.

Methods: A cross-sectional study was conducted among 161 major depressive disorder patients, who were recruited from the Balochistan Institute of Psychiatry and Behavioral Sciences (BIPBS) Pakistan, between August 2016 to February 2017. Those patients, who were clinically diagnosed as cases of major depressive disorder according to ICD-10 criteria, were included in the study. Data was collected through Hamilton Psychiatric Scale for Depression and IBS questionnaire for healthcare

professionals. The data was analyzed using descriptive and inferential statistics.

Results: Out of total 161 patients with major depressive disorder, 126 (78.3%) were female and 35 (21.7%) were male. The mean age of the participants was 35.24 years. Overall 30 (18.63%) patients were diagnosed with IBS. The frequency of IBS was increased with the severity of depression. Among 161 patients, 13 (8%) patients were having mild depression, of which none were diagnosed as having IBS; 59(36.64%) patients were having moderate depression, of which 10 (16.94%) were having IBS; 59(36.64%) patients were having severe depression, of which 20 (33.89%) were having IBS. Our study found significant association of severity of depression with the cases of IBS (P=0.048)

Conclusion IBS is common in major depressive disorder and its frequency increases with the severity of depression. Further studies needed to address the treatment of major depressive disorder with medication or psychotherapy that leads to an improvement of IBS symptomatology.

Keywords: Irritable bowel syndrome, major depressive disorder, Pakistan

3.31

RELATIONSHIP BETWEEN ARFID, ANOREXIA AND BULIMIA NERVOSA WITH STRESS IN MEDICAL AND NURSING STUDENTS AT A TEACHING HOSPITAL, KARACHI, PAKISTAN.

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Objectives: Eating Disorders including avoidant/restrictive food intake disorder (ARFID) are heterogeneous group of disorders defined by abnormal eating habits that significantly impairs physical health and psychosocial functioning. Medical and nursing school is a period of high levels of stress which

may provide ripe grounds for increased rates of eating disorders. *Methods:* This cross sectional study includes medical and nursing students of Aga Khan University. Study tools include Eating Attitude Test-26, Nine Item ARFID Screen and Depression Anxiety Stress Scale. Data is being analyzed in SPSS version 19.0. Mean and standard deviation will be computed for continuous while frequency and percentage for categorical variables. Post stratification Chi square test will be applied and p-value of <0.05 is taken as significant.

Results: According to so far received data, 83% female and 17% male students responded to the study with mean age and BMI of 23 years and 22 respectively. 10% of participants expressed high level of concern about dieting, body weight or problematic eating behaviors but there was no significant association of anxiety depression or stress reported.

Conclusion: This is an ongoing study and no definite conclusion can be drawn at this point, however students reported disturbances in their eating behaviors. Stress is known factor leading to higher risk of eating disorder. Since medical and nursing schools are stressful time so its important to raise awareness in undergraduates regarding eating disorders and its complications

Keywords: eating disorder, nursing and medical students, ARFID

3.32

PERCEIVED RISK AND DISTRESS RELATED TO COVID-19: COMPARING HEALTHCARE VERSUS NON-HEALTHCARE WORKERS OF PAKISTAN- THE GRAPPLE COVID-19 PROJECT

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Introduction: Healthcare workers (HCWs) find themselves susceptible to contracting COVID-19

or being the source of exposure for their family members. This puts them at a high risk of psychological distress which may compromise patient care. In this study we aim to explore the risk perceptions and psychological distress between HCWs and non-healthcare workers (NHCWs) in Pakistan.

Methods: A cross-sectional study was conducted in Pakistan using an online self-administered questionnaire. Respondents were categorized into HCWs (completed or aspiring to complete education in Medicine or allied fields) and NHCWs. HCWs were further categorized into front-line (direct patient care) and back-end HCWs.

Results: Data from 1406 respondents (507 HCWs and 899 NHCWs) was analyzed. No significant difference was observed between HCWs and NHCWs' perception of susceptibility and severity towards COVID-19. Healthcare graduates perceived themselves (66% students vs. 80% graduates, p-value 0.011) and their family (67% students vs. 82% graduates, p-value 0.008) to be more susceptible to COVID-19 than the healthcare students. Frontline HCWs perceived themselves (83% frontline vs. 70% back-end, p-value 0.003) and their family (84% frontline vs. 72% back-end, p-value 0.006) as being more susceptible to COVID-19 than back-end healthcare professionals. Over half of the respondents were anxious on HADS scale (54% HCWs and 55% NHCWs). Female gender, younger age and having COVID-19 related symptoms had a significant effect on the anxiety levels of both HCWs and NHCWs.

Conclusion: Frontline HCWs, healthcare students, young people, women and individuals with lower income were at a higher risk of psychological distress due to the pandemic. Government policies should thus be directed at ensuring the mental well-being of frontline HCWs, and improving their satisfaction in order to strengthen health care delivery system.

Keywords: COVID-19, Healthcare workers, Mental Health

3.33

PSYCHOLOGICAL AND SOCIAL IMPACT OF COVID-19 IN PAKISTAN: NEED FOR GENDER RESPONSIVE POLICIES-THE GRAPPLE COVID-19 PROJECT

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Introduction: COVID-19 has rapidly crossed borders, infecting people throughout the world. Women may be especially vulnerable to depression and anxiety due to the pandemic. This study attempted to assess how gender impacts risk perceptions, anxiety levels, behavioral responses to the COVID-19 pandemic in Pakistan in order to recommend gender responsive health policies

Methods: A cross-sectional online survey was conducted. Participants were asked to complete a sociodemographic data form, the Hospital Anxiety and Depression Scale (HADS), and questions on their risk perceptions, preventive behaviour and information exposure. Regression analysis was used to assess effects of factors such as age, gender and household income on anxiety levels.

Results: Of the 1390 respondents, 478 were women, and 913 were men. Women considered their chances of survival to be relatively lower than men (59 % women vs 73% men). They were also more anxious (62% women vs 50% men), and more likely to adopt precautionary behaviour, such as avoiding going to the hospital (78% women vs. 71% men), not going to work (72% women and 57% men), and using disinfectants (93% women and 86% men). Men were more likely to trust friends, family and social media as reliable sources of COVID-19 information, while women were more likely to trust doctors. *Conclusion:* Women experience a disproportion burden of the psychological and social impact of the pandemic compared to men.

Involving doctors in healthcare communication targeting women, might prove effective. Social media and radio programs may be effective in disseminating information related to COVID among men.

Keywords: risk perception, mental health, gender responsive policies

3.34

GRAPPLING COVID-19 ACROSS BORDERS: GENERAL RISK PERCEPTIONS & ANXIETY LEVELS IN PAKISTAN AND HONG KONG

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Introduction: Since emerging from China, COVID-19 has rapidly crossed borders, infecting people throughout the whole world. The resulting lockdown and constant media reporting have led to a significant public reaction which has heightened levels of risk perceptions. While this may result in the community engaging in protective behavior, it can also cause anxiety. This study attempted to assess the risk perceptions, anxiety levels and behavioural responses of the community towards the COVID-19 pandemic, and to compare the findings of two similar surveys conducted in Pakistan and Hong Kong.

Methodology: An online structured survey was conducted in both regions. A sample of 1406 respondents from Pakistan and 1715 from Hong Kong was selected through convenience sampling. **RESULTS:** Compared to Pakistan, respondents from Hong Kong perceived themselves more susceptible to COVID-19 (72% and 89% respectively), and perceived the disease to be severe (41% and 97% respectively). The anxiety level (HADS scale) was mild in both Pakistan and Hong Kong (Mean: 8.8 and 9.01 respectively). The findings indicate that 25-35

year olds were 3.9 times more likely to be anxious than people above the age of 55 in Pakistan. The opposite was true in Hong Kong, with people over the age of fifty-five being 2.2 times more likely to experience anxiety than 25-35 year olds.

Conclusions: This study discusses how contextual differences between Pakistan and Hong Kong contribute to risk perceptions, anxiety levels and behavioural responses of the community to COVID-19 pandemic. The casual attitude in Pakistan is attributed to lack of past exposure to a similar pandemic like SARS. The study indicates the urgent need to improve the provision of mental healthcare during the pandemic, particularly for younger people.

Keywords: COVID-19, Risk perceptions, Contextual Differences

3.35

RISK OF ADVERSE NEURO-DEVELOPMENTAL OUTCOMES DUE TO EARLY INFANCY INFECTIONS IN COHORT OF 6-8 YEARS OLD CHILDREN IN PERI-URBAN COMMUNITY OF KARACHI, PAKISTAN

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Introduction: Neurodevelopmental (ND) disorders effect 13.6% of the 6-9years old children regionally in Indopak subcontinent. This region also has a high burden of infections related mortality and morbidity among children. The burden and type of ND abnormalities attributed to early infancy infection alone is unclear. This hinders the policy making to grasp the window of opportunity in early childhood in order to reduce the mental health cost and burden in adolescents and adults.

Methods: We followed a birth cohort of 398 children of 6-8 years old from peri urban community in Karachi, Pakistan. During 2012 to 2013 these children were closely monitored from birth to 2 months of age for clinical and laboratory evidence of infection (exposed group), or no evidence of infection (unexposed group). At follow-up they were assessed for neurodevelopmental delays or abnormalities using: Ten Questions Screen (TQS), Strengths and Difficulties Questionnaire (SDQ), Parent's Evaluation of Developmental Stage Assessment Level (PEDS-DM-AL), and a covariate questionnaire for baseline information. Analysis was done using Generalized Structural Equation Modelling using Stata 16.0 software. Akaike information criteria (AIC) was used for model adequacy comparisons. Results The mean TQS score in children exposed to early infancy infections was significantly lower than healthy children (9.1 vs. 9.4). In SDQ the mean scores were not significantly different however 41.5% (vs. 33.1% in healthy children) children with early infancy infection had abnormal scores. Age standardized percentage of skills attained in fine motor and cognitive domains was significantly lower in infection exposed group, while there were no difference in other domains. This study profiles the household more prone to infection and children more prone to ND abnormalities in a single model.

Conclusion: The strength of risk factors associated with increased risk at a family or household level are identified and can be used for public health interventions.

Keywords: neurodevelopment, infection, sepsis

3.36

PROCEDURE APPLIED FOR RSF & PILOT OF GLOBAL SCALE OF EARLY CHILD DEVELOPMENT (GSED)

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Procedure Applied for RSF & pilot of Global Scale of Early child development (GSED)

Introduction: The GSED (Global Scale for Early Development) was developed in response to a need for population-based level indicators of child development that are reliable, valid, universal and free to access, and will be globally feasible to measure early child development.

Methodology: Method 1: Rapid testing of forms (RSF) We translate these GSED tool (SF, PSY, Long Form, Home, Eligibility) during RSF

Conducted training by Master Trainer for trained the Assessor's on GSED tool. for collecting data from Primary caregiver of the child. Total 164 sample size, done by 06 data collectors at field site of Karachi in Ibrahim Haidari. Sample size collect according to child Sex and age band under 3-year age. Age (Months) Sex Total Required 0-2 months Male 15 Female 15 3-5 months Male 12 Female 12 6-11 months Male 14 Female 14 12- 17 months Male 9 Female 9 18-23 months Male 8 Female 8 24-29 months Male 8 Female 8 30-35 months Male 8 Female 8 36-40 months Male 8 Female 8

Method 2: Pilot Study For Pilot we did translation (English to Urdu and Sindhi) in our local language. the GSED tools (Short form SF, Psychosocial PSY scale, Home, PHQ9, CPAS and long form LF) translated into local languages by different local translators: Translation Process: The sample size is 32 child-caregiver pairs, stratified by child age and sex band to under-3-year age range. Information collected from primary caregiver. The GSED conducted for the purposes of: 1) testing the feasibility, logistics and flow of data collection. 2) learning how the various tools perform (ease in administration, respondent comprehension, etc.)

Conclusion: We have successfully completed our sample size of RSF and Pilot. Now we are moving to our main validation study.

Keywords: study design, developing tool, early child development

3.37

PERIOPERATIVE HYPERTENSIVE RESPONSE IN PATIENT WITH IMPLANTED DEEP BRAIN STIMULATION DEVICE: CASE REPORT

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It is a case of middle-aged female with implanted DBS (deep brain stimulation) device for dystonia who underwent total abdominal hysterectomy. By turning off the DBS device peri-operatively, patient showed unusual hypertensive and behavioral response which did not respond to any medical treatment. As soon as the DBS device turned on postoperatively, hypertension settled requiring no further pharmacological treatment.

Keywords: Deep brain stimulation, Dystonia, Hypertension

3.38

ANAESTHETIC MANAGEMENT OF PATIENTS UNDERGOING DEEP BRAIN SIMULATION: A RETROSPECTIVE REVIEW OF 8 CASES FROM A TERTIARY CARE CENTER OF PAKISTAN

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Objectives: The objective of study was to review anaesthesia related outcome, perioperative complications and overall length of stay (LOS) in hospital for patients who had deep brain stimulation (DBS).

Methods: The study was retrospective review of patients medical records diagnosed with Parkinson disease (PD) and underwent DBS at The Aga Khan University Hospital, Karachi from 2017-2019. Data was reviewed from file notes and patient chart and recorded on

predesigned Performa. Frequency and percentages were used to present the data.

Results: All patients were anaesthetized using Sleep-Awake-Sleep technique (SAS). Dexmedetomidine was mainly used for conscious sedation. Bispectral index monitor (BIS) was used to monitor the depth of sedation, and kept between 70-85 during sedative phase. All patients had successful intraoperative neurological monitoring, stimulation, and placement of electrodes. Total duration of anesthesia varied significantly in between the patients. Maximum duration was 600 minutes. None of our patient had any intraoperative event related to anaesthetic management. Overall 5 patients had some adverse events during ward stay. Mean LOS in hospital was 4 days.

Conclusion: Anaesthetic management of DBS is well-tolerated. It requires dedicated team. The SAS technique is excellent for intraoperative neurophysiological monitoring. Careful selection of sedative agents and monitoring depth of anaesthesia using BIS would be beneficial in terms of improving related outcomes.

Keywords: Anaesthetic, Deep Brain Stimulation, Pakistan

3.39

HUMAN GENOME-EDITED BABIES: FIRST RESPONDER WITH CONCERNS REGARDING POSSIBLE NEUROLOGICAL DEFICITS!

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The ultimate outcome in genome-editing research stepped into unknown territories last month when two babies were brought into the world with clustered regularly interspaced short palindromic repeats (CRISPR)-CRISPR-associated protein 9 (Cas9) facilitated knockdown of chemokine receptor 5 (CCR5). An immediate outcry by the public and the scientific community followed, which is still

ongoing with much apprehensions and criticism of the ethical and scientific aspects of the procedure and its effects on the future of genome editing needed in other stubborn inheritable diseases for which there is no cure at present. With the debate on the consequences of this particular receptor knockdown still going on and the after-shocks in the form of queries expected to continue for some time in the future, we enter the arena of this particular genome editing as first responders with concerns regarding the neurological aftermath of CCR5 knockout in the babies born.

Keywords: Human Genome Editing, clustered regularly interspaced short palindromic repeats (CRISPR)-CRISPR-associated protein 9 (Cas9), CNS

3.40

CONNECTING THE DOTS: LINKING THE BIOCHEMICAL TO MORPHOLOGICAL TRANSITIONS IN ALZHEIMER'S DISEASE

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A loss of cholinergic neurons coupled with deposition of amyloid-beta ($A\beta$) has been implicated in the pathogenesis of Alzheimer's diseases (AD), but the exact point of origin of the cholinergic deficiency and $A\beta$ deposition in the course of AD is yet to be established. Additionally, it remains to be recognized whether the cholinergic deficiency initiates the onset of AD or occurs in the midst of a yet unknown ongoing neuropathological process in AD. A comprehensive study of the pathogenic events, considering the etiology related biochemical deficits as the beginning point, which eventually leads to the accumulation of amyloid beta ($A\beta$) and tau tangles, is expected to clarify drug intervention points in AD. As clarity regarding the origins of $A\beta$ and tau protein has now emerged, this Viewpoint highlights the link between the cholinergic deficits and Amyloid Precursor Protein (APP) formation in favor of

amyloid beta ($A\beta$) as compared to the neuroprotective nonamyloidogenic secretory pathway of APP processing. A sustained muscarinic cholinergic receptor stimulation with specific drugs has been suggested with or without a concurrent anticholinesterase, which could discourage $A\beta$ formation and accumulation early in the course of AD.

Keywords: Alzheimer's disease, amyloid-beta, cholinergic system

3.41

DARK SIDE OF AMPHETAMINE AND ANALOGUES: PHARMACOLOGY, SYNDROMIC MANIFESTATION, AND MANAGEMENT OF AMPHETAMINE ADDICTION

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The threat imposed by the use of psychoactive, illicit drugs on human health and the cost of rehabilitation of the affected individuals is nothing less than billions of dollars per year. Of the psychoactive substance abuse drugs are amphetamine and its analogues like methamphetamine. This Viewpoint intends to draw the attention of readers toward the neurological basis of "falling a prey" to methamphetamine. Attention has been paid toward a rapid desensitizing attribute that develops shortly after the repetitive use of drugs belonging to sympathomimetic agents of this group. Also summarized are the changes in physical characteristics and behavioral changes that could herald the loved ones around the methamphetamine abuser to seek the help of healthcare professionals before permanent and irreversible neurological damage ensues. A brief pharmacology of methamphetamine also precedes the management of these patients, for which no standard procedures exist at present.

Keywords: CNS, Addiction, Methamphetamine

3.42

IMPACT OF PATIENT DEATH THROUGH SUICIDE ON PSYCHIATRY STAFF

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Consequences of complete suicide of patient on psychiatry staff: a literature review Abstract
Aims Psychiatry units are most likely to have suicidal patients and if nursing staff witnessed death of suicidal patient to whom they care from many days, it significantly effects staff by increasing their stress level. The aim of this literature review is to explore the impact of expiry on psychiatry ward staff if patient expire in ward due to suicidal attempt.

Method: Sample of staff was taken who had experience an expiry after suicide attempt of patient in ward. Questionnaire of Impact of Event Scale-Revised used for 7 psychiatry ward staff.

Results: The IES-R is very helpful tool in measuring the effect of trauma and acute stress. The mean Impact of Event Scale-Revised (IES-R) contain 22 subjective questions to identify effect of stress full life event on a person. As per result, 28.5 % participants were at cutoff for a probable diagnosis of PTSD. However, 71 % fall at the category where immune system functioning is suppress by having score 37 or more in IES-r score.

Conclusions: The death of admitted psychiatric patient through suicide significantly increase a stress of staff. Their life got affected at home as well as at workplace. Timely individual support and strategies should be implemented to overcome this stress.

Keywords: IES-R, suicide, stress

3.43

RESPONSE AND IMPACT OF COVID-19 INFECTION AT NEUROLOGY TERTIARY CARE CENTERS IN PAKISTAN

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Objective: The COVID-19 pandemic has compelled all health care facilities to restructure provision of clinical care worldwide. We aimed to assess the response and impact of this at tertiary care centers in Pakistan especially pertaining to neurological care, facilities and training.

Methods: A survey through email was sent to 40 neurology tertiary care centers in all the provinces in the country in the first week of July 2020. 33 filled forms were received, out of which 18 were public and 15 were private hospitals. We analyzed the data in four sections including; COVID-19 exposure to health care workers (HCW), COVID-19 care and provision of facilities, Changes in Neurology training program and Modification of facilities for COVID-19 patients.

Results: Estimated 1300 HCW (faculty, medical officers, trainees and nurses) work at these 33 participating centers. There were 17 deaths among HCW (1.3%) at ten centers. Sufficient personal protective equipment (PPE) were provided to 158 (12%) HCW only. 129 (10%) HCW tested positive for COVID-19 at 31 centers including trainees/medical officers (39), consultants (29) and nursing and other staff (61). Due to low neurology admissions, 23/33 hospitals (70%) had residents from neurology posted in the COVID-19 unit to contribute to COVID-19 care. Neurology tele-health services were started for clinically stable patients at 15 (45%) centers. Only 60% neurology training programs were able to start online training. Ongoing studies and trials focused on neurological manifestations of COVID-19 were done at 10 (30%) centers. Modification of facilities for COVID-19 patients showed that 24 (72%) hospital administrations had strictly reduced the number of attendants accompanying patients. Only 10 (30%) centers had neurophysiological tests being conducted on

COVID-19 patients. Mental health support services were provided to HCW at 12 (36%) centers.

Conclusions: The optimal response to multi-disciplinary impact of COVID-19 appears yet to be achieved. Sufficient PPE were provided to 12% HCW. Among HCW 10% tested positive for COVID-19 and 1.3% died. Mental health support services offered for HCW were available in 36% institutions. Neurology training was substantially affected due to low admissions, limited ward rounds and limited availability of online training.

Keywords: Healthcare workers, Personal protective equipments, COVID-19

3.44

MECHANICAL THROMBECTOMY IN ENOXAPARIN RESISTANT CEREBRAL VENOUS SINUS THROMBOSIS ASSOCIATED WITH COVID-19

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Introduction: COVID-19 is multisystemic disease caused by SARS CoV-2. Neurological manifestations clearly reflects its infectious, inflammatory and coagulopathy promoting potentials. infectivemainly including ischemic stroke, cerebral venous sinus thrombosis, meningoencephalitis, Guillan-Barre syndrome and myositis.

Case Presentation: We present a case of a 29 year old male, recently COVID-19 positive, who presented with headache, seizures and left sided weakness. Brain imaging revealed right frontal lobe hemorrhagic infarct due to superior sagittal sinus thrombosis. Despite giving enoxaparin in therapeutic doses and increasing anti-epileptic drugs patients continued to have recurrent seizures and worsening drowsiness. Hence He

underwent mechanical thrombectomy of superior sagittal sinus to which he quickly responded. His seizures stopped next day and drowsiness and left sided motor power improved. He was discharged after 18th day of admission on wheel chair. Currently he enjoys independant mobility with minimal weakness in left arm/hand.

Discussion: Up till now 17 cases of COVID-19 patients with CVST have been reported in which there is no age or gender based predilection of the patients. Most common symptoms are headache, altered mentation, focal neurological deficit and seizures. Out of a total of 17 COVID-19 positive cases with CVST, 9 patients improved on anticoagulation and 8 expired likely due to rampant multi-organ failure All of the patients received heparin, mostly enoxaparin. Out of these 8 patients, 5 underwent surgical or endovascular procedure. 2 patients underwent surgical decompression, 2 had an external ventricular drain placed while 1 patient underwent mechanical thrombectomy, but unfortunately all 5 of them who received surgical intervention did not survive. Our case describes first successful case of mechanical thrombectomy in anticoagulation resistant CVST associated with COVID-19.

CONCLUSION: Patients with COVID-19 are prone to developing a hypercoagulable state, thereby leading to thromboembolic complications like CVST. Mechanical thrombectomy should be considered in drug (anticoagulation) resistant cases.

Keywords: Cerebral venous sinus thrombosis, mechanical thrombectomy, COVID-19

3.45

EFFECT OF PARENT-CHILD RELATIONSHIP ON PHYSICAL AGGRESSION AMONG ADOLESCENTS: GLOBAL SCHOOL-BASED STUDENT HEALTH SURVEY

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Department of Community Health Sciences

Data from the Global School-based Student Health Survey (GSHS) conducted in 2009 consisting of 5192 Pakistani school-going adolescents was used to assess the association between parent-child-relationship and physical-aggression. A multilevel-weighted-cox-proportional-algorithm was performed. The overall prevalence of physical-aggression was 41% of which 27% had a poor parent-child relationship. Male adolescents who have a poor bond with their parents had two times the prevalence of physical-aggression (95% CI: 1.82, 3.00) than those female adolescents with the strong parent-child-bonding. The findings of this study implicated that the poor parental bond and the role of gender as potential factors in physically aggressive adolescents.

Keywords: adolescent, aggression, parent-child relation

3.46

NEUROLOGICAL CARE AND TRAINING IN THE TIMES OF COVID-19: A TERTIARY CARE CENTER EXPERIENCE

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Resilience in these challenging times of COVID-19 at a professional and personal level is cardinal. Trainees and faculty have had to adapt to this adversity with striking limitations on formal neurological, neurovascular and neurophysiological residencies and fellowships. The revision of schedules and reallocation of assignments to cope with the practical aspects in a teaching tertiary care hospital have been overbearing. Novel structural innovation, testing, communications and supervision to assure a modified yet impactful training educational program is mandatory and the need of the hour. Healthcare service providers remain at the highest risk of acquiring COVID-19 worldwide. Urgent measures to educate them

about personal protective equipment (PPE), disease course, infectivity and complications were initialized at the first impact of COVID-19. Foreseeing the pandemic in months to come, here we describe the elemental changes made at the Aga Khan University Hospital (AKUH) Karachi, Pakistan a leading academic institute in health sciences and one of the largest tertiary care hospitals in the country and all the modifications contrived in the section of neurology to deal with the brunt of the pandemic. The neurology section devised a strategy balancing clinical work, research and academic activities. Tele health clinics were encouraged and set up across all specialties to minimize in hospital encounters whilst answering concerns of patients and their caregivers. Collaborative efforts, nationally and globally are the requirement as we continue to learn through clinical experience, trials and research on all the potential complications of COVID-19 in these dismal times.

Keywords: Healthcare services, Tele health, Personal protective equipment (PPE)

3.47

EXPOSURE TO BULLYING AND DEPRESSION AMONG SCHOOL GOING ADOLESCENTS: GLOBAL SCHOOL-BASED STUDENT HEALTH SURVEY

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Aim: To determine the association of bullying status and other factors with depression symptoms among school-going adolescents of Pakistan

Methods: Data from The Global School-based Student Health Survey (GSHS) conducted in 2009 was used. The nationally representative sample of adolescents aged 11–16 years were recruited. The outcome variable was the presence of depressive symptoms whereas, the primary exposure was bullying victimization

experienced by adolescents in the last 30 days. Multilevel-weighted ordinal regression analysis was performed

Results: A significant proportion of severely (48%) and moderately (46%) depressed adolescents reported being bullied. A significant interaction was found that adolescents exposed to long term bully and have poor parent-child relationship had 3 times higher odds of depression (OR: 3.35, 95% CI: 1.95-5.75)

Conclusion: This study has found a strong association between bullying victimization and the presence of depressive symptoms. Formulation of preventive strategies will help to address the toll of depressive symptoms experienced by adolescents.

Keywords: Bullying, Adolescents, Depressive symptoms

3.48

SEVERE MYOSITIS SECONDARY TO ACUTE HEPATITIS E VIRUS INFECTION

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Introduction: Hepatitis E virus (HEV) is one of the common viruses causing acute hepatitis, prevalent more-so in the developing countries. It is transmitted by feco-oral route and vertical transmission, is usually a self-limiting infection but may lead to fulminant liver damage. It also causes extra-hepatic manifestations such as hematological, neurological, gastrointestinal, renal and musculoskeletal manifestations. Neurological manifestations include acute transverse myelitis, acute meningoencephalitis, aseptic meningitis, neuralgic amyotrophy, pseudotumor cerebri, Guillain-Barre syndrome, cranial nerve palsies and, rarely, myositis [Bello]. Diagnosis is confirmed through the detection of anti-HEV immunoglobulins and HEV RNA in serum and cerebrospinal fluid (CSF). Treatment is commonly supportive

except in severe cases or immune-compromised individuals who require ribavirin. *Methods:* This is a case report of severe myositis secondary to HEV.

Results: A 27 years old lady who presented to our hospital with weakness along with pain and tenderness in bilateral proximal upper and lower limbs. She was diagnosed with acute HEV infection 3 weeks prior to presentation. Extensive workup was done which revealed an acute necrotizing myopathy. While all relevant workup was negative, she was treated with intravenous steroids for myositis and was managed conservatively for hepatitis. On follow up visit, she was pain-free and showed significant improvement in mobilization.

Conclusion: Paucity of available literature suggests HEV as a rare cause of severe myositis, however one that is treatable. As yet, only three cases of hepatitis E associated myositis have been reported worldwide to the best of our knowledge. While the vast majority of acute HEV infections are managed only with supportive therapy, ribavirin and immunosuppressants have been widely used for the treatment of severe and complicated HEV infections with resultant viral clearance.

Keywords: Hepatitis E virus, myositis, neurological disorders in hepatitis E

3.49

VIRAL MENINGITIS CAUSED BY ENTEROVIRUS: A CASE SERIES

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Background: Enteroviruses are the most common cause of viral meningitis with peak incidence between late summer and fall. It causes approximately 75,000 cases annually in the United States. The onset of symptoms is characteristically abrupt and typically includes headache, fever, nausea or vomiting, malaise, photophobia, and meningismus. In addition,

diarrhea, upper respiratory symptoms and a skin rash may also be present. The clinical presentation and epidemiologic features help in the diagnosis however it is confirmed by the detection of RNA in the CSF by PCR. Case presentation: We present the clinical description, diagnosis, and management of 5 consecutive cases of viral meningitis secondary to enterovirus. All of these patients visited the emergency department at our hospital over a span of 5 weeks during the monsoon season. All of our patients were young males, with ages between 18-35 years, did not have any prior comorbidities and resided in different localities of Karachi, Pakistan. The presenting complaints were severe headache in all 5 patients (100%), fever in all 5 patients (100%) and diarrhea in 2 out of 5 patients (40%). On examination, neck stiffness was present in all of the 5 patients (100%). After the required workup and detection of RNA in the CSF by PCR, diagnosis of enteroviral meningitis was confirmed. The patients were given supportive care and discharged home with no neurologic complications.

Conclusion: Aseptic meningitis occurring during the summer or fall is most likely to be caused by enteroviruses (eg. Coxsackievirus, echovirus, other non-poliovirus enteroviruses). It is self-limiting and only requires supportive treatment however, significant morbidity has been reported, including hospitalization and impairment of routine activities. Clinically it cannot be differentiated from other central nervous system (CNS) infections hence a rapid diagnosis is important for prompt management and infection control.

Keywords: Enterovirus, Meningitis, Viral Meningitis

3.50

GUILLAIN-BARRE SYNDROME AFTER CORONARY ARTERY BYPASS GRAFTING

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Guillain-Barre Syndrome (GBS) is the most common and most severe acute paralytic neuropathy, with about 100 000 people developing the disorder every year worldwide. It is preceded by various antecedent events most commonly viral or bacterial infections, administration of certain drugs or vaccine, following surgery and organ transplantation. We present a case of a 54 year old gentleman who presented with sudden weakness in all 4 limbs. He was diagnosed with and treated for AIDP variant of GBS. 10 days prior to this presentation, he had undergone Coronary Artery Bypass Grafting (CABG) for triple vessel coronary artery disease without any immediate complications. To the best of our knowledge, the association of GBS with CABG is uncommon and previously only 8 such cases have been reported. The current patient is the first one reported from Pakistan

Keywords: Guillain-Barré syndrome, coronary artery bypass grafting, postoperative complications

3.51

DIAGNOSTIC CONTRIBUTION OF PET/CT WITH [F] FLUORODEOXYGLUCOSE FOR CNS FUNGAL INFECTION: A CASE REPORT

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[¹⁸F]2-Fluoro-2-deoxy-d-glucose ([¹⁸F]FDG) accumulates in metabolically active cells, including neoplastic and inflammatory cells and produces a distinct image during positron emission tomography (PET) scanning ([¹⁸F]FDG-PET). It is thus useful for detecting malignant and inflammatory processes. In past studies have shown the power of [¹⁸F] FDG-PET to detect IFI, with at least the same sensitivity as conventional imaging.

Case: 66 years old gentleman Right handed MRS 2 diagnosed case of Chronic Otitis Externa since last 5 months and Nasopharyngeal carcinoma s/p chemotherapy with Cisplatin and 5Flurouracil presented through ER with complaints of fever, drowsiness for 1 week and hematemesis 1 episode. On arrival patient was in septic shock with multi organ failure. On examination patient was pale and drowsy, localizing with bilateral upper limbs to pain. Neck was stiff. Brainstem signs were intact and planters were flexors bilaterally. Ear examination did not reveal any active discharge or wound. Blood workup showed bicytopenia with low Hb of 5mg/dl and platelets of 119K. His coagulation profile were deranged. His renal functions were also deranged with raised creatinine of 7.4. His Prior Swab cultures showed growth of MRSA and Candida Krusei. Outside our hospital Patient had taken IV Vancomycin and Oral Linezolid 2weeks each but never received antifungals for Candida. Patient was started on IV Amphotericin 1mg/kg for persistent ear swab culture growing Candida. CT/PET was done to look for distant seedings of fungal infection that came out to be negative including negative for Brain involvement. His lab parameters started to improve but his mentation never improved hence MRI Brain with GAD was done(19/2/19) just 5 days after CT/PET that showed Complicated CNS Fungal Infections. CSF studies could never be done due to deranged coagulation profile and falling platelets counts. *Conclusion:* Proper treatment was delayed due to the miss diagnosis of false Negative CT/PET for CNS involvement since Amphotericin has lesser CNS penetration than Fluconazole and Voriconazole which could have been a better treatment option on addition to Amphotericin for this patient.

Keywords: FDG CT/PET, Invasive fungal infection, MRI brain

3.52

“ANTERIOR HORN CELL DISEASE AS FIRST MANIFESTATION OF

PARANEOPLASTIC SYNDROME SECONDARY TO PRIMARY BREAST LESSION A CASE REPORT ”.

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Paraneoplastic neurologic syndromes are a group of conditions that affect the nervous system in patients with cancer. We present a case of a young patient where paraneoplastic syndrome caused anterior horn cell disease. Case presentation: A 48 years old lady who 3 months back was diagnosed as AMAN variant of GBS for relapse of her lower extremity weakness and nasal voice tone. Presented to ER with significant weight loss, vomiting for 2 months and new onset of right upper and bilateral lower extremity weakness for 3 days. During hospital stay she had one episode of seizure for which MRI contrast was done that showed meningeal enhancement. The first CSF showed normal glucose, elevated proteins of 208, white cell count of 26 with 98% lymphocytes. Extensive workup showed neoplastic lesion in breasts Patient was treated with 5 sessions of plasma exchange for her weakness to which she mildly responded. She was referred to oncology. Tumor board considered meningeal enhancement of the brain as evidence of stage IV cancer with secondary metastasis that resulted in seizure previously. She was started on Intrathecal methotrexate and received 4 doses but she expired within a months of her diagnosis. *Conclusion:* The importance of PND lies in the fact that PND may be the first sign of an occult cancer. A particular PND may occur due to multiple anti onco-neuronal antibodies however some antibodies are classically associated with certain types of PND.

Keywords: Anterior horn cell, paraneoplastic, plasma exchange

3.53

ASSESSING KNOWLEDGE, ATTITUDE AND PRACTICES OF EMERGENCY MEDICINE STAFF TOWARDS PATIENTS

WITH SUICIDAL BEHAVIORS IN A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN

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Background: A prior history of self-harm (SH) is a strong predictor of future suicides. SH is a criminalized act in Pakistan. There are an estimated 0.15-0.3 million acts of SH annually in the country. Emergency Medicine Department (EMD) is the first point of contact for SH patients and effective management in EMD is important for secondary prevention. A critical factor in this is the knowledge, attitudes and practices (KAP) of EMD staff towards SH patients. This has not been previously explored in Pakistan. The objective of the study was to assess KAP of EMD staff towards SH patients presenting to Aga Khan University Hospital, Karachi. Methods After a process mapping exercise to understand the medico-legal and clinical management of SH patients, a KAP survey instrument was developed. Between Oct 2018 to Aug 2019, all EMD staff who were either directly involved in providing clinical care or administrative/medico-legal issues were surveyed using Survey Monkey. Data was analyzed using descriptive statistics.

Results: The response rate was 51% (112/220): doctors (n=39), nurses (n=69) and security staff (n=4). Majority of respondents were not aware that suicide and SH are criminal offences punishable under law in Pakistan, though were aware they were sins according to religion. Majority had not received any specific training in management of SH cases. Majority felt people who self-harm are in need of psychiatric care. About 50% of doctors and 16% of nurses felt that self-harm patients are treated 'less seriously than patients with other medical problems'

Conclusion: There is need for education and training of EMD staff for managing SH cases. There is also need to conduct similar surveys in other health facilities that deal with self-harm cases in Pakistan.

Keywords: Self-harm, KAP, Pakistan

3.54

“CLADOPHIALOPHORA CARRIONII FUNGAL ABSCESS: THE BLACK MOLD BRAIN INVASION

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Background: Fungal cerebral abscess are regrettably not uncommon in developing countries like Pakistan. Most common fungal pathogens in abscess include aspergillus, mucormycosis and candida. *Case Description:* 45 year old gentleman known case of end stage renal disease due to renal stones, presented to emergency department with complain of left sided jerky movements of extremities followed by uprolling of eyes, body stiffness and drowsiness for 15 minutes around 10 days back and left sided extremities weakness since 1 day. On examination middle aged gentleman with normal vitals and general physical exam. In Neurological examination, Higher mental functions showed Drowsy, but arousable to verbal response, follows 1 step commands with slurred speech, left upper neuron type facial weakness, and bilateral blurring of optic disc margins. Patient was given Vancomycin, Meropenem and Amphotericin in meningitic but renal adjusted dose. Patient underwent right parietal craniotomy, abscess drainage and biopsy of abscess bed on 22nd January 2020 which

revealed pigmented septate fungal hyphae and culture showed heavy growth of *Cladophialophora Carrionii*. Voriconazole was added to amphotericin and antibiotics were stopped.

Conclusion: *Cladophialophora Carrionii* is an emerging potentially lethal pathogen. All measures must be taken to prevent direct contact from the black mold. Immunocompromised patients are special priority for such measures. Good surgical drainage of pus and prolonged antifungal therapy is the current treatment of choice.

Keywords: *Cladophialophora carrionii*, fungal, brain abscess

3.55

PSYCHIATRIC EMERGENCIES IN LOW, AND MIDDLE-INCOME COUNTRIES: NATURE & OUTCOMES AT AGA KHAN UNIVERSITY HOSPITAL (AKUH), KARACHI

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Background: The role of the accident and emergency department in the care of psychiatric patients has been long recognized. Many studies have reported that many psychiatric patients, at their first or subsequent contact, present themselves as emergencies, and therefore a suitable service must be provided for them. In this paper, we aim to describe the nature and outcomes of referrals made to psychiatric services from the Emergency Department of a tertiary care hospital in Pakistan.

Method: In this cross-sectional study, data of referrals made from the Emergency Department for a Psychiatry consult during the period 2016-18 was reviewed. This data included referred patients' socio-demographic details, reason(s) for referral, comorbidities, psychiatric assessment, management, and outcome. The data was entered and analyzed using SPSS 19.0.

Results: During the period, a total of 779 consults were received through ER of which 420 (53.9%) were females and 359 (46.1%) were males. Most of the patients (33.2%) were in the age range of 21-30 years, the mean age was 34.99 years with an SD of ± 15.2 . The most common reason for referral to psychiatry was anxiety symptoms (22%) followed by agitation (15%) and deliberate self-harm (12.2%). The psychiatry team advised pharmacological intervention to 478 (61.4%) patients and advised admission to 285 (36.6%) of the patients seen in the ER of which 109 (38%) got admitted and 11.3% left against medical advice.

Conclusion: This study was able to highlight a few of the most significant reasons patients with psychiatric illnesses presented to the Emergency Department, which includes anxiety symptoms followed by agitation. This will help us identify areas where we can build the capacity of healthcare professionals working in the ER for the assessment and management of psychiatric emergencies.

Keywords: Psychiatric emergencies, ER, anxiety

3.56

“IGG4- RELATED PANCREATITIS, CEREBELLITIS AND NEUROPATHY”

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Background: Immunoglobulin G4-related disease (IgG4-RD) is an immune-mediated fibroinflammatory condition that is capable of affecting multiple organs. The hallmark is dense lymphoplasmacytic infiltrations with a predominance of IgG4-positive plasma cells in the various tissues including hepatobiliary tissues, retroperitoneal structures, aorta, orbital tissue and salivary glands [1].

Case Description: 19 years old gentleman, with recent history of type I diabetes mellitus due to necrotizing pancreatitis (in October 2019) admitted with infected pancreatic pseudocyst

and initially managed with antibiotics and surgical drainage. Neurology was called for evaluation of scanning speech and generalized weakness. Neurological examination revealed scanning speech, bilateral paraparesis (3/5) along with absent reflexes and bilaterally flexor plantars. Sensory exam was unremarkable. Patient had bilateral appendicular cerebellar dysmetria and dysidiadochokinesia. Routine labs revealed microcytic anemia due to iron deficiency, low B12 (144) and folate levels (2.5) which were replenished immediately with no improvement till 7 days. EMG NCS was done which suggested acute motor axonal neuropathy predominantly involving lower limb. CSF exam was unremarkable except mild raised protein (82 mg/dl). Diagnosis of IgG4 related pancreatitis, cerebellitis and neuropathy was made and patient was started on oral prednisolone 40 mg PO per day. Patient responded significantly and currently able to perform routine activity and walk without support.

Conclusion: IgG4 related disease occasionally involve neural tissues, are difficult to diagnose but are potentially treatable, keeping high index of suspicion due to specific organ involvement can lead to early diagnosis and adequate treatment with minimal residual deficits.

Keywords: IgG-4 Related Disease, Neuropathy, Cerebellitis

3.57

BURDEN OF DELIRIUM AND ITS RISK FACTORS AMONG MECHANICALLY VENTILATED PATIENTS IN THE ICUS, IN PUBLIC AND PRIVATE TERTIARY CARE HOSPITALS IN KARACHI, PAKISTAN.

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Background: Delirium is the most avoidable, serious and developing problem or complication that develops during the intensive care unit stay. It has several undesirable consequences such as aggravated length of stay, deteriorated health

outcomes and high chances of mortality. As per researcher's knowledge, no study has been done in Pakistan to assess delirium and risk factors among mechanically ventilated patients.

Aim of the Study: The aim of this study was to evaluate the burden of delirium and its risk factors among mechanically ventilated patients in the ICUs, in public and private tertiary care hospitals in Karachi, Pakistan.

Methodology: An analytical cross-sectional study design was used to respond to the research questions in the study. The purposive sampling technique was used to recruit 150 participants, admitted in medical and surgical ICUs of public and private sector hospital. Data collection was done through Intensive Care Delirium Screening Checklist (ICDSC) for assessing delirium among mechanically ventilated patients. Findings of the Study: The findings of this study showed that the study participants from hospital A has 71.4% delirium whereas, hospital B showed 58.8% delirium among study participants. The overall delirium burden was 64.7% among mechanically ventilated patients admitted in both the hospitals. Along with this, mobilization and raised lactate presented significant association with delirium among the study participants. It is concluded that patients who are not mobilized are 34.8% at increased risk of developing delirium as compared to mobilized patients. Lastly, patients with raised lactate are at 22.2% greater risk of development of delirium as compared to ones with normal lactate.

Conclusion: The study concluded that approximately third-fourth patients admitted in intensive care units with mechanical ventilation suffer from delirium. The factors those are responsible for delirium are lack of mobilization and raised lactate levels. The recommendations comprise of education level, practice level, at research level.

Keywords: Delirium, Mechanical ventilation, Intensive care unit

3.58

ASSOCIATION OF DEPRESSION AND QUALITY OF LIFE IN PAKISTANI ADOLESCENTS AND YOUTH (15-24 YEARS) WITH SELF-REPORTED POLYCYSTIC OVARIAN SYNDROME- A WEB-BASED ANALYTICAL CROSS-SECTIONAL SURVEY

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Background Clinical-stigmata of Polycystic-ovarian-syndrome (PCOS) can play a part in impairing Quality-of-life (QOL) and can contribute to risk of depression as well but there exists a possibility that depression might color perspective towards perceiving symptoms ultimately affecting QOL. Therefore we aim to investigate the association between depression and QOL in Pakistani adolescents and youth with PCOS and also to determine other factors associated with QOL.

Methods: We conducted a web-based analytical-cross-sectional survey on 213 single Pakistani females aged 15-24 years who had access to the study questionnaire broadcasted via Google Forms. Depression and QOL were assessed through Center-of-Epidemiological-studies-Depression and PCOS quality of life scale. Multiple linear regression was used and adjusted regression coefficients alongwith a 95% confidence interval were reported.

Results: Mean age of participants was 21.4±1.89. Majority of the participants were residents of Sindh(64.3%), belonged to middle class backgrounds(72.7%) and had graduation/post-graduation as their highest level of education(69%). 80%(n=172) participants were screened positive for depressive symptoms. Depressed participants reported reduced mean QOL scores compared to non-depressed respondents (2.8 vs 3.5, p<0.001). We found a

significant interaction between depression and duration of PCOS indicating that estimated mean QOL scores was 25.1(-36.6,-13.6) lower in depressed compared to non-depressed respondents with every year increase in duration of PCOS. Furthermore, those respondents who had family history of PCOS and were not satisfied with their healthcare giver treating PCOS, the estimated mean QOL score was 17.47(-26.11, -8.82) lower than participants who had no family history of PCOS and were satisfied with their healthcare giver. Societal pressure to improve appearance affected by PCOS, BMI, education and employment status were other significant predictors of QOL (p-value<0.001). *Conclusion:* Depression was significantly associated with reduced QOL. Therefore, to improve the symptoms and overall quality of life of PCOS victims, screening and treatment of psychological morbidities should be considered

Keywords: Polycystic ovarian syndrome, Depression, Quality of life

3.59

IMPACT OF PLAY-BASED INTERVENTION ON MENTAL STATUS EXAMINATION OF HOSPITALISED CHILDREN

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Description/Objectives: Children's perception towards hospital based care is often anxiety provoking. Life in hospital is linked to uncertainty and poor interaction between children and their parents. The objective of the study was to understand the impact of play-based psychosocial interventions on mental status of children.

Methodology: The current study is a quality improvement project in Children's Hospital of Aga Khan University Hospital, Karachi, Pakistan. A package was created for children aged six and under. Children and parents were

offered play-based psychosocial interventions based on the needs identified by assessment through mental status examination (MSE) form. Parents were taught interventions through scaffolding and were encouraged to interact with their children using the same principles. Therapists observed parents and children and post-test was conducted using MSE form at the end of session. The assessment helps in gathering the context of symptoms of mental health issues, provision of adequate treatment plan and whether attention from a specialist is required.

Results: 523 sessions were conducted within a span of thirteen months from March 2018 to October 2019. Wilcoxon signed rank test was performed on MSE and it was found out that there was significant increase in the scores of speech (M= 2.3136, SD= 0.91062), mood and affect (M= 2.2084, SD= 0.8691) and interpersonal relationships (M= 2.3442, SD= 0.85272) from before (speech: M= 2.2026, SD= 0.85726; mood and affect: M= 1.9253, SD= 0.7887; interpersonal relationships: M= 2.1797, SD= 0.81746), after the sessions. Significant difference was also observed disease wise on MSE after the first session.

Recommendations: Psycho-social interventions should become part of daily hospital routine and the MSE helps in evaluating the behaviour, thinking and mood of children at specific point in time. Correlation of MSE with disease and length of stay can be explored. The methodology can be applied to older children and adult-care.

Keywords: mental status, play, children's hospital

3.60

MARCHIA FAVA BIGNAMI DISEASE- A case report

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Introduction: Marchia Fava Bignami disease is a rare disorder characterized by demyelination and necrosis of the corpus callosum. Alcoholism is known to be the greatest risk factor. Type A is a more aggressive and severe form with worse prognosis while Type B is a milder form with better prognosis. *Case Report:* We report a case of 38 year old gentleman with history of tobacco and alcohol use, presenting with the complains of generalized weakness and weight loss for four months, behavioral changes, dysarthria, drooling, and difficulty balancing and walking for fourteen days. On examination he was awake but agitated and restless but following commands. Speech was slurred with a hypophonic voice. Cranial nerves were intact and powers of 4+/5 in all four limbs. Cerebellar signs and gait could not be assessed. Baseline workup was within normal limits except Cr of 2.9. MRI Brain was done which showed symmetrical T2 hyper intensity with some diffusion restriction was identified involving the splenium of corpus callosum and scattered micro hemorrhages. CSF DR was normal. CSF BFM was negative. Cryptococcal antigen, HIV, VDRL/ RPR were all negative. Patient was diagnosed as a case of Marchia Fava Bignami disease and started on Vitamin B12 and folic acid. Patient was discharged home with marginal improvement in agitation.

Conclusion: Alcoholism is main cause of this syndrome although a few cases have been reported without any history of alcohol use. Limited data is available on this disease but patients may benefit from parenteral thiamine administered within 2 weeks of symptom onset. Early diagnosis and effective treatment are therefore important to patient's recovery, and serial MRI has demonstrated complete disappearance of lesions with early diagnosis and treatment.

Keywords: Marchia Fava Bignami Disease, Alcoholism, corpus callosum

3.61

PREVALENCE AND FACTORS ASSOCIATED WITH GENERALIZED ANXIETY DISORDER AMONG THE GENERAL POPULATION IN PAKISTAN DURING THE CORONA-VIRUS DISEASE 2019 PANDEMIC

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Background: Psychological impact of the Covid-19 pandemic has been expected and widely predicted, but its associated factors are not measured predominantly in low- and middle-income countries. This study aims to determine the burden and factors associated with generalized-anxiety-disorder in the Pakistani population amidst the COVID-19 pandemic

Methods: We conducted a web-based cross-sectional survey on 1679 Pakistani residents who had access to the study questionnaire broadcasted via the Google form. Generalized-anxiety-disorder was screened through a validated tool of the Generalized-Anxiety-Disorder 7 scale. Multiple ordinal regression was used to report adjusted odds ratios along with 95% confidence intervals.

Results: The mean age of participants was 29.4 + 9.6. Majority of respondents were females (72.7%) and Sindh residents (59.9%). Most of the participants(70.8%) were screened positive for generalized-anxiety-disorder, out of which moderate and severe symptoms were seen in 22%(n=365) and 18%(n=301) of them, respectively. The mean score for generalized-anxiety was 8.57+5.88. A significant interaction was seen between gender and perceived stress, indicating that females with high perceived stress had 30 times greater odds of generalized-anxiety as compared to females with low perceived stress (20.02, 44.46). Additionally,

during the complete down, the odds of generalized-anxiety among respondents who frequently watched news were 1.72(1.06, 2.77) times compared to participants who rarely watched the news. Furthermore, participant's current psychiatric illness, anxiousness about uncertainty, fear of getting infected from Corona, fear of loved one getting infected from Corona, worrying when the first case of Covid-19 was reported, indulgence in recreational activities, and current health status were found to be significantly associated with generalized-anxiety.

Conclusion: This study shows that the pandemic has substantially affected psychological well-being and has evoked generalized-anxiety in the Pakistani population. Proactive steps should be taken by the government and authorities to tackle the alarming increase in the burden of psychological morbidities adequately

Keywords: Covid-19, Generalized Anxiety Disorder, Pakistan

3.62

HASHIMOTO'S ENCEPHALOPATHY AS A RARE BUT TREATABLE CAUSE OF ALTERED MENTATION A CASE REPORT

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Introduction: Hashimotos encephalopathy also called non vasculitic autoimmune meningoencephalitis, first described in 1966 by Brain et al. is an uncommon syndrome characterized by confusion, altered level of consciousness, seizures and myoclonus. We present a case of an 80 years old lady who presented with unexplained drowsiness and frequent triphasic sharp waves on EEG.

Case presentation: An 80 years old lady with an MRS of 2 and known comorbid of Diabetes, Hypertension and depression presented from emergency with complaints of progressive drowsiness for 7-10 days. No association of

fever, headache, and seizures were associated with the current mentation. Outside hospital she was started with sodium valproate in epileptic doses with suspicion of seizure disorder. Drug history revealed no cause of drowsiness. Neurological workup showed MRI brain Multiple EEGs were conducted showing intermittent to generalized triphasic waves. CSF was negative for infective workup including a TLC of 1 in CSF and negative Bio Fire markers for different bacterial and viral infections including HSV. CSF autoimmune and serum paraneoplastic workup was also negative. Serum TPO antibodies titres were significantly high. 301 leading to the probable diagnosis of Hashimoto's encephalopathy. She was started with IV methylprednisolone and after 3 doses of pulse therapy she started giving responses and started to spontaneously opening her eyes.

Conclusion: Hashimoto's Encephalopathy is a rare but treatable cause of drowsiness with mimickers of CJD, Frontotemporal Dementia, HIV dementia, Psychiatric illnesses which are progressive and difficult to manage. Hence, one should not miss the diagnosis of Hashimoto's encephalopathy that may offer a favorable outcome to the patient.

Keywords: hashimotos, steroids, encephalopathy

3.63

PREVALENCE AND FACTORS ASSOCIATED WITH PERCEIVED STRESS AMONG THE GENERAL POPULATION IN PAKISTAN DURING THE CORONA-VIRUS DISEASE 2019 PANDEMIC

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Background: The covid-19 pandemic has paved the way for psychological crises, especially in

resource-limited settings where mental health infrastructure is already crippled. The burden and factors of mental distresses must be known so they can be timely addressed. This study aims to determine the prevalence and factors associated with perceived-stress in the Pakistani population during the Covid-19 pandemic.

Methods: A web-based cross-sectional survey was conducted on 1679 Pakistani residents who received the study questionnaire's Google form link. A validated tool of perceived-stress scale-10 was used to screen perceived stress levels. Multiple ordinal regression was the choice of analysis to report adjusted odds ratios alongwith 95% confidence intervals.

Results: The majority of the participants were female(72.7%), belonged to the age bracket of 25-39(50%), and were Sindh residents(60.1%). Most of the respondents screened positive for moderate(69%) and high levels(14%) of stress, respectively. The mean score of perceived stress was 19.32+6.67. A significant interaction was seen between generalized-anxiety and phase of the lockdown. During the complete lockdown, the odds of high-perceived stress among severely anxious participants were 44.67(21.33,93.53) times as compared to respondents with no/minimal generalized anxiety. Moreover, the odds of high levels of perceived-stress among moderately anxious respondents were 15.79(10.19-24.28) times compared to respondents with no/minimal anxiety during smart lockdown. Additionally, current psychiatric illness, stressful quarantine, working status, age, indulgence in physical exercise, worry about the shortage of food, concern about the imposition of lockdown, and confidence about infection control practices were factors found to be significantly associated with high perceived-stress levels.

Conclusion: This study evidences that the pandemic was extremely distressing for the Pakistani population causing the maximum level of perceived-stress in more than half of the population. Adequate and timely interventions

are needed before high-stress levels culminate into psychological disorders.

Keywords: Covid-19 pandemic, perceived stress, Pakistan

3.64

UNUSUAL COMPLICATION OF BLACK STONE POISONING WITH PRES SYNDROME

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Introduction: Black stone “kala pathar”, is used in industries as hair dye . Paraphenylenediamine is an alanine amine causes lipid peroxidation of membrane and free radical formation causing fatal muscle necrosis. Patients presents with multiorgan involvement including angio-neurotic edema , myocarditis and renal failure. CASE: we present here a case of a patient who ingested black stone as suicidal attempt and develop Posterior Reversible Encephalopathy Syndrome as a complication of it , never reported in literature. 25 year old female confessing the ingestion of hair dye as suicidal attempt 10 hours back came to emergency department with breathing difficulty and drowsiness. She was immediately intubated due to hypoxic respiratory failure and respiratory distress. During intubation laryngeal edema was seen with no visualisation of vocal cords. Gastric lavage was done. During the three days of intubation patient was managed for multiorgan failure including liver profile derangement , rhabdomyolysis and acute laryngeal edema. Post extubation on day 4 of her stay , she developed generalised tonic clonic seizures two to three episodes lasting for around 45 to 60 seconds with postictal confusional state. Lab parameters were within normal limits , not justifying seizure. MRI brain revealed diffuse bilateral hyperintense symmetrical abnormal signals in T2 and FLAIR images with no signal dropout on ADC images suggestive of posterior reversible encephalopathy. EEG showed burst of delta waves followed by 0.5-1.5 seconds of

suppression. Patient was given IV leveteracetam 1000mg stat and 500mg bid as maintenance dose. She remained seizure free on maintenance dose.

Conclusion: Paraphenylenediamine poisoning presents with respiratory distress and complications secondary to myocarditis and renal failure. Literature reports neurological manifestations as either critical care neuropathy or anoxic brain injury due to hypoxia. Our patient behaved unusually revealing PRES as neurological complication of PPD poisoning.

Keywords: pres syndrome, seizures, black stone

3.65

WHEN COVID-19 ENTERS IN A COMMUNITY SETTING: AN EXPLORATORY QUALITATIVE STUDY OF COMMUNITY PERSPECTIVES ON COVID-19 AFFECTING MENTAL WELL-BEING

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Background: The COVID-19 pandemic has certainly resulted in an increased level of anxiety and fear among the general population related to its management and infection spread. Due to the current unprecedented situation the normal routine life of every individual has been hindered which may cause florid mental distress. Considering the relevance of present circumstances we explored perceptions and attitudes of community members towards COVID-19 pandemic and its impact on their mental well-being. *Methods:* We conducted an exploratory qualitative study using a purposive sampling approach, at two communities of Karachi, Pakistan. In-depth interviews were conducted with community members including, young adults, middle-age adults, and older adults of both genders. Study data was analyzed manually using the conventional content analysis technique.

Results: A total of 27 in-depth interviews were conducted, between May and June, 2020. Three overarching themes were identified: (I) Impact of COVID-19 on mental health of the general communities; (II) Current coping mechanisms to adapt to the new reality; and (III) Recommendations to address mental health of communities. Generally community members underwent increased anxiety and fear due to the contagious nature of the virus. Alongside, social, financial and religious repercussions of the pandemic have also heightened psychological distress among community members. However, community members were able to point out some of the coping mechanisms such as getting closer to God, connecting with family, participating in mental health sessions and resetting lives by indulging in diverse activities. Simultaneously, they also recommended the need of remote mental health services for elders and continuous efforts by the government to address mental health needs of the community at larger scale.

Conclusion: COVID-19-associated mental health consequences have hit every individual in the society. The study finding has the potential to guide the development of context-specific innovative mental health programs to overcome the pandemic repercussions.

Keywords: qualitative study, mental health, community, perceptions, qualitative study, mental health, community, perceptions, qualitative study, mental health, community, perceptions

3.66

CERVICAL EPIDURAL BLOOD PATCH IN SPONTANEOUS INTRACRANIAL HYPOTENSION- A CASE REPORT

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Introduction: Spontaneous intracranial hypotension (SIH) results from a decrease in

CSF pressure to less than 60 mm Hg without any iatrogenic cause and presents most commonly with orthostatic headache. Cervical dural tears are an uncommon cause of SIH. Cervical epidural blood patch has been successfully used in the treatment of SIH after failure of conservative management.

Case Report: A 35 years old lady came with unilateral orthostatic headache radiating to neck along with vomiting. She did not have any history of trauma or any recent neuraxial anaesthesia/analgesia. MRI cervical spine suggested a breach in dura at C2 level with extradural collection extending from C2-4 level. CT myelogram showed dural leak at C2-3 level. She failed to respond to conservative management. A multidisciplinary team was involved and it was decided to proceed with cervical epidural blood patch with surgery for dural repair being the last resort. Fluoroscopy guided cervical epidural blood patch was planned. Epidural space was located using fluoroscopy. A 16 gauge Tuohy needle was initially placed at T8 level but the 20 gauge epidural catheter could not be advanced to the desired site and 3mls of blood injected only reached upto T5 level. Tuohy needle was re-sited at T5 level. Catheter was advanced. Position was confirmed with Omnipaque dye under fluoroscopy and 5 mls of autologous blood was given with spread seen upto C2 level. Patient had complete resolution of headache and no neurological deficits were seen. She was observed for 24 hours and discharged home the next day.

Conclusion: Fluoroscopy guided cervical epidural blood patch is an effective treatment for cervical dural tears causing symptoms of spontaneous intracranial hypotension that are not responding to conservative management.

Keywords: Cervical, dural tear, epidural blood patch

3.67

POSTPARTUM DEPRESSION AND ITS CONTRIBUTING FACTORS

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Introduction: Postpartum depression, a dramatic drop in hormones in mother's body. The birth of a baby can be a joyful and excited moment but it sometimes turns into fear and anxiety. Some new mothers experience more severe and long lasting symptoms known as postpartum depression. It is not a pathological condition, sometimes it simply a complication of giving birth. The sign and symptoms which may last temporarily may include mood swings, anxiety, crying, appetite problem and trouble sleeping. People with depression may not know that they are depressed and they need medical help to overcome their condition. Research question: What are the contributing factors in postpartum depression in new mothers?

Methodology: A comprehensive literature review of 12 articles was conducted. The literature was time bound from January 2008 to December 2018. The search was conducted by using the search strategy which was formed using key words and addition of boolean operators. The papers were filtered using time and full text filter. The literature review included the researches from underdeveloped country of Pakistan to developed country of United States of America.

Finding: Edinburgh Postnatal Depression Scale (EPDS) is widely used depression scale to evaluate depression among new mothers. The prevalence of postpartum depression ranged from 15% to 40% depending upon the population being studied. Furthermore, prevalence of postnatal depression is much higher among newcomer mothers. Many factors are identified behind postpartum depression that includes: insomnia, previous history of depression, substance abuse, poor social support,

young age of to become mother, infant sleeping problems, unplanned pregnancy, domestic violence and unsatisfied marital relation. Based on these findings, few strategies are also been identified to reduce the incidence of postnatal depression that include antenatal counselling, creating support groups to foster interpersonal exchanges and emotional support. Role of health care providers is crucial in addressing these concerns and prevention of depression.

Conclusion: The current review assessed the magnitude and factors associated with postpartum depression in new mothers. We also conclude that various cultures don't allow women to express their negative feelings after child birth and consequently the condition gets worse and patients deteriorate. This is a common condition that occurs with most women and sometimes needs urgent medical attention. The role of spouse and immediate family member play an important role to ease the patient.

Keywords: Postpartum depression, new mothers, contributing factors

3.68

CASE REPORT: PIRIFORMIS SYNDROME- A DIAGNOSIS OF EXCLUSION

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Introduction: Piriformis Syndrome constitutes a constellation of sign and symptoms and has always remained a diagnostic dilemma for pain physicians. Piriformis Syndrome causes pain due to myofascial trigger point but also due to nerve compression in the piriformis muscle. The compression of nerve within the piriformis produces radiculopathy like pain which mimics lumbar nerve root pain. Diagnostic Piriformis Block remains a standard for diagnosis and modalities like MRI and nerve conduction velocities help it in making a diagnosis of exclusion. **OBJECTIVE:** This is a case report of a patient who was diagnosed Piriformis

Syndrome after multiple back surgeries & conventional interventions thus making it a diagnosis of exclusion. **CASE REPORT:** We are presented with a 55-year-old gentleman with chronic low back pain radiating on right leg till ankle since last ten years. He underwent microdiscectomy L5-S1 which did not relieve his symptoms. He was given fluoroscopic guided lumbar epidural steroid injection by neurosurgeon which did not relieve his symptoms. He was referred to the pain physician who gave fluoroscopic guided Transforaminal right-sided L5-S1 steroid injection which partly relieved his symptoms. After discussing in multidisciplinary team, he was given diagnostic ultrasound guided piriformis muscle injection using steroid and local anesthetic. This relieved his symptoms with reported pain score of 2/10 on Numerical Rating scale. Later he was given Botulinum Toxin 100 IU into his piriformis muscle using ultrasound guided approach which relieved his pain with resumption of routine activities. **DISCUSSION:** Piriformis syndrome is a neuromuscular condition characterized by leg, low back, hip and buttock pain. It is thought to be more common in women than men, often occurring on fourth to fifth decades of life. Sciatic nerve is formed by roots L4 – S3 nerve roots and it passes anteriorly to the piriformis muscle but in some cases sciatic nerve and its branches pass through the piriformis muscle which can cause selective or dermatomal type of pain when a branch is compressed. It is worse in the sitting position and relieved in the standing. Although diagnostic block of the piriformis muscle remained a standard in locating the cause of pain. MRI and NCV testing would help in diagnosing Piriformis syndrome. Although diagnostic block of the piriformis muscle remained a standard in locating the pain generator of the leg. Magnetic resonance imaging and NCV testing would help us differentiate from many diseases ranging from nerve root pain, intervertebral disk pain, sympathetically mediated pain, compression vertebral fracture, spinal cord diseases, and canal stenosis. In our

patient MRI and NCV testing showed normal results which reflect more on a disease such as peripheral neuropathy rather than spinal cord cause. In above-mentioned case, we made piriformis syndrome as our provisional diagnosis because the back pain was aggravated upon sitting. FAIR-test was positive and upon palpation piriformis was tender. Right foot was externally rotated at rest.

Conclusion: Piriformis pain syndrome encompasses many symptoms and overlap with other disease presentation. It can mimic pain and radiculopathy of the leg from any cause. Proper and organized history and physical examination should be accomplished with aid of MRI and NCV testing which can eliminate other disease entity.

Keywords: Piriformis syndrome, botulinum toxin, radiculopathy

3.69

DEPRESSION IN THE ELDERLY IN PAKISTAN: A NARRATIVE REVIEW

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Aim of review: Depression is a major contributor of morbidity and mortality in the elderly. Despite this, it is usually under-reported and untreated. We reviewed current literature on the epidemiology and outcomes of depression in the elderly in Pakistan and discuss the related challenges, solutions, and knowledge gaps.

Methods: Search terms ‘depression’, ‘elderly’ and ‘Pakistan’ were entered into PubMed. All studies including an elderly population (65 years or above) living in Pakistan were included (59 studies). *Results:* Approximately 40.6% of the elderly have depression. Alzheimer’s disease and cancer patients having the highest prevalence. A relatively higher age-group, female gender, poor family and financial support, and lesser education are common demographics. Secondary depression is highest in congestive heart failure, hemodialysis and

type-2 diabetes patients. The risk of depression increases with fewer personal achievements, poor health and poor support. Presenting symptoms include agitation, guilt and somatic symptoms. Suicidality has not been studied. Protective factors include physical activity, acceptance of chronic disease, formal education, and social support, and mediators include social capital. Depression results in reduced treatment compliance for diseases. Symptoms usually get ignored by healthcare because they are difficult to distinguish from physical diseases or are confused with normal grief. Physicians may not be trained to treat depression. Stigma of psychiatric diseases, treatment non-compliance, and preferring faith healers also contributes. Misdiagnosis and under-recognition have resulted in less research as social taboos make sensitive information gathering difficult. Regular screening, training of healthcare professionals, timely psychiatric referrals with increased awareness are needed. Social workers can contribute towards preventative family and community programs. *Conclusion:* Treating depression will improve mental health and comorbidity outcomes by increasing well-being, physical exercise, social health and treatment compliance. Depression is not a normal part of ageing, and should be managed as the massive invisible contributor to mortality that it is.

Keywords: depression, elderly, geriatric depression

3.70

PERCEIVED BREASTFEEDING SUPPORT RECEIVED BY WORKING MOTHERS: A CROSS SECTIONAL STUDY AT A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN

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Background: Approximately 22.5% of the labor force in Pakistan comprises of women. The working mother who chooses to breastfeed her

child has a right to the support and facilities she needs to continue her breastfeeding plan. Support received from the social environment and workplace, and challenges faced, affect the breastfeeding practices of working mothers in Pakistan. We aim to assess the perceived breastfeeding support received by working mothers in Pakistan to highlight the need for social reform and institutional policy to support the decisions of working mothers.

Methods: In this cross-sectional study, the Perceived Breastfeeding Support Assessment Tool (PBSAT) questionnaire (developed and validated for urban working mothers in Pakistan, in the English and Urdu languages), comprising of 29 questions, will be used to assess the different aspects of perceived support received by working mothers currently employed in any capacity at a tertiary care hospital in Karachi, Pakistan. The PBSAT questionnaire will be administered by a student data collector, maintaining social distancing and taking all appropriate safety precautions required for the prevailing pandemic.

Results: We anticipate working women to have varying levels of support for the different factors assessed by the PBSAT questionnaire: social environmental support, which includes health care support, social support and informational support; and workplace environmental support. We will further assess how demographic characteristics, including family structure, number of children, shift work, working hours, proportion of co-workers who are women, socio-economic indicators, availed leaves at childbirth, and employment capacity affect perceived support.

Conclusion: Women are entitled to social behaviors, attitudes, and facilities that respect the autonomy of their decision to breastfeed their child. This study will help identify the extent of support breastfeeding mothers receive in the social or workplace environment and will help identify if additional measures are needed to give them their due rights.

Keywords: breastfeeding, working mothers, support

Keywords: Dengue, ADEM, Steroids

3.71

ACUTE DISSEMINATED ENCEPHALOMYELITIS AS MANIFESTATION OF DENGUE INFECTION IN AN ADULT FEMALE NONRESPONSIVE TO STEROIDS

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Abstract Dengue virus is typically non-neurotropic recently more neurological complications are being reported. Neurological manifestations like encephalitis, myelitis, Guillain-Barré syndrome, hypokalemic paralysis and myositis are common. Acute disseminated encephalomyelitis (ADEM) in dengue is very rare and it may occur during the acute phase or post-infectious phase of dengue. We report a rare case of a 55 years old woman who presented with left sided weakness, two-week history of low-grade relapsing fever and nonspecific headache. She was diagnosed to have ADEM secondary to dengue virus with extensive white matter involvement not responsive to steroids. Learning Point ADEM is an immune mediated syndrome that usually occurs in the acute phase of the illness but may occur during the resolution phase of dengue like in our case. In Pakistan, Dengue fever and Dengue hemorrhagic fever are one of the fastest emerging arboviral infections since 2005. The dengue outbreak trend in 2019 has increased 35 per cent from 2017 where similar increment can be seen in mortalities in 2019. One of the reasons of the outbreak in 2019 was heavy rainfall during the monsoon season which was worse than previous years leading to a number of dengue cases from all parts of the country. The change in climate and environmental factors play major role in the virulence of pathogens and on our immune responses that may result in atypical presentation and outcome of infection.

4.1

GENDER AND AGE GROUP DISTRIBUTION OF FANCONI ANEMIA DIAGNOSED BY CHROMOSOMAL BREAKAGE TEST.

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Introduction: Fanconi anemia (FA) is an inherited bone marrow failure syndrome. The hallmark of FA is defective DNA repair that results in extreme sensitivity to DNA crosslinking agents. The screening laboratory test for this defect involves assessment of chromosomal breakage upon exposure of cells to diepoxybutane (DEB) or mitomycin C (MMC).

Objective: To determine the gender and age group distribution among pediatric aplastic anemia patients with strong positive chromosomal breakage test.

Material & Methods: This was a cross sectional descriptive study covering a period of 6 months from 1st August 2016 to 31st December 2016. This study was conducted at Section of hematology, The Aga Khan University (AKU) Hospital Karachi. Pediatric patients age 1- 18 years with aplastic anemia on bone marrow biopsy was enrolled. Five ml of venous blood in sodium heparin tube collected for detection of FA by chromosomal breakage test using MMC. As per institutional protocol, results are defined as negative (< 1), weak positive (1-5) and strong positive (>5 breakage per cell). Ethical clearance was taken from ethical review committee, AKU. Statistical package for social sciences 21 was used for data entry and analysis. **RESULTS:** One hundred fifty six pediatric patients with aplastic anemia were enrolled. There were 42 (27%) females and 114 (73%) males. The mean age of all patients was 8.99±4.60 years. . Frequency of different age groups was found 72 patients (46%) were in age 1-8 years, 40 patients (26%) were in 9-12 years of age, 44 patients (28%) were found in 13-18 years of age and the

disease was common (8.3%) strong positive chromosomal breaks in the age group of 9-12 years old. Chromosomal breakage test in patients with aplastic anemia was strong positive in 32 (20.5%) while weak positive in 30 (19%) patients. Gender-wise analysis showed 23 of 114 males (20.1%) and 9 of 42 female (21.4%) were positive for chromosomal breakage test which was clinically insignificant.

Conclusion: Chromosomal breakage test was strong positive in (20.5%) among pediatric aplastic anemia patients with male to female sex ratio of 1:1 and the disease was common in the 9-12 years age group.

Keywords: Fanconi's anemia (FA);, Diepoxybutane (DEB);, Mitomycin C (MMC)

4.2

CLINICO-PATHOLOGICAL AND MOLECULAR SPECTRUM OF BIOTINIDASE DEFICIENCY- EXPERIENCE FROM A LOWER MIDDLE INCOME COUNTRY IN SOUTH EAST ASIA

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Background: The aim of this study was to evaluate the clinical, biochemical and molecular analysis of Pakistani patients with Biotinidase deficiency (BD).

Methods: Medical charts, urine organic acid (UOA) chromatograms and Biotinidase (BTD) enzyme activity of 113 suspected BD cases and BTD gene results of BTD enzyme deficient patients presenting at Biochemical Genetics Clinic, AKUH from January 2010 to December 2019 were reviewed. Details were collected on a pre-structured questionnaire. SPSS 22 was used for data analysis. **Results:** BD was found in 33 (29.23%) cases, 28 being profound and 5 partial BD. The median age of BD diagnosis was 171

days (IQR: 81-1022.75) and 300 days (IQR: 25-1540) for the profound and partial BD, respectively. The median BTD levels in the partial BD and profound BD groups were 35 U (IQR: 25.5-62.5) and 15 U (IQR: 11-17) respectively. UOA analysis exhibited sensitivity, specificity and agreement of 52.94%, 86.05% and 76.67% with BTD enzyme activity. The BTD sequencing revealed seven recurrent homozygous single nucleotide variants (SNVs) and small indels. These variants include three frameshift, protein truncating variants and four missense variants. We report two novel protein truncating variants, c.929GinsA, p.S310fs*14 and c.394insA, p.T132Nfs*30 and one missense variant, c.416G>A, p.S139N that had not been reported in BD associated literature and clinical databases.

Conclusions: Thirty-three cases of BD from a single center indicates a high frequency of BD in Pakistan. Late diagnosis emphasize the need for increased clinical awareness and preferably screening for BD in this population.

Keywords: Biotinidase deficiency, Urine organic acid, BTB gene

4.3

CHANGING TRENDS IN FACILITY BASED DELIVERIES AT BASIC HEALTH UNITS AFTER PEOPLE PRIMARY HEALTHCARE INITIATIVE IN TALUKA SINJHORO, DISTRICT SANGHAR: A DESCRIPTIVE STUDY.

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Maternal morbidity and mortality and neonatal morbidity and mortality are important health indicators for assessing health status of a country. Pakistan is having a high maternal mortality and child mortality rate and our country is unlikely to achieve Millennium Development Goals (MDGs) 4 and 5, which are

linked with child health and maternal health respectively.

Rationale: This study will generate evidence regarding benefits of involving private sector in provision of health services at very first Primary Health Care level and how facility based deliveries will be an effective way of decreasing maternal and neonatal morbidity and mortality. Aim: is to improve overall health status of child bearing women of Taluka Sinjhor.

Objectives i) To determine the trends of facility based deliveries before and after PPHI ii) To do secondary data analysis of BHUs in terms of facility based deliveries. Study variables: i) Type of delivery ii) age of delivering women frequency of deliveries, iii) Status of human resource available in BHU's regarding facility based deliveries, iv) referral system. Results: There is an increase in number of facility based deliveries at BHUs after charge over by PPHI. 20% females were under 18, 52% were between 19-24, 23% were between 25-30 and 5% were above 30 years. Rukan Buriro. 61% of women were presenting for first time at BHU Rukan Buriro while 39% women were presenting for second time. *Conclusion:* Study yielded a lot of valuable information and gave a picture of the existing situation. It was found that Peoples Primary Health Initiative had a very positive impact on facility based deliveries at these basic health units and involvement of PPHI has created a positive trend not only at basic health units but also in the minds of local community and it has changed their past concepts regarding facility based deliveries.

Keywords: basic health units, Primary Healthcare, health indicators

4.4

FREQUENCY, RISK FACTORS, TREATMENT AND OUTCOMES OF HYPERINSULINEMIC HYPOGLYCEMIA IN NEONATES PRESENTING WITH PROLONGED HYPOGLYCEMIA IN A TERTIARY CARE HOSPITAL OF KARACHI, PAKISTAN

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Objective: To identify the frequency of hyperinsulinemic hypoglycemia in neonates with prolonged hypoglycemia, its risk factors, treatment and outcome. Study Design: Cross-sectional analytical study. Place and Duration of Study: The department of Pediatrics, neonatal unit of a tertiary care hospital, from Jan 2014 to Dec 2018.

Methodology: Data on infants with prolonged hypoglycemia was collected retrospectively from hospital medical records. Cases of Hyperinsulinemic hypoglycemia were analyzed for demographic characteristics, associated risk factors, and details of time and age of diagnosis along with the management.

Results: Fifty two cases (50.9%) were studied and treated for Hyperinsulinemic hypoglycemia out of 102 with prolong hypoglycemia. Male gender, Pregnancy induced hypertension, maternal diabetes and Small for gestational age were common risk factors associated with hyperinsulinemic hypoglycemia (p

Keywords: Glucose Infusion Rate, Hyperinsulinemic hypoglycemia, Small for gestational age (SGA)

4.5

AWARENESS OF FUTURE RISK OF DIABETES IN WOMEN DIAGNOSED WITH GESTATIONAL DIABETES (GDM)

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Background Gestational Diabetes Mellitus (GDM), a worldwide phenomenon can be defined as; glucose intolerance that is first known or develops in pregnancy. About 95% of patients return to normal glucose status with delivery, but there is a higher risk for future occurrence of pre-diabetes (impaired fasting glucose and impaired glucose tolerance), GDM and type 2 diabetes (T2D) in women who reported GDM in the past history. In Pakistan GDM is a possible threat to both child and maternal health and GDM prevalence is reported as 4.2% to 26%.

Objectives: The objective of this study is to assess Knowledge of GDM and the risk perception for type 2 diabetes in women with gestational diabetes of Karachi. Methods A cross-sectional study was conducted at National Institute of Diabetes & Endocrinology (NIDE), Dow University of Health & Sciences (DUHS) using a validated questionnaire. The responses were scored, and participants were divided into poor knowledge and fair/good knowledge.

Results A total of 101 adult female participated in the study. Mean age of the population fell in the range of 35-39 (26.73%). The mean number of children participants had was 2 (30.69%). However, some women had gone through abortion (5.9%). Many of the approached participants were recently delivered mothers (37.62%) while observing the gestational age majority of women were in their third trimester (14.8%). Five (4.9%) women knew a lot about diabetes before this/last pregnancy. Thirty (29.7%) women had GDM in their previous

pregnancy. Regarding the overall GDM knowledge assessment, 56 women had poor knowledge and 44 women had fair/good knowledge. 32 women knew that GDM can lead to T2D in the future.

Conclusions: Our study concludes that there is a low knowledge and awareness in the participants regarding GDM.

Keywords: Knowledge, Gestational Diabetes Mellitus (GDM), Type 2 diabetes (T2D)

4.6

RELATIONSHIP BETWEEN FOOT LENGTH AND GESTATIONAL AGE IN PAKISTAN

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Preterm births have a high risk of mortality. Therefore, knowledge of the gestational age (GA) at birth is crucial to guide the appropriate management of a newborn. Common methods for estimating GA such as the last menstrual period, ultrasonography, and post-natal Ballard scoring have some limitations. This study aimed to determine the relationship between foot length and GA to develop and validate an equation for predicting GA of Pakistani newborns. We conducted a prospective study in a large obstetric hospital in Pakistan. Data for this analysis were extracted from the hospital files of eligible women by trained study midwives. Midwives were also trained in performing the Ballard examination and taking foot length using a disposable measuring tape within an hour of the birth. The GA was calculated using an android-based GA calculator. Simple and multiple linear regression were used to construct predicting equations for GA. Both the foot length and GA were available for 1,542 cases. The median GA was 34.5 (IQR 4.7) weeks and the median foot length was 7 cm (IQR 1.4).

There was a positive linear relationship between foot length and GA (r^2 81.7%, p -value

Keywords: foot length, gestational age, relationship

4.7

RAOULTELLA SPECIES SEPSIS IN CHILDREN: (CASE SERIES AND LITERATURE REVIEW FROM A DEVELOPING COUNTRY)

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Background: Raoultella spp. is an emerging gram-negative organism with a high antibiotic resistance associated with increased morbidity and mortality. It is increasingly reporting now in children. We describe the clinical spectrum and management option of Raoultella spp. reported in tertiary care pediatric hospital.

Methods: This is a case series of all the reported Raoultella spp. in children admitted at Aga Khan university hospital from the period of Jan 2017 to June 2020. There are clinics-demographics features, antibiotic resistance patterns, site of infection, mortality, and the outcome along with the duration of a hospital is reviewed.

Results: There were twenty-three culture-positive Raoultella spp. identified in 20 children. Most of them were blood $n=12$ followed by trachea, urine, cerebral spinal fluid, skin, and soft tissue. One patient reported Raoultella spp. from more than one site. Among twenty children 11(55%) were female with a median age of 9.5 months. Five (25%) children had bacterial co-infection with Raoultella spp. Five (25%) children had a source of community-acquired infection and fifteen (75%) had a source of hospital-acquired infection with Raoultella spp. The antibiotic analysis showed 1(4.3%) had pan sensitive, 11(48%) had multidrug-resistant, 10(43.4%) had extensive drug-resistant and 1(4.3%) had pan drug-resistant. A combination therapy (triple regimen)

was used in 35% of patients with severe sepsis. The median duration of antibiotic treatment of Raoultella is 7.5 days. Microbiological clearance (sterility) was achieved in 60% of the children. Mortality with Raoultella spp. infection was 8(40%).

Conclusion: We find highly resistant Raoultella spp. associated with high mortality among reported cases with a limited choice of antibiotics and combination therapy. The management of Raoultella spp. is possible and required with a multi-specialty approach.

Keywords: Raoultella species, Enterobacteriaceae, multidrug-resistant

4.8

KANGAROO MOTHER CARE IMPLEMENTATION AND CULTURALLY ACCEPTABLE APPROACHES AT HEALTH CARE FACILITIES AND COMMUNITIES: A FORMATIVE STUDY IN DADU, SINDH, PAKISTAN

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Background: About 20 million infants are born with low birth weight (LBW). Globally, LBW is a common outcome of preterm birth and increases the risk of an infant's morbidity and mortality. Kangaroo Mother Care (KMC) introduced over 30 years ago is evidence-based cost-effective intervention that has impact on reducing neonatal morbidity and mortality in preterm births. It is therefore important to understand and evaluate KMC (skin-to-skin contact) practices in the community.

Objectives: A formative study was conducted to understand the context of communities and facilities with respect to KMC practices, inform culturally appropriate design of intervention and develop effective recruitment and retention strategies for KMC administration.

Method: This purposive sampling based qualitative study was conducted from August to November 2017 in the 3 Taluka's of Dadu, Sindh, Pakistan. We conducted focus group discussions, in-depth interviews and key informant interviews with families of LBW babies, community members, healthcare providers and hospital administrators to identify barriers, enablers and a knowledge base for KMC interventions.

Results: Newborn care practices in communities were subpar. KMC practices were unknown to many families and health care providers in the facility and community. However, families were willing to provide KMC. The purpose of KMC is to understand the concept of KANGAROO MOTHER CARE. Another important finding was that in Dadu the traditional concept of ((Chilla) mother and baby together or rooming in) is prevalent in the community. This provides an ideal time for mother to carry the baby in KMC position. Families were willing to practice KMC for a maximum of 8 hours and intermittent KMC was acceptable.

Conclusion: KMC practices were widely accepted in the community. This formative research provided strategically effective ways for developing strategies by identifying common community practices for LBW babies, barriers and enablers to KMC practices.

Keywords: Kangaroo mother care, Premature/Low birth weight, skin-to-skin contact

4.9

EFFECTIVENESS OF SPECIALIZED NUTRITIOUS FOOD COMBINED WITH CASH TRANSFERS AND/OR BEHAVIOR CHANGE COMMUNICATION TO PREVENT STUNTING AMONG CHILDREN 6-23 MONTHS IN RURAL DISTRICT OF PAKISTAN: A FIVE-ARM CLUSTER RANDOMISED CONTROLLED TRIAL

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Objective: We aimed to assess the effectiveness of wheat soya blend plus (WSBP) provided during pregnancy and lactation on weight gain during pregnancy, reduction of low birthweight (LBW), and improvement in nutritional status in infants at 6 months of age in Thatta and Sujawal districts of Sindh, Pakistan.

Methods: A cluster randomized-controlled trial was conducted in Thatta and Sujawal districts in Pakistan from August 2014 to December 2016. A total of 2030 pregnant women were enrolled in the study. These women and their infants were followed during pregnancy and first 6 months of life. Pregnant women received a monthly ration of 5 kg (i.e., 165 g/day) of WSB + during pregnancy and the first 6 months of their lactation period.

Results: There was no difference in weight gain during pregnancy between the intervention and control groups (n=496, 326.7 g/week 95% CI 315.2-338.1 vs. (n=507, 306.9 g/week, 95% CI 279.9-333.9 P=0.192), after adjustment with different factors. The reduction in the prevalence of LBW was not different between intervention and control groups (n=325, 34.0%, 95% CI 31.7-36.4, vs. (n=127, 34.3%, 95% CI 27.2-41.5, P=0.932). Significant reductions in risk of stunting (n=1319 RR 0.85, 95% CI 0.73–0.99, P = 0.041), wasting (n=1330 RR 0.77, 95% CI 0.65-0.91, P=0.003), and underweight (n=1295 RR 0.77, 95% CI 0.69-0.87, P < 0.001) were observed in infants at 6 months of age in the intervention as compared to the control group. However, no difference was noted on reduction in the risk of stunting among infants at 6 months of age in the intervention and control group (n=1318 RR 0.91, 95% CI 0.78-1.07, P = 0.253) after adjustment. A significant reduction in anemia was noted (n=1328 RR 0.94, 95% CI 0.91-0.98, P=0.002) in infants at 6 months of

age in the intervention as compared to the control group in adjusted analysis.

Conclusions: Provision of WSB + during pregnancy and the first 6 months of lactation is effective in reducing the risk of under nutrition and anemia in infants at 6 months of age. This study can potentially guide the government and donor agencies in investing in nutritional programmes, especially for pregnant and lactating women living in vulnerable settings.

Keywords: Stunting, Supplementation, Social and behavioral change communication

4.10

EFFECT OF LIPID-BASED NUTRIENT SUPPLEMENT-MEDIUM QUANTITY ON REDUCTION OF STUNTING IN CHILDREN 6-23 MONTHS OF AGE IN SINDH, PAKISTAN: A CLUSTER RANDOMIZED CONTROLLED TRIAL

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Objective: The primary objective of this study was to test the hypothesis that the provision of lipid-based nutrient supplement-medium-quantity (LNS-MQ) known as Wawamum will result in a 10% reduction in risk of being stunted at the age of 24 months in the intervention group compared with the control group.

Design: A cluster randomized controlled trial was conducted in Thatta and Sujawal districts of Sindh province, Pakistan. A total of 870 (419 in intervention; 451 in control) children between 6-18 months old were enrolled in the study. All children received standard government health services, while children in the intervention group also received 50 grams/day of Wawamum.

Results: Children who received Wawamum were found to have a significantly reduced risk of

stunting (RR = 0.91, 95% CI; 0.88-0.94, $p < 0.001$) and wasting (RR = 0.78, 95% CI; 0.67-0.92, $p = 0.004$) as compared to children who received the standard government health services. There was no evidence of a reduction in the risk of underweight (RR = 0.94, 95% CI; 0.85-1.04, $p = 0.235$) in the intervention group compared to the control group. Statistically significant reduction in anaemia in the intervention group was also found as compared to the control group (RR = 0.97, 95% CI; 0.94-0.99, $p = 0.042$). The subgroup analysis by age, showed intervention effect is significant in reduction of risk of stunting in younger children of aged 6-12 month (RR = 0.83, 95% CI; 0.81-0.86, $p < 0.001$) and their older peers aged 13-18 month (RR = 0.90, 95% CI; 0.83-0.97, $p = 0.008$). The mean compliance of Wawamum was 60% among children.

Conclusions: The study confirmed that the provision of Wawamum to children 6-23 months of age is effective in reducing the risk of stunting, wasting and anaemia. This approach should be scaled up among the most food insecure areas/households with a high prevalence of stunting to achieve positive outcomes for nutrition and health.

Keywords: Stunting, Nutrient, Supplement

4.11

EFFECTIVENESS OF WHEAT SOYA BLEND SUPPLEMENTATION DURING PREGNANCY AND LACTATION ON PREGNANCY OUTCOMES AND NUTRITIONAL STATUS OF THEIR INFANTS AT 6 MONTHS OF AGE IN THATTA AND SUJAWAL DISTRICTS OF SINDH, PAKISTAN: A CLUSTER RANDOMIZED-CONTROLLED TRIAL

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Purpose: We aimed to assess the effectiveness of wheat soya blend plus (WSBP) provided during pregnancy and lactation on weight gain during pregnancy, reduction of low birthweight (LBW), and improvement in nutritional status in infants at 6 months of age in Thatta and Sujawal districts of Sindh, Pakistan.

Methods: A cluster randomized-controlled trial was conducted in Thatta and Sujawal districts in Pakistan from August 2014 to December 2016. A total of 2030 pregnant women were enrolled in the study. These women and their infants were followed during pregnancy and first 6 months of life. Pregnant women received a monthly ration of 5 kg (i.e., 165 g/day) of WSB + during pregnancy and the first 6 months of their lactation period.

Results: There was no difference in weight gain during pregnancy between the intervention and control groups ($n=496$, 326.7 g/week 95% CI 315.2-338.1 vs. ($n=507$, 306.9 g/week, 95% CI 279.9-333.9 $P=0.192$), after adjustment with different factors. The reduction in the prevalence of LBW was not different between intervention and control groups ($n=325$, 34.0%, 95% CI 31.7-36.4, vs. ($n=127$, 34.3%, 95% CI 27.2-41.5, $P=0.932$). Significant reductions in risk of stunting ($n=1319$ RR 0.85, 95% CI 0.73-0.99, $P = 0.041$), wasting ($n=1330$ RR 0.77, 95% CI 0.65-0.91, $P=0.003$), and underweight ($n=1295$ RR 0.77, 95% CI 0.69-0.87, $P < 0.001$) were observed in infants at 6 months of age in the intervention as compared to the control group. However, no difference was noted on reduction in the risk of stunting among infants at 6 months of age in the intervention and control group ($n=1318$ RR 0.91, 95% CI 0.78-1.07, $P = 0.253$) after adjustment. A significant reduction in anemia was noted ($n=1328$ RR 0.94, 95% CI 0.91-0.98, $P=0.002$) in infants at 6 months of age in the intervention as compared to the control group in adjusted analysis.

Conclusions: Provision of WSB + during pregnancy and the first 6 months of lactation is effective in reducing the risk of under nutrition

and anemia in infants at 6 months of age. This study can potentially guide the government and donor agencies in investing in nutritional programmes, especially for pregnant and lactating women living in vulnerable settings.

Keywords: Wheat soya blend, Stunting, Wasting

4.12

EARLY RECOGNITION AND MANAGEMENT OF MATERNAL SEPSIS IN PAKISTAN

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Introduction: Maternal sepsis is a life-threatening organ dysfunction caused by infection during pregnancy, childbirth and in postpartum period. In Pakistan, 15% of maternal deaths are due to sepsis. A bundled approach to sepsis management is evidenced to decrease significant maternal mortality rates in high-income countries. Utilization of bundled approach to sepsis management can help to reduce maternal mortality rates in LMICs. FAST-M bundle was tested and validated in different health settings of Africa. The FAST-M bundle includes Modified Early Obstetric Warning Score (MEOWS), the FAST-M decision tool to enable early recognition of maternal sepsis and the FAST-M treatment bundle comprised of components of Fluids, Antibiotics, Source-control, assessment of need for Transport and ongoing Monitoring of mother and neonate.

Objective: This study aims to assess the feasibility of introducing FAST-M bundle for early detection and management of maternal sepsis in low resource health-setting of Pakistan.

Methods: An ongoing mixed-method study divided and executed over two phases. The study-site is Liaquat University of Medical and

Health Sciences, Hyderabad. Phase 1 phase of the study will assess that in what circumstances intervention will be feasible to implement by conducting interviews and focused-group-discussions with health-care providers. This will then form the basis of the feasibility testing of FAST-M intervention in Phase 2 of this study.

Results: The study is ongoing and Phase 1 of the study has been initiated. The Key-informant interviews with health-care providers have been conducted. Interim, the stakeholders have provided positive response for acceptance of the FAST-M bundle at their setting. The results for Phase 1 are in analysis process.

Conclusion: Optimizing the utilization of timely interventions can facilitate diagnosis and timely management. There is a need to integrate bundle approach in health-system of Pakistan for early recognition and management to minimize the rate of maternal morbidity and mortality.

Keywords: Maternal sepsis, FAST-M bundle,,low-resource setting

4.13

CHILDBIRTH PRACTICES AT HEALTHCARE FACILITIES IN DISTRICT THATTA: A QUALITATIVE EXPLORATORY STUDY

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Background: Pakistan in last two decades have worked on strategies for promoting safe childbirth practices; accessibility and timely referral for emergency care, increasing the demand of skilled birth attendance, and has towards developing a well-established and functional healthcare system in to Pakistan's healthcare policy, still the mortality rate has not declined as much as it should be. World Health Organization, along with healthcare work force has developed a cost effective and easy "Safe Childbirth Checklist" for countries like Pakistan

and India. To ensure successful implementation of this checklist, it is important to have a baseline survey of childbirth practices and to identify the gaps and challenges faced by healthcare providers in implementing them.

Methods: An exploratory qualitative study was conducted at private and public secondary care hospitals in Thatta, Pakistan. In-depth interviews (IDIs) were conducted from doctors, nurses and midwives to understand their knowledge about childbirth practices and direct clinical observations were made to observe the management and practices in the health facilities. WHO “The Safe Childbirth Checklist” was used to observe the safe practices and gaps in the practices for delivery care. Results: A total of 15 in-depth interviews and 24 observations were conducted. Two overarching themes were identified: (i) Care at the time of Birth to Discharge, and (ii) Referral System Mechanism. Generally, safe childbirth practices were considered important and essential by healthcare providers to lessen the number of mortality but discrepancy was found in what they verbalized and what we observed. The study highlighted the absence of; management of woman coming to facility after trials or with fits, management of newborn infection, bleeding status of mother before discharge, and counseling about family planning. In addition, there was a complete absence of a proper referral system. The challenges were poor coordination and linkages within and between facilities, lack of standardized tools to communicate and document referrals, no referral monitoring systems; and inadequate referral infrastructure.

Conclusion: This formative research provided a unique opportunity to explore the healthcare providers’ practices and knowledge about childbirth practices. Such insights are crucial for the successful implementation safe childbirth checklist in future.

Keywords: save childbirth checklist, Quality of life, emergency care

4.14

SOUND LEVEL AND ITS ASSOCIATED FACTORS IN A NEONATAL INTENSIVE CARE UNIT OF A PRIVATE TERTIARY CARE HOSPITAL, KARACHI, PAKISTAN

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Introduction: Neonates spend their developing months in the NICU, which is often bright, and full of high pitch, high intensity, and undesirable sounds. High sound levels cause alteration in newborns hemodynamics, including increase in HR, RR, BP, and a decrease in SpO₂. It poses risk to the developing brain of neonate, and cause long term neurodevelopmental delays and hearing loss. The American Academy of Pediatrics (AAP) has recommended hourly sound level (Leq) in NICU to be

Keywords: Sound level, NICU, Neonates

4.15

DETERMINANTS OF UNDER-NUTRITION AMONG WOMEN OF REPRODUCTIVE AGE IN SINDH, PAKISTAN: FINDINGS FROM PAKISTAN DEMOGRAPHIC AND HEALTH SURVEY, 2012-2013

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Introduction: Undernutrition is a significant public health concern in the developing world and factors such as high parity and short birth intervals are significant contributors to maternal undernutrition. This study aimed to assess the determinants of undernutrition among women of reproductive age in Sindh, Pakistan, using the national demographic health survey.

Methods: Data of 4050 ever-married women of reproductive age from the Pakistan

Demographic and Health Survey (PDHS) 2012-2013 were analyzed. These included sociodemographic and fertility-related variables. Logistic regression was applied to assess the determinants of undernutrition.

Results: Women having ≥ 5 children were 47% less likely to be undernourished compared to women having < 5 children (OR=0.53; 95% CI: 0.43–0.63). Undernourished women included those who belonged to rural areas (adjusted odds ratio, AOR=3.47; 95% CI: 2.76–4.36), those who breastfed their infants (AOR=1.40; 95% CI: 1.16–1.68), were smokers (AOR=4.35; 95% CI: 2.58–7.34) or worked (AOR=1.22; 95% CI: 1.09–1.47).

Conclusions: The highest rates of undernourishment were found among working women as well as those who breastfed, smoked, or belonged to the rural setting. We recommend that breastfeeding and working women should be provided awareness through teaching sessions and other means to improve their nutritional status as this subset of patients typically require additional calories

Keywords: Under-nutrition, Women, Determinants

4.16

ASSESSMENT OF FOOD HYGIENE BEHAVIORS AND DIETARY PRACTICES FOR CHILDREN 6-24 MONTHS OF AGE IN URBAN SLUM AREAS OF KARACHI, PAKISTAN.

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Objective: To examine environment and hygiene practices of mothers during preparation and handling of weaning food. Introduction Worldwide, diarrheal diseases ranked second cause of death for children under five years. Unhygienic food preparation and inadequate

environment are the major determinants of diarrheal disease and intestinal infections.

Methods An exploratory research study carried out between 2 January to 31 January 2019 which includes 40 home observations and 16 focus group discussions from urban slum areas of Karachi. Households were purposively selected based on having 6-24 months children. A trained research assistant observed mothers for 4-6 hours during handling, preparation and feeding of the weaning food. Samples of drinking water and weaning food were collected for microbiological testing to identify faecal and coliform growth.

Results: The study reveals that inadequate sanitation, poor hygiene and hand washing practices in almost all household. 37.5% E. coli and 95% Coliforms were found in drinking water, whereas, all food samples contained colony counts and 55% had coliforms. During direct observation, 73% kitchens were not clean, 60% unwashed cooking utensils were used, whereas 100% untreated water stored in dirty drums for cooking and drinking purpose. Poor hand washing practices before food preparation was 57.5% and before child feeding 87.5%. Moreover, 97.8% contaminated hands were used during food preparation. Most of the households were unhygienic like there were 80% flies, 45% animal dropping, 65% dirty nappies and 55% visible defecation. Gaps were identified in group discussions towards weaning food, its preparation and hygiene practices. Barriers like shortage of water and unavailability of soap due to financial constraints were recognized for hand washing. Improper spacing and inaccessibility of refrigerators for food storage and shortage of gas for reheating were counted as hurdles to food hygiene behavior.

Conclusion: This study highlight issues and barriers related to unhygienic child feeding practices in the selected areas.

Keywords: food preparation, hygiene practices, Pakistan

4.17

USE OF BOVINE LACTOFERRIN: PARENTAL PERSPECTIVE

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Background: Pakistan has the third highest number of neonatal deaths worldwide. Neonatal infections account for approximately one third of these neonatal deaths. Bovine lactoferrin (bLF) is a naturally occurring protein found in cow's milk, which prevents neonatal infections and improves survival in high-risk, low birth weight newborns. The aim of this study was to identify the optimal method of administering bLF at community level and to generate information that will help towards determining key practices and perceptions that may serve both as enablers or challenges for the use of bLF in small babies.

Method: Exploratory qualitative research design along with Trial of Improved Practices (TIPs) were used to assess the acceptability and feasibility of using Lactoferrin to prevent sepsis in low birth weight infants (LBW) from the local population. Thirty in-depth interviews with mothers, grandmothers and fathers involved in the care of the LBW infants were conducted at the Aga Khan University Hospital, Karachi, Pakistan. Information on key practices and perceptions regarding routine newborn care, feeding practices, care seeking, treatment sought and source of care seeking in LBW babies were sought. TIPs was also carried out following training of care givers on the administration of the lactoferrin (bLF powder, method of mixing with breast milk and administration for two weeks). At the end of the second week, each participant was asked to share their experiences and challenges on administration of Lactoferrin,

Results: In-depth interviews revealed that there were cognizant of low immunity in such babies

making them prone to frequent viral and bacterial infections compared to term babies. Mothers found administration of the lactoferrin supplementation easy and considered it safe. They expressed satisfaction and found that their babies gained weight steadily and did not encounter any illness during the 28 days of life.

Keywords: Bovine Lactoferrin, low birth weight, Sepsis

4.18

COMPARISON OF PERIOPERATIVE ANALGESIA BETWEEN INTRAVENOUS PARACETAMOL AND FENTANYL FOR RIGID HYSTEROSCOPY

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Objective: To compare efficacy of intravenous paracetamol and fentanyl for intra-operative and post-operative analgesia in patients undergoing for diagnostic and therapeutic rigid hysteroscopy.

Methods: Prospective Randomized Control Trial was conducted at Aga Khan University Hospital, Karachi, from October 2016 to June 2017, patients comprised of ASA-I, II, aged 18-65 years, scheduled for hysteroscopy. Anesthesia induction technique was standardized and analgesia in group-P, paracetamol 15 mg/Kg administered 15-30 minutes before surgery and in group-F, fentanyl 2 mcg/kg administered at induction of anesthesia. Intraoperative pain was assessed by changes in heart rate, systolic, diastolic and mean arterial blood pressure and postoperative pain was assessed by visual analogue scale. SPSS 19 was used for data analysis.

Results: Sixty patients scheduled for hysteroscopy were allocated into two groups. Patient's ASA status and demographics were found relatively similar in both groups except for age differences ($p < 0.011$). In paracetamol

group, mean SBP at 10,15, 20, 25 and 30 minutes and mean DBP at 20, 25 minutes & Mean arterial blood pressure at 20 minutes were statistically significant ($p < 0.05$) among the groups. Although, the rescue analgesia was needed in 3 patients on arrival in recovery room in each group.

Conclusion: Intravenous paracetamol offers similar analgesic efficacy to fentanyl for rigid hysteroscopy in ambulatory surgery. However, paracetamol efficacy and safety profile enable narcotic sparing analgesia for short surgical procedure.

Keywords: hysteroscopy, analgesia, general anesthesia

4.19

EPIDEMIOLOGY, CLINICAL CHARACTERISTICS AND OUTCOMES OF COVID-19 IN PEDIATRIC PATIENTS FROM KARACHI, PAKISTAN

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Introduction: The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) pandemic has also effected children directly. There have been increasing reports on the epidemiology of COVID-19 in children but information from developing countries is lacking. The present study elucidates disease characteristics of COVID-19 in children presenting to the Aga Khan University Hospital (AKUH), Karachi, Pakistan.

Methods: This is a retrospective review of medical records of pediatric patients presenting to AKUH Karachi. The patient population comprised of children less than 18 years, who had a positive SARS-CoV-2 reverse transcription-polymerase chain reaction assay (RT-PCR) assay and were subsequently

admitted between March to July 2020. Results: Among 60 Covid-19 positive patients, 42 (70%) children were female and a majority 20 (33.3%) were between 11-18 years of age. About 56 (93%) patients acquired Covid-19 infection through community transmission. 8 children (13.3%) were asymptomatic, whereas 35 (58.3%), 12 (20%), and 5 (8.3%) had a mild, moderate and severe infection respectively. 5 (8.3%) patients also had multi-system inflammatory syndrome (MIS-C). Respiratory symptoms were prevalent in 21 (35.5%) patients and included cases of pneumonia 5 (8%) and acute respiratory distress syndrome (ARDS) 3 (7%). Malignancy in 7(11%) was the most prevalent comorbidity. Respiratory support was required for 15 (25%) patients. Deaths were 5 (8%). Most children, 52 (87%), were discharged with a median length of hospital stay of four days (range 2-8 days). Tocilizumab was administered to 2 (3.3%) patients with severe ARDS. A median of 16.5 (9.5, 22.5) days was observed as the time is taken to become COVID-PCR negative in 22 children.

Conclusion: This case series in children, reports the burden of Covid-19 infections in Karachi, Pakistan. The disease had a diverse clinical spectrum with infants and healthy children having milder disease. Co-morbidities may play an important role in disease severity.

Keywords: Covid-19, children, clinical spectrum

4.20

OBSTETRIC TRIAGE IMPROVEMENT PROCESS USING DONABEDIAN MODEL OF QUALITY CARE --A QUALITY IMPROVEMENT INITIATIVE

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Introduction: Obstetric triage has emerged as one of the most critical perinatal service innovations in the last 15 years. In traditional obstetric triaging, patients are seen on the first

come first serve basis. The most important issues related to the traditional process are patient dissatisfaction, prolonged waiting times and increased morbidity and mortality. Therefore, priority -based care with determination of acuity is essential for effective and timely assessment of obstetric patients and such systematic care processes are lacking in Lower middle -income countries.

Objective: This study was conducted in a tertiary care hospital of Pakistan to document and publish the impact of obstetric triage model used to improve patient care process in Labor and Delivery triage area. *Method:* A quality improvement process using Donabedian Model was implemented with changes in triage system, guidelines, forms, staff training and introduction of obstetric triage acuity tool. All the data recorded for pre audit in quarter 1 of 2018 and post implementation audit in Quarter 2 of 2019 was used to explore the impact of quality improvement on outcome measures of waiting time and length of stay. *Results:* The results of obstetric triage quality improvement project showed significant reduction in the average length of stay and waiting time in post implementation phase as compared to results during preaudit phase with traditional model. There was improvement in the length of stay from 4 hours to 60 minutes and a 5 minutes waiting time was achieved in 65% patients versus 6%. There were no reported morbidities from the L& D triage in post -implementation phase.

Conclusion: This project was successfully implemented in our hospital and resulted in system improvement with better length of stay and improved waiting time. *Recommendation;* Similar model for effective obstetric triage management can be considered for its national uptake and by other care providers in LMICs to consider adapting these strategies in their institutions

Keywords: Obstetric Triage, Acuity Tool, Donabedian Model

4.21

THE IMPACT OF THE COVID-19 PANDEMIC ON IMMUNIZATION CAMPAIGNS AND PROGRAMS: A SYSTEMATIC REVIEW

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Background: To assess the impact of COVID-19 pandemic on immunization programs and their coverage across the globe and identify factors leading to the disruption. Consequently, all countries regardless of socio-economic status are experiencing a rapid decline in childhood immunization coverage rates.

Methods: A systematic search strategy was employed on PubMed, Embase and WHO COVID-19 Database from Dec/2019 till 15/Sept/2020. Studies were considered eligible if they evaluated the impact of the pandemic or identified factors associated with disruption of immunization programs. Two review authors independently assessed studies for inclusion, assessed quality and extracted the data. Title has been registered with PROSPERO under the identifier # CRD42020182363 *Results:* A total of 3,588 records were identified initially and 17 observational studies met the eligibility criteria. Out of the 17 included studies, 10 explored immunization campaigns in high income countries (HICs) and remaining seven in low- and middle-income countries (LMIC). Decline in vaccination coverage and total number of vaccines administered led to children missing out on their vaccine doses during the COVID-19 pandemic. Polio, an existing public health challenge, was severely affected. An approximate fourfold increase in polio cases was observed during the COVID-19 lockdown. Factors like fears of being exposed to the virus at health care facilities, restriction on city-wide movements, shortage of workers and diversion of resources from child health to address the

pandemic affected the coverage of the vaccination programs.

Conclusion: As the world re-strategises for the post-2020 era, policymakers must remember that one should never let a crisis go to waste as they provide an opportunity to establish guidelines and allocate resources for the future instances. High-quality supplementary immunization activities and catch-up programs need to be established to address gaps during the pandemic era.

Keywords: Immunisation, Systematic Review, Meta Analysis

4.22

MICROBIAL SPECTRUM AND ANTIMICROBIAL SUSCEPTIBILITY PATTERN IN 20,799 URINE CULTURE ISOLATES AMONG PEDIATRIC POPULATION FROM A NATIONWIDE NETWORK OF AKUH LABORATORIES OVER A PERIOD OF 5 YEARS (2015-2019).

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Introduction: Globally, the prevalence of Urinary tract infections (UTI) in paediatric age group ranges from 2-20% resulting in about six million outpatient visits and 300,000 admissions. Treatment is mostly empirical, with antimicrobial resistance (AMR) is an emerging problem.

Objectives: To describe the spectrum of organism and AMR pattern in urine culture specimens across AKUH laboratory network during a five year period from 2015 to 2019. **METHODS:** Data was extracted from electronic records for all the urine culture samples across the AKUH laboratory network for pediatric population between 2015-2019. Samples with single growth of organisms greater than 10⁵ cfu/ml were considered positive.

Results: There were a total of 20,799 samples which were positive. Nearly three quarters (71.2%) of the samples were from females. Mean age affected was 4 ± 1.5 in years. Neonates (birth to 29 days) were 10.4%, 9.8% Infant (30 Days to 12 Months), 6.7% Toddler (13 Months to 2 Years), 54.5% belong to childhood age group (2-11 years) and 18.6% were adolescent (12 to 18 years). For 76.8% samples method of urine collection was unknown. Three fourth of the isolate (n=16602) were gram negative and remaining (n=4171) were gram positive isolates. E.coli constituted 56.5% of isolates followed by Enterococcus 13.5% and K.Pneumoniae 12.2%. Prevalence of resistant organism to ciprofloxacin was 42.5% (n=8921) and ceftriaxone was 45% (n=9355). **CONCLUSION:** E coli were the major isolate identified among more than half of the positives. Nearly half of the isolates were resistant to ceftriaxone and ciprofloxacin.

Keywords: Paediatric UTI, microbial resistance, 5 years

4.23

THE DIFFERENCES IN CLINICAL PRESENTATION, MANAGEMENT, AND PROGNOSIS OF LABORATORY-CONFIRMED COVID-19 BETWEEN PREGNANT AND NON-PREGNANT WOMEN: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Coronavirus disease 2019 (COVID-19) pandemic has affected millions of people across the globe. Previous coronavirus outbreaks led to worsened symptoms amongst pregnant women, suggesting that pregnant women are at a greater risk. **Objectives:** Our aim is to investigate the differences in clinical

presentation, management and prognosis of COVID-19 infection in pregnant and non-pregnant women. *Methods:* We ran a Search on electronic databases and analysis of relevant articles was done using Revie Manager 5.4.

Results: The review seven studies comprising 91,788 women (8349 pregnant and 83,439 non-pregnant) and most of the data was driven from a single large study. The risk of experiencing symptoms like cough (RR:0.77; 95%CI:0.73-0.82), headache (RR:0.62; 95%CI:0.59-0.65), fatigue (RR:0.60; 95%CI:0.38-0.96), fever (RR:0.65; 95%CI:0.62-0.69), shortness of breath (RR:0.79; 95%CI:0.75-0.84), diarrhea (RR:0.49; 95%CI:0.45-0.54), and expectoration (RR:0.45; 95%CI:0.21-0.97) were lower in pregnant women compared to non-pregnant COVID-19 infected women. Pregnant women with COVID-19 infection had a greater frequency of comorbidity, such as cardiac disease (RR:1.28; 95%CI:1.13-1.45), diabetes mellitus (RR:1.57; 95%CI:1.39-1.77), and chronic respiratory diseases (RR:1.38; 95%CI:1.25-1.52), compared to non-pregnant COVID-19 infected women. The risk of ICU admission (RR:1.61; 95%CI:1.33-2.59) and receiving mechanical ventilation (RR:1.87; 95%CI:1.35-2.59) was significantly higher amongst pregnant women.

Conclusions: Although the risk of experiencing clinical symptoms of COVID-19 was higher among non-pregnant women, COVID-19 infected pregnant women had a greater frequency of risk factors (cardiac illness, diabetes mellitus and respiratory illness) and greater frequency of ICU admissions with mechanical ventilation compared to non-pregnant COVID-19 infected women. More well conducted studies from varying contexts are needed to draw conclusions.

Keywords: COVID-19, Pregnant, Non-pregnant women

4.24

DIFFERENCES IN PREGNANCY AND PERINATAL OUTCOMES AMONG SYMPTOMATIC VERSUS ASYMPTOMATIC COVID-19-INFECTED PREGNANT WOMEN: A SYSTEMATIC REVIEW AND META-ANALYSI

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Background: Trends of SARS-CoV-2 in pregnant individuals seem to differ compared to previous coronavirus outbreaks. The aim of this review is to assess differences in pregnancy and perinatal outcomes among symptomatic and asymptomatic COVID-19 infected pregnant women.

Methods: We ran a search on PubMed, Embase, the WHO COVID-19 database, Google Scholar, MedRxiv and BioRxiv to identify studies reporting COVID-19 in pregnancy. Two reviewers independently evaluated eligible studies, extracted information on pre-defined criteria, and assessed the methodological quality using NHLBI quality assessment tools. Meta-analysis was performed and risk ratios (RR) and mean difference (MD) with 95% confidence intervals (CI) were calculated using Review Manager 5.4.

Results: We included nine articles reporting data on 913 pregnancies; with 598 symptomatic and 315 asymptomatic pregnant women. There was no significant difference in mean age, gestational age and body mass index between the two groups. The meta-analysis suggested hypertensive COVID-19 infected pregnant women were more likely to be symptomatic (RR:9.28; 95%CI:1.38-62.31) whereas obese pregnant women were more likely to be asymptomatic (RR:0.62; 95%CI:0.41-0.92). There was no difference in delivery methods

(vaginal: RR:1.22; 95%CI:1.00-1.48 or caesarean-section: RR:1.02; 95%CI: 0.67-1.57) between symptomatic and asymptomatic pregnant women. The mean birthweight(g) (MD:-240.51; 95%CI:-393.24 to -87.78), was significantly lower, while risk of low birthweight (RR:2.32; 95%CI:1.07-5.04) was higher in symptomatic pregnant women with a greater requirement for maternal ICU admission (RR:6.97; 95%CI:1.89-25.75) and mechanical ventilation (RR:12.81; 95%CI:2.58-63.5).

Conclusion: The review found that hypertensive pregnant women were more likely to be symptomatic and obese to be asymptomatic. The mean birthweight was significantly lower in symptomatic women and their risk of LBW infants higher as compared to asymptomatic COVID-19 infected pregnant women, while there was no difference in other pregnancy related outcomes. More adequately conducted studies with adjusted analysis comparing symptomatic and asymptomatic COVID-19 infected pregnant women are required from varying contexts for any conclusive findings.

Keywords: Coronavirus, Pregnancy, Clinical presentation

4.25

EPIDEMIOLOGY OF POSTPARTUM DEPRESSION IN PAKISTAN: A REVIEW OF LITERATURE

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Introduction: Postpartum depression affects 12.5% women on average and is one of the most common complications of pregnancy. Among Asian countries, Pakistan has the highest prevalence rate that is 28%- 63%. The consequences of PPD go beyond the mother and affect the partner and the child as well and can even lead to infanticide and maternal death, often by suicide. Besides, not all women are assessed for PPD or receive its treatment despite of several treatment options available.

Objective: This literature review aims to explore the risk factors, preventive measures and treatment options for women with postpartum depression especially in Pakistan.

Methods: Comprehensive and systematic literature search was undertaken by using various electronic research databases. Studies were eligible for this review if they were published in last twenty years in English language and focused on epidemiology, risk factors, consequences, prevention and treatment of PPD especially in Pakistan.

Results: Postpartum depression is a prevalent illness, with complications that are severe. The causes can be situational or maternal and thus, recommended prevention is to reduce the burden related to public health. If primary prevention fails, programs for screening to detect early can be well thought-out for timely treatment. If there is any progress in the disease, implementation of antidepressant, effectual psychotherapy besides the recommended diet are beneficial. Exercise and appropriate sleep as well are also recommended for the patients. Moreover, barriers to each level of prevention exist due to maternal factors, healthcare factors and socioeconomic factors in Pakistan.

Conclusion: Results suggest that women do not proactively seek help when suffering from postpartum depression due to many factors, the root cause of which is lack of awareness especially in developing countries like Pakistan. Since this ignored illness can lead to serious complications, the issue should be addressed to promote public health.

Keywords: Postpartum depression, maternal health, epidemiology

4.26

PREVALENCE OF INFANT MALNUTRITION BY PHENOTYPES OF BIRTH WEIGHT AND GESTATIONAL AGE—AN ANALYSIS OF LONGITUDINAL DATA FROM THE AMANHI-ALL CHILDREN THRIVE COHORT.

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Background: A heavy burden of undernutrition disproportionately affects children with lower socioeconomic status, and medical vulnerabilities such as prematurity, small for gestational age (SGA) and low birth weight (LBW). resulting in an estimated 13 million deaths globally. The Alliance for Maternal and Newborn Health Improvement (AMANHI) biorepository cohort was established to answer questions around adverse pregnancy outcomes, child growth and development in South Asia.

Objectives: To determine the prevalence of underweight, stunting and wasting at birth, 3-months, 6-months and 1-year-old among preterm, LBW and SGA infants from the Pakistan arm of the AMANHI-ACT cohort.

Methods: Anthropometric measurements were taken at birth, 3-, 6- and 12-months of age from children belonging to two peri-urban sites, namely, Ibrahim Hyderi and Ali Akber Shah, Karachi. Standardized techniques were used in accordance with the WHO Multicenter Growth Reference Study.

Results: A total of 2500 pregnant women were enrolled, resulting in 2352 live births from which 1178 were included. Overall underweight, stunting and wasting was prevalent in 23% (254/1105), 22% (233/1154) and 15% (155/767) at birth, 28% (274/979), 25% (245/980) and 10% (96/981) at 3-months, 27% (276/), 24% (245/) and 12% (118/) at 6-

months and 34% (299/879), 36.5% (321/879) and 20.3% (177/871) at 1 year of age. In preterm and SGA infants, prevalence of underweight, stunting and wasting was highest at birth and was 100% (40/40), 83% (35/4) and 69% (25/36) respectively. A similar pattern was observed among preterm and LBW infants at birth. In term and SGA infants, the percentages were highest at 1 year of age, however, for term and LBW infants, the trends were higher at birth.

Conclusion: Our study demonstrated a high prevalence of infant malnutrition at 1 year of age, which was seen to be higher in those born preterm, SGA and LBW. Timely screening at 1 year of age, may contribute positively towards an early identification and treatment of malnutrition.

Keywords: Malnutrition, SGA, LBW

4.27

PAKISTAN'S COMMUNITY-BASED LADY HEALTH WORKERS (LHWS): CHANGE AGENTS FOR CHILD HEALTH?

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Background: In Pakistan's high child mortality context, a large-scale Lady Health Worker (LHW) Program raises the need to look at whether LHWS are delivering their key mandate as agents of change for child health. This study examines the quantity and quality of LHW interactions with mothers for child health and their impact on mothers' knowledge and child health practices.

Methods: 1,968 mothers of children <2 years (n=1968) were interviewed through a cross-sectional survey in two rural districts of Pakistan focusing on immunization, nutrition, and early child illness. Data on frequency of LHW's visits; services provided, specific services related to routine immunization (RI),

nutrition and child illness, and maternal knowledge and practices were analyzed using median values for continuous variables and counts and percentages for categorical data.

Results: Monthly visits by LHW were reported by only 63% of LHW covered households. During LHW monthly encounters, Oral Polio drops administration was most frequently reported (77%), followed by RI (59%), breastfeeding counseling (20%), child illness management advice (18%), growth monitoring (9.5%), while none reported receiving hygiene counseling. Although LHWs were reported to be the main information source for child health; limited impact of LHW-mother interaction was seen on maternal knowledge and practices- 76% mothers reported receiving ORS packets from LHWs but only 27% knew of correct usage, only 34% washed hands before feeding children, less than a third could correctly recall early signs of pneumonia and awareness of Vaccine Preventable Diseases other than Polio ranged from 42%-9% only.

Conclusion: Although LHWs are main information source for child health services but infrequent, poor quality household encounters indicate ineffective delivery on the key mandate of community-based child health. Policy debate instead of focusing on scaling up or downsizing the program, should prioritize quality and supervision to improve value for money of a critical community resource

Keywords: child health, Community Health Workers, Performance

4.28

OPERABILITY, ACCEPTABILITY, AND USEFULNESS OF A MOBILE APP TO TRACK ROUTINE IMMUNIZATION PERFORMANCE IN RURAL PAKISTAN: INTERVIEW STUDY AMONG VACCINATORS AND KEY INFORMANTS

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Introduction: There has been a recent spate of mobile health (mHealth) app use for immunizations and other public health concerns in low- and middle-income countries. However, recent evidence has largely focused on app development or before-and-after effects on awareness or service coverage. This study aimed to provide the qualitative experiences of frontline health staff and district managers while engaging with real-time digital technology to improve the coverage of routine childhood immunization in an underserved rural district in Pakistan.

Methods: An Android-based app was iteratively developed and used for a 2-year period in 11 union councils of an underserved rural district with poor immunization coverage. We used iterative methods to examine the acceptability and operability of the app, validity of the collected data, use of the collected data. We collected barriers and enablers for uptake of app. In-depth interviews were conducted with vaccinators and purposively selected key informants, involved with Expanded Program for Immunization. Findings were triangulated in line with three broad research areas.

Results: Digital immunization tracking was considered acceptable by vaccinators and district managers. Real-time immunization data used to monitor vaccination volume, track children with incomplete vaccinations, develop outreach plans, correct existing micro plans, disburse fuel allowance for outreach sessions. The validity of app data was perceived to be superior to that of data from manual records.

Conclusions: Embedding digital technology into mainstream health systems relies on use by both end users and district stakeholders. Ease of operability, satisfaction with data reliability, personal recognition, links to field support, and empowerment are powerful enablers, whereas improved coordination as result of easy, transparent data access can be an important by-

product of digitalization. Findings are relevant not only for wide-scale implementation of immunization tracking apps in Pakistan but also for informing use of digital technology for results-based delivery by frontline health workers.

Keywords: mHealth, immunization, digital technology

4.29

LOW VACCINATION IN RURAL SINDH, PAKISTAN: A CASE OF REFUSAL, IGNORANCE OR ACCESS?

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Introduction: Pakistan is suffering from low routine childhood immunization (RI) coverage, meriting a systematic examination of community acceptance and barriers towards vaccination with a view to inform responsive strategies. We examine community perspectives on RI for children 0–23 months of age, unveiling community beliefs, health systems barriers and willingness to actively seek immunization services.

Methods: A qualitative study was conducted in the rural under-resourced district of Tando Muhammad Khan of Pakistan's Sindh province. 12 focus group discussions were conducted to probe immunization perceptions and experience: 6 with female caregivers of children <2 year and 6 with Lady Health workers (LHWs). An adapted Health Access Livelihood Framework guided data collection, qualitative data were thematically coded using inductive analysis and findings were triangulated across caregivers and LHWs. *Results:* Caregivers were either indifferent to vaccination or had an unmet need to know more, with few reporting outright refusals to vaccinate. Caregiver beliefs were characterized by a lack of awareness and a

confusion of RI with Polio and a fear of side effects. Religious beliefs were not major considerations. Second, health systems issues of hurried and infrequent vaccination encounters, driven by LHWs' poor capability to handle the vaccine counter-narrative, interrupted vaccine delivery to villages. These challenges were exacerbated by interruptions due to the Polio campaigns. Third, time and public transport constrained access to the Extended Program on Immunization centers. However, female caregiver usually took decisions on vaccination without recourse to male household members, with child's health viewed to be the main concern.

Conclusions: An ineffective vaccination narrative, low LHW capability and prioritization of RI, intermittent outreach vaccination encounters, overshadowing of RI activities by Polio campaigns limit the uptake of childhood RI services. We contend that critical attention is required for post-immunization messaging, client-centric services, positive immunization experiences and the availability of vaccination encounters.

Keywords: Vaccine hesitancy, access, Routine immunization

4.30

COMPARISON OF EXECUTIVE FUNCTION (EF) TOOL BETWEEN 48 MONTHS AND 60 MONTHS OF AGE

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Introduction: The term executive function refers to a wide variety of processes, such as goal-setting, formulating hypotheses, planning, focusing and sustaining attention, generating strategies, behavior monitoring, problem-solving, cognitive flexibility, working memory, response inhibition and emotion control. These functions involve, therefore, components of both

a cognitive and emotional nature, and they play a key role in the regulation of goal-oriented behavior.

Objectives: To assess the comparison of executive functioning tool at 48 and 60 months of age by using AMANHI (Alliance Maternal and New Born Health Improvement) –ACT (all Children Thrive) Cohort study. *Method:* Study setting: This observational cohort study has enrolled 2500 pregnant women and followed them for their outcome. Study is conducted in peri-urban settlement of Karachi (Ibrahim Hyderi). The pregnant women were identified through 2-3 months surveillance and offered enrolment in the study. Consented women were underwent an ultrasound scan and a questionnaire was filled to collect demographic and socioeconomic information. In this study, Child followed at age of 48 months and 60 month to assess neurodevelopment by using EF tool. Four domains; “Fruit Stroop Game”, “GO / NO GO”, “Knock /Tap Game”, “Forward Word Span Game” were assessed by trained and standardized staff. Consented mother and index child were invited to take part in this study.

Results/Recommendation: Out of 2500, 246 and 300 children reached at the age of 48 and 60 months respectively. 410 children from age 48 and 625 children from 60 months of age are assessed. The study is in progress and after completion of data collection comparison of executive functions at age of 48 and 60 months will be developed to assess sensitivity of tool at specific tools. On the basis of findings, further recommendations will be made.

Keywords: executive function, Comparison, Age Group

4.31

MATERNAL DEPRESSION AFFECTS CHILD DEVELOPMENT

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Introductions: Socioemotional and cognitive development of children are affected by certain factors of which maternal depression is important but is often overlooked. Postpartum depression in Pakistan is highest among Asian countries, ranging from 28 to 63 percent. In the last few decades, child development has been a focus of research and impact of maternal depression on child development is regarded as a societal concern by early childhood developmental researcher. The main objective of this study is to assess the association between maternal depression and early childhood development as assessed at different time points.

Methods: This is a longitudinal cohort study of 2500 women who were enrolled before 20 weeks of gestation of the index pregnancy. This study was conducted at Ibrahim Hyderi, located in Bin Qasim town in Karachi, Pakistan. We present the data from April 2014 to June 2020. Participants were administered a sociodemographic questionnaire and Patient Health Questionnaire (PHQ-9) at baseline. The PHQ-9 is used to assess depression in mothers. Home visits were made at 6, 12 and 18 months postpartum during which PHQ-9 was administered and WHO milestones were assessed for child development.

Results /Recommendation; Data will be analyzed to assess the association between maternal depression and child development by using Logistic regression analysis using univariate and multivariate modeling. . PHQ9 scores will be compared with six domains of WHO milestone to formulate an association. Maternal depression is always considered as risk factor for child outcomes which effects cognitive function, social and academic performance and poor physical outcomes. These effects can be prolonged and may continue into adulthood. Interventions to treat and manage maternal depression may serve to lessen the impact on the cognitive and physical development of children.

Keywords:maternal depression, affects, child development

4.32

ASSOCIATION OF TRINUCLEOTIDE REPEAT POLYMORPHISMS CAG AND GGC IN EXON 1 OF THE ANDROGEN RECEPTOR GENE WITH MALE INFERTILITY: A CROSS-SECTIONAL STUDY

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Introduction: Infertility is a global problem that brings with serious sexual and social consequences that strain the health sector and society. The expansion of CAG & GGC repeats in androgen receptor (AR) gene Ensembl number; ENSG00000169083 may leads to reduced fertility. Our objective was to determine association of CAG and GGC repeats with altered sperm parameters in male infertile subjects. **Materials and Methods:** It was a cross sectional study conducted at Aga Khan University, Karachi Pakistan. A total of 376 males were recruited, out of which group A (N=241) and group B (N=135) comprised of subjects with normal and altered sperm parameters respectively from 18 to 60 years. Numbers of CAG and GGC repeats were determined by using PCR amplification and sequence analysis using Molecular Evolutionary Genetic Analysis (MEGA) software version 6.0. Statistical analysis was done using SPSS version 20 and p-value of < 0.05 were considered significant.

Results: The mean androgen receptor gene CAG repeats were significantly longer in males with altered sperm parameters as compared to male subjects with normal sperm parameters (p< 0.001). There was no significant difference found for GGC repeats for subjects with altered sperm parameters.

Conclusions: Longer CAG length corresponded to greater severity of spermatogenic defect and may lead to subfertility recommendations.

Keywords:Androgen receptor, trinucleotide repeats, male infertility

4.33

SCHOOL-BASED INTERVENTIONS TO PROMOTE PERSONAL AND ENVIRONMENTAL HYGIENE PRACTICES AMONG CHILDREN IN PAKISTAN: PROTOCOL FOR A MIXED METHODS STUDY

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Background: Poor personal hygiene and inadequate sanitation practices among children leads to communicable diseases. There remains a gap in the holistic assessment of school children's hygiene literacy, practices, and effectiveness of school-based hygiene interventions in Pakistan. Therefore, a school-based intervention project has been designed to promote hygiene practices for primary grade children.

Methods: Using quasi-experimental design, this study will be conducted in schools located in an urban squatter settlements in Pakistan. To assess children and their mothers' hygiene status, a survey will be held in the pre-intervention phase. This phase also includes qualitative exploration of key stakeholders (mothers, teachers, health & education authorities representatives') perceptions about the factors facilitating and impeding the adaption of hygiene behaviors among school children. In-depth guides and focus group discussion tools will be used for this purpose. This will be followed by a multi-component intervention phase with behavior change strategies to improve children's and mothers' hygiene literacy and behaviors. The

post-intervention phase will assess the intervention effectiveness to enhance hygiene knowledge and practices among school children and mothers, alongside exploration of mothers and teachers' insights into whether or not the intervention has been effective in improving hygiene practices among children. Paired t-test will be applied pre and post-intervention to measure the differences between the mothers and children's hygiene literacy and knowledge scores. Similar test will be performed to assess the differences in children's hygiene knowledge and practice scores, pre and post-intervention (75 = excellent). Thematic analysis will be carried out for qualitative data.

Conclusion: Multi-component intervention aimed at improving hygiene knowledge and practices among primary school children offers an opportunity to design and test various behavioral change strategies at school and in home settings. The study findings will be significant in assessing the intervention's effectiveness in improving children's overall hygiene.

Keywords: School-based intervention, Hygiene, Primary grade school children

4.34

NEURO-DEVELOPMENT ASSESSMENT OF CHILDREN IN LONG TERM COHORT STUDY

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Introduction: The Bayleys scale of infant and toddler development BSID III is an directly child administered instrument that assesses the developmental functioning of infants and young children. Its primary purpose is to identify children with developmental delay and to provide information for intervention planning Research sites in Karachi IH (Ibrahim hydri) AG (Ali Akbar shah Goth). *Methodology:* At our

field site we are assessing following 3 sub-domains of BSID. Cognitive, Language (receptive and expressive), Motor (fine motor and gross motor)

Cognitive: The cognitive scale include item that assess sensory motor development, exploration and object manipulation related concept formation, memory and other aspects of cognitive process. *Language:* - Language scale is composed for receptive communication, and expressive communication skills. *Receptive:* The receptive communication subtest include item that assess preverbal behaviors vocabulary development, such as being able to identify objects and pictures that are referenced. *Expressive:-* The expressive communication subtest include item that assess preverbal communicating such as babbling, gesturing, joint referencing, such as naming objects, pictures and attributes. *Motor:-* The motor scale is divided into the fine motor subtest and the gross motor subtest. *Fine motor:* - Fine motor skills associated with perceptual-motor integration, motor planning, and motor speed are including in fine motor subtest. Item measured young children skill related to visual raking, reaching, object manipulation, and grasping. Children functional hand skills and responses to tactile information are also measured. *Gross motor:-* The gross motor primary measured the movements of the limbs and torso item assess sitting, standing dynamic movement, including locomotion and coordination, balance and motor planning.

Conclusion: Bayley assessment is a very important and useful key to assess the children neurodevelopmental skills in a very easy and smooth way.

Keywords: Neuro-development, Assessment, Children

4.35

NEWBORN SCREENING FOR CONGENITAL HYPOTHYROIDISM THROUGH DRIED BLOOD SPOT IN LOW MIDDLE INCOME COUNTRY(LMIC):EXPERIENCE FROM A TERTIARY CARE CENTER.

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Introduction: Neonatal screening can be used as a preventive strategy for various congenital disorders. Congenital hypothyroidism (CH) is one of the most common preventable and treatable causes of intellectual disability, and its delayed diagnosis can lead to disastrous consequences. Based on the nature of the disease, CH is considered as one of the target diseases, which requires screening worldwide. CH occurs in approximately 1:3000-1:4000 neonates but the data varies considerably all over the world. Pakistan lacks a national programme for newborn screening for any inherited disease, but at local level Aga Khan University Hospital (AKUH) and few others are doing newborn screening for Congenital Hypothyroidism (CH). Since April 2019 CH screening is being done through dried blood spot (DBS). **Objective:** To see the proportion of newborn babies with Congenital Hypothyroidism in our population through a newborn screening programme done through dried blood spot

Methods: It was a descriptive, cross sectional study. Data of all the newborn babies was collected who were born between April 2019 to October 2020. The DBS specimens are collected from newborns delivered at AKU between 48- 72 hours of life and after 24 hours of birth in case of early discharge. Quantitative determination of thyroid stimulating hormone (TSH) is carried out by Fluorometric enzyme immunoassay. The TSH results $\geq 10 \mu\text{IU/ml}$ are taken as screen positive. Values up to 10

$\mu\text{IU/ml}$ of blood are taken as normal, values between 10-20 $\mu\text{IU/ml}$ are considered ambiguous and those above 20 $\mu\text{IU/ml}$ are labeled as presumptive positive. All babies in the ambiguous zone and all presumptive positive patients are recalled. All recalled neonates are subjected to determination of Free T₄(FT₄) along with TSH in serum using chemiluminescence / radioimmunoassay. CH is confirmed on the basis of low FT₄ and elevated TSH $>10\mu\text{IU/ml}$ and treatment is started.

Results: Out of total 9058 live births during the study duration, 305 screen positive DBS TSH reports were informed to us. 520 (5.7%) babies were 33 weeks. To identify safe minimum recall criteria for routine use, infants were recalled if the TSH level was more than 10 mU/l of dried blood spot or, if they were not preterm. Altogether 141 infants were recalled, out of which plasma TSH and FT₄ was repeated in 90. Ten newborns with congenital hypothyroidism were identified, with primary hypothyroidism and their treatment was started.

Keywords: CH: congenital hypothyroidism, DBS: dried blood spot, NBS: newborn screening

4.36

SUCCESSFUL TRANSITION FROM INSULIN TO SULFONYLUREA TREATMENT IN 3 NEONATES WITH DIABETES WITH A NOVEL KCNJ11 MUTATION: A SUCCESS STORY FROM PAKISTAN

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Background: Neonatal diabetes mellitus (NDM) presenting within the first 6 months of life is rare with a prevalence of approximately 1 in 500,000 infants worldwide. It is a monogenic form of Diabetes caused by various different genetic mutations and includes permanent and transient forms. Most permanent types of NDM were being clinically managed with life long insulin treatment but now it is known that heterozygous

activating mutations in the genes forming ATP sensitive K channels KCNJ11 and ABCC8, which has a key role in insulin secretion in glucose metabolism, are the most common causes and are responsible for approximately 40% of all cases of neonatal diabetes. More than 30 mutations in the KCNJ11 gene have been identified. Sulfonylurea treatment restores insulin secretion in patients with these mutations so insulin therapy can be effectively replaced by oral sulfonylureas which offer more improvement in glycemic control and better quality of life.

Case Summary: We herein report a case series from Pakistan of 3 infants who were diagnosed with Neonatal Diabetes and successfully transitioned from insulin to oral sulfonylureas. Two babies were diagnosed with Diabetes within the first month of life after presenting with DKA. Both of them were initially started on NPH insulin which was later on transitioned to oral glibenclamide when genetic testing came out to be positive for Heterozygous KCNJ11 mutation at seven weeks and 4 months of age respectively. The third child, came to us at 11 months of age for poor glycemic control of diabetes and was started on Glibenclamide at 14 months of age following positive genetic testing for KCNJ 11. All three children are being followed in our pediatric endocrinology clinic, well thriving, effectively being managed on oral sulfonylureas, with good glycemic control and no long term neurologic sequela. *Conclusion:* Oral Sulfonylureas are a useful and effective treatment option in patients with neonatal diabetes, with improved glycemic control and quality of life and good long term outcomes.

Keywords: Sulfonyl urea, Diabetic ketoacidosis, Neonatal diabetes mellitus

4.37

OXIDATIVE STRESS AND MALE INFERTILITY: A CROSS SECTIONAL STUDY

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Introduction: Male infertility is reported to affect 5-7% of the general male population and it accounts for 20% of the cause of infertility and 50% cases of male infertility are idiopathic in nature. It has been reported that oxidative stress (OS) is one of the important causes of male infertility (30-80%) as it has adverse effects on both the structural and functional integrity of the sperm, and causes loss of sperm function. In this study our aim is to compare stress markers and antioxidants in fertile and infertile males, and to explore their effects on reproductive hormones and fertility.

Methods: The cross-sectional case-control study was conducted from July 2017 to July 2018 at the Islamabad Clinic Serving Infertile Couples, Islamabad, Pakistan, and comprised male subjects aged 25-55 years. Infertile subjects were the cases, while healthy fertile males acted as the controls. Stress hormones cortisol and adrenaline and antioxidants glutathione peroxidase and superoxide dismutase were measured using enzyme-linked immunosorbent assay. Data was analysed using SPSS 22.

Results: Of the 376 subjects, 241(64%) were cases and 135(36%) were controls. Median cortisol, adrenaline, superoxide dismutase and glutathione levels were significantly higher among the cases compared to the controls (p

Keywords: Oxidative Stress, Male infertility, Glutathione peroxidase

4.38

CLINICAL AND MOLECULAR CHARACTERIZATION OF CHILDREN WITH NEONATAL DIABETES MELLITUS AT A TERTIARY CARE CENTER; CASE SERIES

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Introduction:Prevalence of Neonatal diabetes mellitus around 1 in 100 000–200 000 live births .Neonatal diabetes mellitus (NDM) is mostly of genetic origin, diagnosis of these cases can extend from birth to 6 months of age occasionally in second half of the first year.Etiology of congenital diabetes is genetically heterogeneous,occurs due to abnormal development or absence of the pancreatic islets that in turn limits insulin secretion.To date more than 20 pathogenic genes have been identified in permanent neonatal diabetes,KCNJ11and ABCC8 are the most common that encode Kir6.2 or SUR1 accounting for about 40% to 60% of all genes other common mutations are EIF2AK3, FOXP3, IPF-1,HNF 1B, GLIS 3, and PTF1A GCK gene.Activating mutations in either Kir6.2 or SUR1 respond to sulfonylurea drugs, such as glibenclamide and through correct molecular diagnosis the quality of life of patients can improve and overall treatment cost can be reduced.Mutations in EIF2AK3 are the most common known genetic cause of diabetes among patients born to consanguineous parents .Wolcott-Rallison syndrome (WRS) is characterized by severe pancreatic hypoplasia multiple epiphyseal dysplasia, and hepatic and/or renal dysfunction mental retardation , cerebellar and cortical dysplasia.Correct identification of molecular defect or mutation will help to determine treatment plan ,Clinical prognosis and genetic counseling for risk in future pregnancies .The objective of this case series is of describing the genetic mutation profile and presentation at diagnosis, treatment

and outcome of patients with Genetic diabetes at our institute over the last 10 years. Results:10 infants with NDM presented at our tertiary care center.Overall in 8 patients (80%) mutations is identified .2 cases of permanent NDM are caused by mutations in the KATP channel (KCNJ11 and ABCC8) genes, These two patients were successfully switched to oral glibenclamide.one patient with KCNJ11 mutation was developmentally delayed ,INS gene mutation is present in child, 2 patients were identified EIF2AK3 mutation both are homozygous ,among both one sibling was tested that was found to be heterozygous carrier who didn't manifest the disease. No mutation was identified in 2 patients initially undergone evaluation for three most common genes (KCNJ11, ABCC8 and INS) on further testing one was identified having mutation LRBA and other had FOXP3 .No mutation were identified in 2 patients even after extensive testing .

Discussion /Conclusion:This case series describes the clinical and genetic Profile of children with neonatal diabetes mellitus presented at our center. Molecular genetic testing has a big impact on management, as KCNJ11 and ABCC8 mutation has been screened first because they have major therapeutic implications and these patients can be switched over to oral sulfonylureas which would be convenient for both parents and patients

Keywords:Neonatal diabetes mellitus, genetic mutations, wolcott rallison syndrome

4.39

EARLY PREGNANCY HBA1C LEVELS AMONG PREGNANT WOMEN IN KARACHI, PAKISTAN AND ITS ASSOCIATION WITH ADVERSE PREGNANCY OUTCOMES IN AMANHI-ACT COHORT.

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Introduction: The AMANHI biorepository study sought to identify biomarkers of important pregnancy-related outcomes, and establish a biobank in developing countries.

Objectives: 1. To describe trends in HbA1c levels during pregnancy and the postpartum period. 2. To determine the association of early pregnancy HbA1c levels with pregnancy complications and adverse pregnancy outcomes (APO).

Methods: We performed a sub analysis from the Pakistan component of AMANHI ACT study. HbA1C levels were measured in pregnant women and phenotypic data was collected at three time points during pregnancy (8-19,24-28, 32-36 weeks). Complications like (pre-) eclampsia, intrauterine growth restriction, preterm birth and stillbirths were prospectively ascertained. Results: Mean HbA1C level at enrolment (8-19 weeks) was $5.07 \pm 0.57\%$ (n=2500) and the subsequent antenatal visit (24-28- or 32-36-week's visit) was $5.00 \pm 0.56\%$ (n=2199). No significant difference was noted in the readings from the three time points of sampling, therefore, values recorded at enrolment were taken into account. Consequently, a mean HbA1c value of $5.35 \pm 1.34\%$ (RR 0.60, 95% CI 0.482-0.73) (P=0.001) was found to be significantly associated with 143 pregnancies from the cohort that did not end in live births. HbA1C levels of $5.15 \pm 0.87\%$ (RR 0.76, 95% CI 0.64-0.89) (P=0.001) corresponded to 465 preterm births from the cohort. Additionally, a mean HbA1C level of $5.55 \pm 1.74\%$ (RR 0.53, 95% CI 0.42-0.67) (P=0.000) and $5.05 \pm 0.54\%$ (RR 0.70, 95% CI 0.57-0.83) (P=0.000) was revealed to be positively associated with stillbirths and hypertension in pregnancy, respectively. In the univariate model, HbA1C levels of 5.5% and 5.6% were indicative of adverse pregnancy outcomes such as no live births/stillbirths and preterm births.

Conclusion: In this cohort of Pakistani women, an early measurement of HbA1C unveiled the potential to identify women at high risk of poor pregnancy outcomes

Keywords: adverse pregnancy outcomes, HbA1c, biomarker

4.40

VAN WYK GRUMBACH SYNDROME: A RARE PRESENTATION IN A CHILD WITH DOWN SYNDROME

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Introduction: Isosexual precocious puberty associated with ovarian cyst is a rare manifestation of prolonged hypothyroidism and has been described in literature also termed as van Wyk grumbach syndrome. It is characterized by breast development, uterine bleeding but lack of pubic hairs and multicystic ovaries. Cystic ovarian enlargement in these children can be misinterpreted as ovarian neoplasm causing precocious puberty. Usually these manifestations of precocious puberty due to prolonged hypothyroidism are reversible after thyroid hormone therapy. We report a case of Down syndrome with hypothyroidism presenting with vaginal bleeding and bilateral multicystic ovaries. We report a rare case of prepubertal female child known case of Down syndrome, presented with long-standing untreated hypothyroidism complicated with Van Wyk Grumbach syndrome. She presented with vaginal bleeding and large ovarian mass. The patient was managed with thyroid hormone replacement therapy and careful observation. Complete resolution of the ovarian mass and interval normalization of the Thyroid hormones levels were achieved. This case highlights the fact that hypothyroidism should be considered in prepubertal females with multicystic ovaries or with precocious puberty.

Keywords: Hypothyroidism, Down syndrome, Van Wyck Grumbach syndrome

4.41

SOCIOECONOMIC STATUS, PARENTING STRESS AND COGNITIVE AND GROWTH DEVELOPMENT OF CHILDREN IN A LOW INCOME POPULATION OF PAKISTAN.

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Introduction: Around 200 million children <5 years are unable to reach their latent cognitive development due to poverty, poor nutrition and suboptimal home care. The role of socioeconomic status, parenting stress with child cognitive and physical development in early childhood is still unclear.

Objective: To examine association between socioeconomic status, child cognitive and physical development and parenting stress in a low income population.

Methods: A total of 2500 pregnant mothers were recruited for prospective cohort study from 2017-2019. All consented mothers having <20 weeks of gestation were from a slum area of Karachi. A designed questionnaire for baseline characteristics for demographic and maternal information was filled by a trained research officer. Mothers and their newborns were followed for 3 years with multiple visits at 3, 6, 12, 24 and 36 months. Parenting Stress Index (PSI), Bayley Scales of Infant Development (BSID III) and WHO gross motor milestones tools were used. WHO anthropometric z scores measures were also used for child physical growth assessment.

Results: Mothers with mean age 26.56 ± 5.17 years were participated where 52.2% mothers were illiterate and 97% were housewife. Total parenting stress index, parental distress and

parent-child dysfunctional interaction were high at the age of 12 months. Difficult child index showed higher proportion in children with age of 2 years. Data will be further analyzed for mediation analyses of possible significant mediating variables and association of SES with parenting stress (PSI), child's cognitive and behavioral status and gross motor skills.

Conclusion: Poverty is associated with a slower cognitive development in children and associated with slower gross motor development. This should encourage early child development authorities to invest in improved welfare programmes.

Keywords: Socioeconomic status, cognitive, growth development

4.42

SUBSIDIARY LEARNING OPPORTUNITIES FOR THE SUSTAINABILITY OF EARLY CHILD DEVELOPMENT UNDER THE AGE OF 36 MONTHS.

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Introduction: The living environment of child affects their developmental potential in their formative years. If there is some form of developmental delay, an unsupportive environment and under stimulation weigh in as much to the problem as the underlying biological and genetic constitution of the child. There are many factors involved and have direct/indirect impact on early development, such as socio-economic status, learning opportunities, parents' interaction, social acceptancy, gender equality, and parents' mental health. Scientific research has proved that nurturing environment provided in very early years of childhood is most important for their development and their brain function in adulthood.

Objective: Comparison of “HOME IT” (home observation and measurement of environment) scores at the age of 24 and 36 months to check association of BSID (Bayley’s Infants and Toddlers Development) as subsidiary learning opportunity. **Methodology:** The sample data are from the study of “All Children Thrive” (ACT) being conducted coastal peri-urban communities in Karachi. Children are followed from birth to 36 months of age with various ECD assessments Bayley’s Scale of Infants and Toddlers Development (BSID-III) and Home Observation and Measurement of Environment (HOME-IT) tools at different time point by trained senior research assistance Comparison structure:

Results: Data of total 1060 mothers of (mean) age 26.64 years was analyzed, 50% of mothers were illiterate and 97% were housewife. Out of 7 domains of home scores, we found significant difference in emotional and verbal responsivity of caregiver (P

Keywords: subsidiary learning, early child development, nurturing environment

4.43

INTRAOPERATIVE POST PARTUM HEMORRHAGE IN A PATIENT WITH DENGUE FEVER: A CASE REPORT

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Pregnant women are at higher risk of severe complications because of platelet pathology coexistent with coagulopathy and vasculopathy. We report case of a 33 year old parturient with mild fever only who underwent emergency caesarean section under general anesthesia. She had platelet count of 98,000 per microliter and increased APTT of 37.8s at the time of surgery. After uneventful general anesthetic induction and delivery of the baby she had massive hemorrhage. Massive transfusion protocol was initiated. Patient remained vitally stable and was extubated. Next day, Patient's dengue IgM was reported positive. Her platelets dropped to

48,000 per microliter on first post-surgical day. Anesthesiologists and obstetricians must be cautious for suggestive clinical features of the dengue fever. Hemostatic defects due to the disease can lead to life threatening hemorrhage and prolonged surgery.

Keywords: Dengue Fever, Thrombocytopenia, Massive Transfusion

4.44

CHANGES IN VITAMIN E LEVELS AS A MARKER OF FEMALE INFERTILITY

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Introduction: Vitamin E (VE) is a lipid soluble antioxidant. Being a peroxy free radical scavenger, it functions as a chain breaking antioxidant by preventing the proliferation of free radicals in membranes and plasma lipoproteins. To study the impact of Vitamin E (VE) levels of follicular fluid (FF) on oocyte competence, embryo development and pregnancy outcome in patients after intra cytoplasmic sperm injection (ICSI). **Methods:** It was a cross-sectional study conducted in Islamabad Clinic Serving Infertile Couples in which follicular fluid of 137 females booked for ICSI, was obtained during oocyte retrieval, centrifuged and stored for analysis. VE levels in FF were analyzed by enzyme linked immune sorbent assay. Receiver Operating Curve (ROC) was used to demarcate VE levels required for acquiring pregnancy. Generalized linear model using log binomial regression was applied to see the effect of VE on pregnancy, the effect of VE on oocyte and embryo parameters was assessed by linear regression; all p-values less than 0.05 were considered statistically significant.

Results: ROC suggested 5.49 (unit) as the cutoff value of VE in the pregnancy group, with 72.9% area under the curve. Ninety-one females comprised Group I with VE > 5.49, whereas

forty six females formed Group II with VE < 5.49. Follicular fluid VE levels were significantly high in 39 (28.5%) females who compromised pregnancy group. Chances of pregnancy increased to 4% with an increase in VE levels (p-value 0.01). VE gave significant positive relationship with all oocyte (retrieved, mature and fertilized) parameters, cleavage of embryo till its differentiation to blastocysts (p

Keywords: Vitamin E, Follicular fluid, Intracytoplasmic sperm injection

4.45

GROSS MOTOR DEVELOPMENTAL MILESTONES IN CHILDREN (6-18 MONTHS) FROM A LONGITUDINAL COHORT STUDY IN KARACHI, PAKISTAN

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Introduction: Early childhood development may vary across ethnicities and cultures. The WHO Multicenter Growth Reference Study (MGRS) has identified an age range for achievement of six common and observable gross motor milestones among healthy children. We aimed to compare the median age of achievement of six gross motor developmental milestones with that reported by WHO among children aged 6 to 18 months in an LMIC setting.

Methods: The All Children Thrive (ACT) study was a longitudinal study carried out in a semi-urban population in Karachi, Pakistan between 2017 and 2019. The study assessed 1584 children for all six WHO milestones at 6, 12 and 18 months. The milestones assessed were sitting alone, hands and knees crawling, standing with support, standing alone, walking with support and walking alone. The proportion of children that achieved each milestone within the age range reported by WHO was computed. Median age of achievement with IQR was also calculated for each milestone. Results Of the 1584 participants, 49.6 % (N=769) were girls. In

our study, 82.7%-99.6% of the participants reached the milestones within the WHO specified age range. Apart for hands and knees crawling, however, delays were observed for all milestones. The median age for sitting with support in our cohort was 7 months vs 5.9 months reported by WHO; standing with assistance (10 vs 7.4 months); walking with assistance (11 vs 9 months); standing alone (12 vs 10.8 months) and walking alone (14 vs 12 months).

Conclusion: Age-appropriate physical development in early childhood is now considered to have a significant relation with physical and mental health in later life. Though a high proportion of children were able to reach the milestones within WHO age range, the later median age of achievement in our population is concerning and should draw attention toward exploring the underlying factors.

Keywords: early childhood development, WHO milestones, physical development

4.46

ASSESSMENT OF HEALTH CARE FACILITIES TO PROVIDE QUALITY CARE FOR NEWBORN AND YOUNG INFANTS IN PAKISTAN: FINDINGS FROM A CROSS-SECTIONAL STUDY

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Introduction: Pakistan is claimed to be the riskiest place for newborns due to the highest neonatal mortality rate. This study aimed to assess the availability and quality of newborn care services at inpatient care units in Pakistan. Methods This was a cross-sectional study, held during 2018 to 2019 in 23 public sector health care facilities providing inpatient care for sick NYIs in Pakistan. We interviewed facility managers and health care providers using a

structured questionnaire. We observed facility infrastructure and relevant metrics related to the quality of inpatient care such as types of infant care units, staffing cadre, equipment, facility management practices, quality assurance of activities, essential services for NYI care, and discharge planning and support. Results Of the 23 facilities assessed, 83% had special care units for the sick NYIs, 70% had newborn intensive care units (NICUs), and 39% had Kangaroo Mother Care Units (KMCs). Almost 100% of the facilities had pediatricians, 13% had neonatologists, and 9% had neonatal surgeons. Around 61% and 13% of the facilities had staff trained in neonatal resuscitation and parental counseling, respectively. About 35% of the facilities monitored nosocomial infection rates, 39% were baby-friendly hospitals, and 26% were accredited. Essential services to diagnose congenital birth defects were offered in only 4% of facilities. Only 39% of facilities had received external supervision for NYI care and 17% reported organizing management team meetings three months preceding the survey. Conclusion The study has demonstrated important gaps towards improving the quality of newborn care in inpatient setting in public hospitals of the country. Recommendations include, establishing KMC units at the district and provincial hospitals with adequate supplies and equipment; deploying specialized staff at DHQ hospitals; building on the job capacity of health care providers in neonatal care management; strengthening important parameters of newborn care with adequate external supervision.

Keywords: Service readiness, Quality of care, Small and sick young infants

4.47

IMPROVE HAND HYGIENE: SIGNIFICANT REDUCTION AMONG NEONATAL SEPSIS.

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Background: Demographic profile of the district Jamshoro has a population of around 993142 in the year 2017. Major health issues faced by the district are increasing burden of maternal and child health issues and raise of communicable and non-communicable diseases. District literature has highlighted the burden of neonatal sepsis as is the most significant cause of neonatal deaths. Most recently, in 2019 the UNICEF has estimated 5.2 million children under 5 years of age died, mostly from preventable and treatable causes. A study of Pakistan 2015, reported that the rate of sepsis among premature neonate is 39 percent. Moreover, the report of USAID shared analytical profile of Jamshoro 2013, reported they were 55 deaths out of 1000 birth of neonates and it is still statics for the last 22 years. The aim of this paper to highlight the importance of low-cost hand hygiene practice towards neonate sepsis reduction.

Methodology: It is a literature-based review article. The search was conducted via the exploration of the electronic database. For National data, Regional reports like USAID was reviewed. These reviews were related to the infection in neonates which reported from the unhygienic cord care practices in birth attendants and midwives, and mothers by the poor practices of breastfeeding.

Result: In the nutshell, infection prevention is paramount towards decreasing neonatal death rate. 70 percent of the infections can easily be decreased via proper hand hygiene at the time of labour and delivery. Studies have also reported the use of chlorhexidine has a significant reduction in the infection transmission rate. On the other hand, Practice of hand hygiene among health care providers played a vital role on the road to achieving neonatal health. It was suggested that the provision of low cost (chlorhexidine) health washing solution can improve the health outcomes of the neonate.

Keywords: neonate, sepsis, hand hygiene

4.48

ASSESSMENT OF FACTORS AFFECTS THE SMOKING HABIT IN MINORS IN PAKISTAN.

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Assessment of factors affects the smoking habit in minors in Pakistan. According to the National Statistics of Pakistan (2000), approximately 90% of smokers begin smoking before the age of 21 years. By the age of 11 years, one-third of children, and by 16th-year two-thirds of children have experimented with tobacco smoking. A survey conducted in Islamabad showed that 27% of children aged 10-14 years are smokers and about 1200 new children start smoking every day in Pakistan. There are multiple factors reported in the literature related to the use of tobacco and its product, especially at a young age. Aim: To identify the factors affecting smoking habits in minors in Pakistan
Methodology: It is a qualitative exploratory study. It helps to explore the opinions and observations of the policymakers, school teachers, health experts, policy implementers, tobacco industry representatives, and parents about the use of smoking tobacco and its regulation in Karachi Pakistan. These factors include peer pressure, role modeling, easy accessibility, unrestricted availability, and low or absence compliance and implementation of the tobacco and its product usage laws and regulations. Result: the study also concluded by taking different opinions and observations from participants about the use of smoking tobacco and its regulation in Karachi Pakistan. The study indicated how different agencies initiated different programs to control smoking tobacco in minors based on their geographical localities. The tendency towards the use and indulging in the activities of smoking; tobacco use increases in those events and places where these products are commonly used. For children and young

adolescents, public places such as parks, schools, colleges, and other educational institutes may put them under peer pressure for the use of tobacco products and smoking. In Pakistan, there are different laws and regulations available to control and put restrictions on using tobacco products.

*Keywords:*Minors, Factors, Smoking

4.49

SURVEILLANCE OF POLIOVIRUS EXCRETION AMONG CHILDREN WITH PRIMARY IMMUNE DEFICIENCY IN PAKISTAN & ASSESSMENT OF SENSITIVITY OF JMF SIGNS FOR SCREENING OF SUSPECTED PID CHILDREN

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Background and objectives: Polio is regarded as a highly infectious viral disease which invades the nervous system of a child causing irreversible paralysis. Children with primary immunodeficiency (PID) disorder exposed to oral polio vaccine (OPV) have substantial increased risk of chronic poliovirus excretion and paralytic poliomyelitis. This project aims in developing pilot surveillance system in order to allow the successful identification and monitoring of vaccine derived poliovirus (VDPV) excretion among children diagnosed with PID. Moreover, it will further assess whether Jeffery Modell Foundation (JMF) warning signs is an appropriate tool to screen PIDs in Pakistan.

Methods: The suspected PID cases from the participating institutions all over Pakistan will be enrolled and will be tested for the poliovirus excretion in the fecal specimen. Those cases that are excreting polio virus would be followed on the monthly basis until the two negative stool samples are obtained. Results: The surveillance for poliovirus has been initiated

since December 2018. Until now, 156 cases have been enrolled with suspected PID. Of these, none have reported for shedding immunodeficiency-associated vaccine-derived poliovirus (iVDPV), whereas, seven had excreted Sabin like virus (SL3) and eight were identified with Non-polio Enterovirus (NPEV). The JMF sings 8, 5 & 3 are the most frequently occurring signs amongst enrolled PIDs.

Conclusion: PID children might not be a truly depicting the paralysis and would have been missed during surveillance. Therefore rigorous efforts should be made for their identification of PID suspects and eradication of poliovirus.

Keywords: Primary Immunodeficiency, immunodeficiency-associated vaccine-derived poliovirus (iVDPV), Jeffery Modell Sings

4.50

SUPPORTIVE SUPERVISION DRIVING CHANGE IN PERCEPTIONS OF RURAL FRONTLINE WORKERS AND CARE GIVERS DESPITE SEVERAL INEQUITIES: THE NIGRAAN PLUS (UEN PROJECT) TRIAL IN PAKISTAN

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Introduction: Diarrhoea and pneumonia greatly contribute to high childhood mortality in Pakistan. Community Health Workers (CHWs) provide care at door step to over 60% rural population in Pakistan. Rural terrain, deficient supplies and inadequate supervision puts CHWs at a disadvantage in providing appropriate care. Hence, timely diagnosis of danger signs and delivering known treatment options to community caregivers (CCGs) is hampered. This study assesses if a supportive supervision intervention focusing on Lady Health Supervisors (LHSs) accompanying Lady Health Workers (LHWs) during home visits, and providing a written feedback can improve

community case management (CCM) of childhood diarrhoea and pneumonia.

Methods: This perception based qualitative inquiry included LHSs, LHWs and CCGs as the participants. 22 In-depth Interviews (IDIs) and 16 Focus Group Discussions (FGDs) were conducted prior to a supportive supervision intervention in 2017. Following the intervention, 10 FGDs were conducted in 2019-2020 until saturation was achieved. Manual content analysis helped to arrive at various themes to characterize the information obtained.

Results: The ability of community frontline health workers to describe the danger signs of diarrhoea and pneumonia, classify dehydration and relate respiratory rate to severity of pneumonia was perceived to improve over time. Appropriate prescription of zinc in diarrhea and antibiotics in pneumonia was noted. Furthermore, CCGs' trust in LHWs increased following the intervention and they reported a growing inclination to contact LHWs as their first point of care. LHWs in intervention arm were more satisfied with their job due to frequent supervisory visits and feedback by LHSs.

Conclusion: Despite geographic, social and economic inequities, supportive supervision (as in N+ trial) has the potential to improve knowledge, practice and skills of community health workers related to CCM of childhood diarrhea and pneumonia in disadvantaged rural communities. Additionally, trust of CCGs in CHWs' ability to manage such cases also improved.

Keywords: community health workers, perceptions, inequities

4.51

DOES SUPPORTIVE SUPERVISION INTERVENTION IMPROVE COMMUNITY HEALTH WORKER KNOWLEDGE AND PRACTICES FOR COMMUNITY MANAGEMENT OF CHILDHOOD DIARRHEA AND PNEUMONIA? LESSONS FOR SCALE UP FROM NIGRAAN (WHO) AND NIGRAAN PLUS (UEN PROJECT) TRIALS IN PAKISTAN

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Introduction: Lack of programmatic support and supervision is one of the underlying reasons of the poor performance of Pakistan's Lady Health Worker Program (LHWP). This study describes the findings and potential for scale-up of a supportive supervision intervention in two districts of Pakistan for improving LHWs skills for community case management (CCM) of childhood diarrhea and pneumonia. *Methods:* The intervention comprised of enhanced supervision training to lady health supervisors (LHSs) and written feedback to LHWs by LHSs, implemented in Districts Badin and Mirpur Khaas. Clinical skills of LHWs and LHSs and supervision skills of LHSs were assessed before, during, and after the intervention using structured tools. *Results:* LHSs' practice of providing written feedback improved considerably between pre-and mid-intervention assessments in both trials (0% to 88% in Badin and 25% to 75% in MPK) in the study arm. Similarly, in both trials at endline assessment, supervisory performance of study arm LHSs was better than the comparison arm in reviewing the treatment suggested by workers' (94% vs 13% in MPK and 94% vs 69% in Badin). There were improvements in LHWs' skills in managing childhood diarrhea and pneumonia in both districts. In intervention arm, LHWs' performance for correctly assessing dehydration (28% to 92% in Badin and 74% to 96% in MPK), and measuring respiratory rate correctly

(12% to 44% in Badin and 46% to 79% in MPK) improved between baseline and endline assessments in both trials. Furthermore, study arm LHWs performed better than those in comparison arm in classifying diarrhea correctly during post intervention skills assessment (68% vs 40% in Badin and 96% vs 83% in MPK).

Conclusion: Supportive supervision including written feedback and frequent supervisor contact could improve the performance of community-based workers in managing diarrhea and pneumonia among children. Positive lessons for provincial scale up can be drawn.

Keywords: Supportive Supervision, Lady Health Worker, Knowledge and Skills

4.52

LISTENING TO CAREGIVERS: NARRATIVES OF HEALTH SEEKING FOR CHILDREN UNDER FIVE WITH PNEUMONIA AND DIARRHEA: INSIGHTS FROM THE NIGRAAN (WHO) TRIAL IN PAKISTAN

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Introduction: Access to health services is an important way to reduce child mortality and is influenced by health-seeking behaviors of caregivers. There are numerous contextual factors that affect health-seeking behaviors, such as distance to health services, transportation, treatment cost, caregiver access to household finances, perceived quality of health providers, availability and comprehension of health information, social and religious norms, and perceived severity of illness.

Objective: The objective of this study was to gather caregiver narratives to develop a comprehensive understanding of the context and process of care giving for children under five with pneumonia and diarrhea, in order to

highlight the complexities and dynamics of health seeking in rural Sindh, Pakistan.

Methods: This study used a narrative interview approach, gathering information in the form of stories from caregivers of children <5 with pneumonia and diarrhea. Twenty caregivers from 11 households participated. All data collection was conducted privately in participants' homes.

Results: The role of joint family households is integral in health seeking for pneumonia and diarrhea in children under five, and was generally observed to increase the support available to address the financial and practical considerations. Elders and female relatives, especially the child's paternal grandmother, are an important source of knowledge regarding sickness in the household. Furthermore, practice of home remedies is inherited from mother-in-law and sisters-in-law in the household; and their recommendations are taken as authority. Caregivers were generally dissatisfied with doctors in public sector who provide free consultation and associated higher quality care with private doctors who charge more and had shorter waiting times.

Conclusions: Policy and research on community-based health programs and interventions would be comprehensive if a health education intervention considered the context of decision making and social influences at the household level rather than focusing on individual caregivers

Keywords: Narrative interview approach, health seeking behavior, family decision making

4.53

DOES SUPPORTIVE SUPERVISION INTERVENTION IMPROVE CARE GIVER KNOWLEDGE AND PRACTICES FOR CCM OF CHILDHOOD DIARRHOEA AND PNEUMONIA? LESSONS FOR SCALE UP FROM NIGRAAN (WHO) AND NIGRAAN PLUS (UEN PROJECT) HOUSEHOLD SURVEYS IN PAKISTAN

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Introduction: This study aimed to understand the potential for scale up of a supportive supervision intervention in two districts of Sindh Pakistan in changing community caregivers' (CCGs) knowledge and practices in managing childhood diarrhoea and pneumonia, and their perceptions about the LHW Programme.

Methods: Intervention in Districts Badin (Nigraan trial) and Mirpur Khaas (Nigraan plus trial) employed improved supervision, mentorship and written feedback delivered by Lady Health Supervisors (LHSs) to Lady Health Workers (LHWs). Cross sectional surveys were conducted pre- and post- intervention among 8250 households, with mother of < 5 child as the primary respondent.

Results: There were significant improvements in CCGs' knowledge and practices of managing pneumonia cases in both districts. In the intervention arm, CCGs' knowledge of cough (Badin 55% to 63%, p-value: 0.011; MPK 35% to 52%, p-value <0.001) and breathing difficulty (Badin 25% to 62%, p-value <0.001; MPK 41% to 50%, p-value <0.001) as key signs and symptoms of pneumonia improved. Furthermore, CCGs' use of antibiotics to treat pneumonia also increased in both districts (Badin 3% to 6%, p-value 0.028; MPK 12% to 22%, p-value <0.001). The proportion of CCGs using store-bought ORS during diarrhoeal illness significantly improved in MPK (70% to 80%, p-value <0.001) but remained unchanged in Badin (around 73%). CCGs also demonstrated an improved awareness of the LHW Programme, as more participants knew about LHW Programme activities (Badin 93% to 98%, p-value <0.001; MPK 97% to 99%, p-value 0.001) and household visits (Badin 91% to 98%, p-value 0.001; MPK 98% to 99%, p-value <0.001).

Conclusion: Improvement in knowledge about danger signs of pneumonia and increased use of

antibiotics in both districts and partial increase in knowledge and use of ORS are encouraging. The findings of this study can serve as a reference for scaling-up the supportive supervision intervention at provincial level.

Keywords: Community caregivers, childhood diarrhoea and pneumonia, knowledge and practices

4.54

SUPPORTIVE SUPERVISION IMPROVES MENTORSHIP SKILLS OF LADY HEALTH SUPERVISORS OVERTIME: LESSONS FROM NIGRAAN PLUS (UEN PROJECT) TRIAL IN SINDH, PAKISTAN

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Introduction: There is relatively little understanding of what constitutes good quality supervision and how best it can be provided. Written feedback is an important component of supportive supervision. This paper explores the quality of supervisory practices in NIGRAAN PLUS (N+) trial and compares skills of LHSs with LHWs' CCM performance for childhood diarrhea and pneumonia. *Methods:* An ongoing community surveillance monitored LHSs performance through Independent Evaluators (IEs). An 11 item instrument was designed to be administered during LHSs' supervisory visits, monitoring LHSs supervisory performance for cases of diarrhea and pneumonia. The IEs observed and recorded how LHSs assessed LHWs, mentored and coached LHWs, demonstrating correct method of assessment, and appreciating LHWs on their performance. Another instrument was designed to monitor and evaluate LHWs' CCM for diarrhea (13 indicators) and pneumonia (10 indicators). A score was computed to assess LHSs supervisory skills and LHWs CCM of childhood diarrhea and pneumonia.

Results: The overall score of LHSs on supervisory skills was significantly lower

(85.9%, CI: 82.9–88.9, SD 16.66) than that of LHWs CCM (92.3%, CI: 91.4–93.4, SD 11.47) for cases of diarrhoea. Similarly, LHSs supervisory score (84.2% CI: 81.00–87.40, SD 17.83) was lower than LHWs CCM (90.08%, CI: 88.80–91.35, SD 14.46) for cases of pneumonia. Monthly time trends over the 9-month period showed that, through the practice of providing regular feedback as part of N+ intervention, the LHSs improved on their skills for supervising and mentoring LHWs while the CCM performance scores of LHWs remained static.

Conclusion: This study identified gaps in the supervisory and mentorship skills of LHSs. LHWs are constantly in contact with their catchment areas hence their CCM skills were much better. In N+ LHSs regularly paid supervisory visits and provided feedback to LHWs which had positive impact on their supervisory skills overtime

Keywords: Supportive Supervision, mentorship, Lady Health Supervisors

4.55

IS SUPPORTIVE SUPERVISION OF LHWS AN ECONOMICALLY VIABLE OPTION? - THE NIGRAAN PLUS (UEN PROJECT) TRIAL IN PAKISTAN

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Introduction: The Lady Health Worker (LHW) Programme employs female lay health workers to deliver healthcare, particularly to women and children residing in rural districts. Bottlenecks in delivery of such health services include inadequate supervision of LHWs and deficient supplies. This study aimed to assess costs associated with delivering a supportive supervision intervention (N+) within the routine layout of the LHW-P.

Methods: Scoping review of peer reviewed and grey literature was conducted to assess the

existing costs associated with the LHW Programme. Using Levin, McEwan's Ingredients method costs were estimated, whereby items contributing to the overall expenditures in LHW Programme were line listed. Relevant costs included those relating to management and monitoring, salaries for work staff, capacity building, and facilities-related expenses. Costs corresponding directly to supportive supervision were listed and then tallied for each of the two arms (intervention and control). The overall cost per LHW and cost per beneficiary are reported. Research costs such as surveys and assessments were excluded and only direct costs incurred by Nigraan plus intervention were considered.

Results: Of the 140 articles identified through a structured literature search, twelve grey literature, and 9 peer reviewed sources were finally included in the scoping review. From these, a line listing of the various expenses of the LHW Programme was developed which was estimated to be between \$570 and \$750 per LHW. Overall costs for the intervention and control arms of Nigraan Plus amount to \$2488.8 and \$2487.6 respectively. Therefore, an incremental cost of \$1.2 per LHW, and \$0.39 per beneficiary could result in improved supervision of LHWs.

Conclusion: There is a critical deficiency in recent literature on costs associated with the LHW Programme. Further, the supportive supervision intervention appears effective in improving CCM of childhood diseases at a minimal cost and hence scale up can be considered

Keywords: Community Health Workers, Cost analysis, Supportive Supervision

4.56

EFFECTIVENESS OF INTERVENTIONS TO IMPROVE IMMUNIZATION COVERAGE AMONG SCHOOL-AGED CHILDREN AND ADOLESCENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Context: Adolescent vaccination is a topic that has been gaining attention over the years. However, coverage levels have still not reached optimum level. Timely uptake of vaccination during adolescence can significantly reduce the burden and severity of vaccine-preventable diseases.

Objective: To systematically review the effectiveness of interventions to improve vaccination coverage among school-aged children and adolescents. Data Sources: Our data sources included The Cochrane Library (CENTRAL), Medline, PubMed, CINAHL, Web of Science and Embase. We also searched Google Scholar by pasting titles and reviewing the first 50 hits. Study Selection: Eligible studies studies focused on improving vaccination coverage for human papillomavirus (HPV), influenza, TDaP, DPT, meningococcal (meningococcal A, B, C and conjugate), hepatitis A and B, measles, mumps and rubella (MMR), varicella, polio and chickenpox vaccines.

Data Extraction: Data was extracted for study background, study design, participants, sample size, description of intervention and control arms, vaccination coverage, series completion and missed opportunities of vaccine. Results: We included 114 studies in this review, 73 studies were RCTs, 39 studies were quasi-randomized trials and 2 were CBA studies. Our findings suggest that vaccination coverage may improve through education by 18%, reminders by 19%, intervention to providers by 11%, financial incentives by 55%, multi-level interventions by 14% and policy and legislations by 73%. We are uncertain of the effect of school-based clinics and multi-component interventions on overall coverage. Limitations: Our review comprised of studies conducted in HICs only. This limits our capacity to evaluate

strategies that may improve the uptake of vaccine among children and adolescents in LMICs. Additionally, we only included articles that were available in the English language.

Conclusions: The results underscore the need to improve vaccination coverage among children and adolescents by developing cost-effective and feasible interventions that can be implemented at individual, community and national level.

Keywords: Vaccination, Adolescents, Immunization

4.57

SYSTEMATIC REVIEW OF INFANT AND YOUNG CHILD FEEDING PRACTICES IN CONFLICT AREAS: WHAT THE EVIDENCE ADVOCATES

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Background: Breast feeding in conflict settings is known to be the safest way to protect infant and young children from malnourishment and increased risk of infections. This systematic review assesses the evidence on infant and young child feeding (IYCF) practices in conflict settings. *Methodology* We conducted a search in PubMed and CENTRAL and also searched for grey literature from the year 1980 to August 2019. We included studies conducted in settings inflicted with armed conflict; which comprised settings undergoing conflict, as well as, those within 5 years of its cessation. Studies were included if they discussed IYCF practices, barriers, programmes and guidelines to promote and improve IYCF practices. Two review authors independently evaluated and screened studies for eligibility and extracted data; followed by a descriptive and thematic analysis. *Results* We included 56 studies in our review including 11 published articles and 45 reports from grey literature and broadly classified into four predetermined sections: epidemiology (n=24), barriers/enablers (n=18),

programmes/interventions (n=15) and implementation guidelines (n=30).

Epidemiological evidence shows that IYCF practices were generally poor in conflict settings with median prevalence of exclusive breast feeding at 25%, continued breast feeding at 29%, bottle feeding at 58.3%, introduction to solid, semisolid or soft foods at 71.1% and minimum dietary diversity at 60.3%. IYCF practices were affected by displacement, stress, maternal malnutrition and mental health, family casualties and free distribution of breast milk substitutes. To improve IYCF, several interventions were implemented; including, training of health workers, educating mothers, community networking and mobilisation, lactation-support service, baby friendly hospital initiative, mother-baby friendly spaces and support groups.

Conclusion: The evidence suggests that IYCF practices are generally poor in conflict inflicted settings. However, there is potential for improvement by designing effective interventions, responsibly disseminating, monitoring and implementing IYCF guidelines as prescribed by WHO development partners, government and non-government organisations with dedicated funds and investing in capacity development.

Keywords: infant and young child feeding, conflict, systematic review

4.58

EXTENSIVE FACIAL NECROSIS WITH INVASIVE FUNGAL DISEASE BY MUCORACEOUS MOLD, A LIFE THREATENING RARE CUTANEOUS MUCORMYCOSIS IN CHILD, A CASE REPORT AND LITERATURE REVIEW

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Background: The mucoraceous molds are members of the Mucorales, a common cause of

cutaneous mucormycosis. It manifests as cellulitis, dermal necrosis and black eschar. The progressive black necrotic lesion reflects vascular invasion and thrombosis leading to life-threatening Invasive fungal disease (IFD). It is relatively rare in children. Accurate diagnosis of (IFD) with cutaneous mucormycosis remains challenging and reliant on traditional culture methods. Diagnosis at initial stage and administration of polyene antifungal and surgical debridement significantly reduces mortality in this life threatening infection. Clinical Awareness is needed to suspect and diagnose at early stage so that prompt treatment yields better outcomes. Apart from acquired immunocompromised conditions, primary immunodeficiency disorders (PIDs) can present with (IFIs) with cutaneous mucormycosis. Case A 15month old female child, born to consanguineous parents, presented with right-sided facial necrosis for the last 3 months. The lesion started at the age of 6 months with erythematous nodule over the scalp with febrile illness for which she treated with multiple antibiotics.. The lesions were progressive with swelling and ulceration of skin leading to necrosis involving the right side of scalp, face, and neck hence broad-spectrum intravenous antibiotics were continued for 6 weeks. On examination there were extensive necrotic areas involving the scalp, face, eye, and neck. Initial Biopsy of lesion was suggestive of chronic granulomatous inflammation and langhaan type giant cell with necrosis. Investigations including complete blood count, Blood culture, HIV serology, Immunoglobulins, were within normal range. Facial Tissue biopsy and Fungus culture revealed Invasive fungal infection, Nonsporulating mucoraceous mold + *Candida glabrata*. Intravenous amphotericin was started but due to extensive systemic involvement, patient could not survive.

Conclusion: Cutaneous mucormycosis with invasive fungal infection by Mucoraceous molds is life-threatening disease; an early diagnosis, amphotericin B, and surgical debridement are

mainstay to prevent mortality. Underlying primary immunodeficiency should be ruled out.

Keywords: Mucoraceous mold, Cutaneous mucormycosis, early diagnosis

4.59

ACUTE DISSEMINATED ENCEPHALOMYELITIS (ADEM) IN CHILDREN: EXPERIENCE FROM A TERTIARY CARE HOSPITAL

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Objective: To determine the clinical pattern, neuroimaging findings and outcomes of acute disseminated encephalomyelitis (ADEM) in patients admitted in the Pediatric department of a tertiary care hospital. *Methods:* This is a retrospective study conducted in the Pediatric department at the Aga Khan University, Pakistan. All patients between the ages of 2 months and 18 years with diagnosis of ADEM in last 10 years were included in the study. Patient's demographics, clinical presentation, motor deficits, seasonal variation, brain imaging findings, types of therapy given – high dose steroids or immunoglobulins, length of stay, need and duration of mechanical ventilation, clinical improvement and mortality were studied. Data was analyzed via SPSS version 23.

Results: Total of 28 cases of ADEM were identified. Males were 11 (39.3%) and female were 17 (60.7) with a mean age of 6.43±4.079 years. Mean length of hospital was 7.29±4.379 days. Among all patients, 10 (35.7%) presented in spring followed by 7 (25%) cases in winter and remaining in autumn and summer. Most common clinical presentation was fever, headache and altered consciousness. Motor deficits were present in 15 (53.5%). Abnormal CSF findings were seen in 12 (42.8%) patients. Brain magnetic resonance imaging identified bilateral and multifocal lesions in 22 (78.6%) and brainstem lesion in 7 (25%) patients.

Steroids were given to 21 (75%) patients while 5 (17.9%) patients received IVIG along with steroids. Among 28 patients, clinical improvement was seen in 25 (89.3%) and residual weakness in 2 (7%) at time of discharge and one expired.

Conclusion: The clinical pattern of ADEM is variable. Fever, headache and altered consciousness was the most common presentation. Most cases presented in spring. The outcome is generally favorable although motor deficit and cognitive impairment were reported

Keywords: Acute Disseminated Encephalomyelitis, clinical spectrum, outcome

4.60

FACTORS AFFECTING THE PERFORMANCE OF LADY HEALTH WORKERS AT SAKRO, DISTRICT THATTA, SINDH: A MIXED METHOD STUDY

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Objective: To identify facilitating and hindering factors for LHWs working in the rural areas of Thatta district, Sindh province. *Methods:* The mixed-method study was conducted between March to June 2019 with LHWs and their supervisors in taluka Sakro of district Thatta. A structured questionnaire was used to evaluate these factors from 70 LHWs working in the taluka. Additionally, four FGDs with LHWs and three in-depth interviews were conducted with the supervisors of those LHWs. Separate semi-structured guidelines were developed for both FGDs and IDIs.

Results: The survey indicated that 55.7% of LHWs were serving in communities for the last 16-20 years. 75.3% of LHW mentioned that they discuss drinking boiling water, while only 3% discussed family planning and 0.7% STIs and HIV with women in communities. 64.3% LHWs

receive supplies on a monthly basis and the majority (97.1%) were involved in the polio campaign and provide support of 5-7 days 12-13 times every year in the campaign. According to LHWs, there is positive behavior change among communities towards health due to the program. LHWs considered referral mechanism as the weakest link, additional workload, and lack of refreshers as hindering factors to perform their duties in rural areas.

Conclusion: With limited resources, LHWs are providing preventive and curative services at the doorsteps in rural areas. The LHW program can be strengthened with the help of timely training, uninterrupted supplies of drugs, and developing a strong linkage of LHWs with the providers at the facility.

Keywords: LHW program, family planning, community health workers

4.61

TRACKING COVERAGE AND EQUITY IN COVERAGE IN MATERNAL AND CHILD HEALTH SERVICES IN PAKISTAN DURING THE TURBULENT TIMES: 2001-15

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Background: Besides substantial investments in maternal and child sector, as of 2015 Pakistan could not reach targets of the health related Millennium Development Goals (MDGs). The objective of this paper is to track progress on coverage and equity in coverage of vital maternal and child healthcare intervention in Pakistan at baseline, at the end line, and at important milestones of the MDG era- 2000-2015.

Methods: Pakistan Social and Living Standard Measurement Survey rounds of 2000-01, 2004-05, 20010-11 and 2014-15 are used to estimate coverage of maternal and child health interventions. To analyze equity I selected two indicators of absolute inequality, equity gap (Q5-Q1) and slope index of inequality and two

indicators of relative inequality, equity ratio (Q5/Q1), and concentration index.

Findings: Over the period (2001-2015) coverage of institution based care improved; antenatal care by 74%, institutional births by 114%, and postnatal care by 217%. Coverage of many maternal health seeking has remained relatively inequitable than the coverage of child vaccination. Among provinces, Punjab is generally ranked better in relative inequality than other provinces. Values of slope index of inequality for BCG, DPT/Pentavalent, and TT vaccination were still high in 2014-15 but with a declining trend since 2001. Provinces of KPK and Baluchistan performed better than others in achieving absolute inequality.

Conclusion: Over MDG era, achievements on coverage and equity in coverage are substantial yet due to weak baselines, in many cases, these achievements are far behind then the targets set to achieve MDGs (i.e. >90 coverage). There are likely effects of socio-economic developments, climate changes, and health sector reforms on the health seeking behavior of the population in the MDG era.

Keywords: Health Care Disparities, Health Equity, Health Care Disparities

4.62

FINANCIAL SUSTAINABILITY PLAN FOR THE DONOR FUNDED NUTRITION PROGRAMS IN THE PROVINCES SINDH

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Introduction: Malnutrition and Stunting is a major public health issue in Pakistan in general and Sindh in particular. With the help of development partners, Nutrition programs are functioning in 21 districts of Sindh. The objective of this research is to help Government of Sindh (GoS) to mainstream nutrition programs, after the donors funding is exhausted namely Nutrition support Program (World Bank) SP, Accelerated Action Plan-Health (GoS) and

Program for improved Nutrition-2 (European Union) *Methods:* Data on expenditure of the nutrition program, utilization rates, and population coverage comes from the management of the nutrition projects, GoS and market survey. The interventions include Out-Patient Therapeutic Center (OTP), Nutrition Stabilization Centers (NSC) and Community Outreach Program (COP). Operation cost to manage an OTP, NSC and COP is estimated followed by their budgetary impact to GoS for the year 2020-21. *Findings:* There are 972 OTP centers and 17 NSC and 9647 CHW are working in the province of Sindh. The average visits to OTP center are 16.42 per month and average admission to NSC are 25.95 per month. The yearly operation cost of an OTP, an NSC and COP are PKR 0.73 million, PKR 8.6 million and PKR 7.5 million respectively. For the year, 2021, an amount of PKR 4.05 billion is required from the provincial ex-chequer of Sindh to manage 865 OTPs and 29 NSC and supportive COP across the province of Sindh.

Conclusion: Using government approved financial rules, internationally recommended protocols for management of acute and moderate malnutrition, analysis of this research provide a timely support to GoS. Scenario based financial forecasting that will arrange fiscal space for the continuity of the activities of nutrition

Keywords: Nutrition Economics, Financial sustainability, Budget Impact

4.63

ASSOCIATION OF HEMOGLOBIN LEVELS IN THE FIRST TRIMESTER AND AT 26 TO 30 WEEKS WITH PREGNANCY OUTCOMES: A SECONDARY ANALYSES OF THE GLOBAL NETWORK FOR WOMEN'S AND CHILDREN'S HEALTH TRIMESTER WITH ASPIRIN TRIAL

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Background & Objective: Limited data are available from low- and middle-income countries (LMICs) on the relationship of hemoglobin (HGB) levels at different times in pregnancy to adverse outcomes. We evaluated the association of HGB levels in nulliparous women at two times in pregnancy with pregnancy outcomes.

Methods: Design: ASPIRIN Trial data were used to study the association between HGB levels measured at 6+0 to 13+6 weeks and 26+0 to 30+0 weeks gestational age (GA) with fetal and neonatal outcomes. **Setting:** Obstetric care facilities in Pakistan, India, Kenya, Zambia, The Democratic Republic of the Congo and Guatemala **Population:** 11,976 pregnant women **Statistical Analysis:** Generalized linear models were used to obtain adjusted relative risks and 95% CI for adverse outcomes **Main Outcome Measures:** preterm birth, stillbirth, neonatal death, SGA and birth weight

Keywords: Hemoglobin levels, Pregnancy outcomes, Low and middle-income countries

4.64

TASK SHARING OF INJECTABLE CONTRACEPTION SERVICES IN PAKISTAN: A RANDOMIZED CONTROLLED TRIAL

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The provision of injectable contraceptive services by lay health workers is endorsed by normative bodies, but support for this practice is not universal. We assessed whether lay (Lady Health Worker-LHW) could perform as well as clinically trained providers (Family Welfare Worker-FWW) on appropriate screening, counseling, and injection of intramuscular and

subcutaneous depot medroxyprogesterone acetate (DMPA) using a randomized controlled trial. In the urban sample (n=355), 88% of FWW DMPA clients were appropriately screened vs. 77% of LHW clients (non-inferiority test p=0.88). In rural facilities (n=105), over 90% of both providers' clients were screened appropriately. Appropriate counseling was low in general, but LHWs were significantly non-inferior to FWWs (p=0.003). Overall LHWs demonstrated better injection technique than FWWs. We could not conclude that LHWs screened new DMPA users as well as FWWs from an urban sample of providers but results from the rural sample suggest that the service delivery context played an important role.

Keywords: task sharing, injectable, Pakistan

4.65

HEMOGLOBIN CONCENTRATIONS AND ADVERSE BIRTH OUTCOMES IN SOUTH ASIAN PREGNANT WOMEN: FINDINGS FROM A PROSPECTIVE MATERNAL AND NEONATAL HEALTH REGISTRY

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Abstract Background While the relationship between hemoglobin (Hb) concentrations and pregnancy outcomes has been studied often, most reports have focused on a specific Hb cutoff used to define anemia. Fewer studies have evaluated pregnancy outcomes across the entire range of Hb values. Moreover, to date, most studies of the relationship of Hb concentrations to pregnancy outcomes have been done in high-income countries. Thus, we have sought to determine the relationship between the range of maternal Hb concentrations and adverse birth outcomes among South Asian pregnant women. **Methods** For this study, we used data collected

from two South Asian countries (Pakistan – Sindh Province and two sites in India - Belagavi and Nagpur) in a prospective maternal and newborn health registry study. To assess the association between Hb concentrations and various maternal and fetal outcomes, we classified the Hb concentrations into seven categories. Regression analyses adjusting for multiple potential confounders were performed to assess adverse pregnancy outcomes across the range of Hb concentrations.

Findings Between January 2012 and December 2018, 130,888 pregnant women were enrolled in the South Asian sites had a Hb measurement available, delivered and were included in the analyses. Overall, the mean Hb concentration of pregnant women from the sites was 9.9 g/dL, 10.0 g/dL in the Indian sites and 9.5 g/dL in the Pakistan site. Hb concentrations 35 years of age, women with ≥ 4 children and those who enrolled in the third trimester were more likely to have Hb concentrations of

Keywords: Hemoglobin, Anemia, South Asia

4.66

LOW-DOSE ASPIRIN FOR THE PREVENTION OF PRETERM DELIVERY IN NULLIPAROUS WOMEN WITH A SINGLETON PREGNANCY (ASPIRIN): A RANDOMISED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL

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Background Preterm birth remains a common cause of neonatal mortality, with a disproportionately high burden in low-income and middle-income countries. Meta-analyses of low-dose aspirin to prevent pre-eclampsia suggest that the incidence of preterm birth might

also be decreased, particularly if initiated before 16 weeks of gestation.

Methods ASPIRIN was a randomised, multicountry, double-masked, placebo-controlled trial of low-dose aspirin (81 mg daily) initiated between 6+0 and 13+6 weeks of pregnancy, in nulliparous. Participants were enrolled at seven community sites in six countries. Participants were randomly assigned (1:1, stratified by site) to receive aspirin or placebo tablets of identical appearance. Treatment was continued until 36 weeks and 7 days of gestation or delivery. The primary outcome of incidence of preterm birth, was analysed in randomly assigned women with pregnancy outcomes at or after 20 weeks, according to a modified intention-to-treat protocol.

Findings 11 976 women aged 14–40 years were randomly assigned to receive low-dose aspirin (5990 women) or placebo (5986 women). 5780 women in the aspirin group and 5764 in the placebo group were evaluable for the primary outcome. Preterm birth before 37 weeks occurred in 668 (11.6%) of the women who took aspirin and 754 (13.1%) of those who took placebo (RR 0.89 [95% CI 0.81 to 0.98], $p=0.012$). In women taking aspirin, we also observed significant reductions in perinatal mortality (0.86 [0.73–1.00], $p=0.048$), fetal loss (after 16 weeks' gestation and before 7 days post-partum; 0.86 [0.74–1.00], $p=0.039$), and early preterm delivery (

Keywords: Low-dose aspirin, Preterm delivery, Low and middle income countries

4.67

FACTOR ASSOCIATED WITH EXCLUSIVE BREASTFEEDING AMONG MOTHERS IN THATA: A CROSS-SECTIONAL STUDY

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Background: Optimal infant feeding is important for optimal growth and development of children. Breastfeeding is the best source of nutrition for infants. Promotion of exclusive breastfeeding (EBF) is one of the most cost-effective interventions to decrease infant mortality and morbidity in low and middle income countries. The aim of this study was to determine the prevalence and factors associated with EBF.

Methodology: A cross-sectional study was conducted in areas of district Thatta enrolled in Maternal Neonatal Health Registry (MNHR), using quantitative methods of data collection. Data was collected from 400 mothers having a baby of 6-11 months. Systematic sampling technique was used for selection of study participants. Survey questionnaire was composed of five parts including demographic characteristics of mother and baby, reproductive health, practice of EBF, knowledge and attitude regarding EBF.

Results: Prevalence of EBF among women in Thatta is 60.6%. Factors associated with EBF include Mothers who did not face any problem during breastfeeding (POR 5.6; 95 % CI: 3.2-9.9, $p = 0.001$). admission of baby in NICU (POR 3.1; 95 % CI: 1.4-6.8, $p = 0.006$), knowledge of mothers regarding EBF (POR 2.8; 95 % CI: 2-3.7 $p = 0.001$), attitude of mothers regarding EBF (POR 2.4; 95 % CI: 1.4-4.1 $p = 0.002$) and mode of delivery (POR 1.5; 95 % CI: 1-2.1 $p = 0.034$).

Conclusion: Problems not experienced by mothers during breastfeeding, knowledge of mothers related to EBF, attitude of mothers towards EBF, admission of baby in NICU after birth and mode of delivery are predictors of EBF. Therefore, enhancing the breastfeeding promotion strategies such as educating mothers and family members about benefits of early initiation of breastfeeding and EBF during antenatal and post-natal care, advocating and counseling of mothers who undergo C-section will help to promote EBF.

Keywords: Exclusive breastfeeding, Prevalence, Determinants

4.68

A COMPARISON OF MITS COUNSELING AND INFORMED CONSENT PROCESSES IN PAKISTAN, INDIA, BANGLADESH, KENYA, AND ETHIOPIA

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Globally, more than 5 million stillbirths and neonatal deaths occur annually. For many, cause of death (CoD) is unknown. Minimally invasive tissue sampling (MITS) has been increasingly used in postmortem examinations for ascertaining CoD in stillbirths and neonates. Our study compared counseling and consent methods used in MITS projects in five countries in Africa and south Asia. Key informant interviews were conducted with researchers to describe characteristics and backgrounds of counselors, environment and timing of consent and perceived facilitators and barriers encountered during the consent process. Counselors at all sites had backgrounds in social science, psychology and counseling or clinical expertise in obstetrics/gynecology or pediatrics. All counsellors received training on techniques for building rapport and offering emotional support to families; training duration and methods differed across sites. Counselling environments varied significantly; some sites allocated a separate room, others counselled families at bedside or nursing stations. All counsellors had a central role in explaining MITS procedure to families in their local languages. Most sites did not use visual aids during the process, relying solely on verbal descriptions. In most sites, parents were approached within one hour of death. The time needed for decision making by families varied from a few minutes to 24 h. In most sites, extended family took part in decision

making. Because many parents wanted burial as soon as possible, counsellors ensured that MITS be conducted promptly after receiving consent. Barriers to consent included decreased comprehension of information due to emotional and psychological impact of grief. Each site adapted the process to fit their context. Many commonalities are sustained across contexts and have the potential to inform MITS counselling approaches and strategies for the future.

Keywords: MITS counseling, , Informed consent processes,,Comparative, PURPOSE Pakistan, PURPOSE India, CHAMPS Bangladesh, SIP Ethiopia, PRESS 2 Kenya

4.69

FATCO SYNDROME VARIANT IN A MALE NEWBORN INFANT – CASE REPORT

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Fibular aplasia, tibial campomelia, and oligosyndactyly (FATCO syndrome) are purely descriptive terms. This syndrome comprising a rare, genetic, congenital limb malformation is characterized by unilateral or bilateral fibular aplasia/hypoplasia, tibial campomelia, and lower limb oligosyndactyly involving the lateral rays. Upper limb oligosyndactyly and cleft lip/palate may also be associated. We report on a newborn male with malformations consisting of unilateral fibular hypoplasia, tibial campomelia, and oligosyndactyly, a FATCO variant case. Given the rarity of reports on this syndrome with unknown genetic basis and inheritance and the lack of a uniform management approach, it is imperative that each case of FATCO syndrome is reported.

Keywords: Fibular Hypoplasia, Oligosyndactyly, Tibial Campomelia

4.70

DETERMINANTS AND PREGNANCY OUTCOMES OF HOME VS. HOSPITAL-BASED DELIVERY IN RURAL SETTING OF SINDH, PAKISTAN

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Introduction: In Pakistan, although the rate of institutional deliveries is comparatively higher in urban areas (81%), but nearly half of the rural women still prefer to deliver at home in an unsafe environment. We conducted this study with an objective to determine the factors influencing women's decision regarding their place of delivery and its subsequent effect on the pregnancy outcome in rural setting of Sindh, Pakistan.

Methods: This study was a secondary data analysis. Data for this study was taken from The Global Network's Maternal Newborn Health Registry (MNHR) which is a prospective, population-based observational study. Only data from Pakistan (District Thatta in Sindh province) from 2018-2019 was taken for the analysis. We have used Chi square test to assess the frequency distribution and the relationship of independent factors with place of delivery. Multivariate models were developed to assess the strength of association between outcome variable and independent variables (covariates) with place of delivery.

Results: A total of 4649 women were included in this study. Out of the total 1286 (27.7%) women had delivered at home. Majority of the home delivered mother (34.7%) had parity of 2-3. Around 15.1 % of the women delivering at home had no ANC visit during the current pregnancy and nearly two third women (63.4 %) had less than 4 ANC visits as compared to those delivering at a facility. Having no ANC visit were also associated significantly with home delivery (aOR= 6.23; [95% CI: 3.74,10.35]). Women choosing home as place of delivery

have higher odds of not delivering a life baby (aOR= 1.39; [95% CI: 1.02,1.93]).

Conclusions: In our study we found multiple statistically significant associations between education, parity and outcome of last pregnancy and no ANC care with choice of place of delivery. Maternal complications and having low birth babies were also associated with home delivery which calls for appropriate interventions in this respect.

Keywords: Place of delivery, Rural women, Pregnancy outcomes

4.71

CREATING THE ARCHITECTURE OF SUSTAINABLE IMMUNIZATION FINANCING- TEACHING VACCINE ECONOMICS EVERYWHERE- PAKISTAN WORKSHOPS

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Background: Pakistan recently began its graduation from Global Alliance for Vaccines and Immunization (GAVI) funding for the national vaccine delivery system, and therefore has begun to phase towards autonomous immunization system financing. However, the problem is the lack of human resources skilled in financial and economic decision making when critical policies are made, that affect the performance of immunization delivery in GAVI countries. The Teaching Vaccine Economics Everywhere (TVEE) program aims to provide training centered in capacity building for immunization officials through a comprehensive immunization economics curriculum.

Methods: The Aga Khan University Pakistan, being one of the 6 regions of TVEE, has organized five workshops and one policy roundtable, each spanning over 2-3 days, since 2017. These workshops brought together over 130 participants from Pakistan and Afghanistan that are currently working on immunization in various capacities. The curriculum was taught by

health economics experts from AKU, Johns Hopkins University, WHO and World Bank; in the modules of Principles of vaccine economics, Costing in vaccine planning & programming, Economic evaluation of vaccine and immunization programs, Program evaluation of vaccine and immunization programs, Financing and expenditure analysis and Systems and logistics analysis. A Level 3 evaluation was conducted via emailed surveys to understand the varying needs between TVEE cohorts in their respective vaccine delivery systems. Results: Pakistan and Afghanistan cohort respondents indicated that religious and cultural barriers, vaccine hesitancy, insufficient awareness of the clients and community and financial constraints and weak service delivery were the most prominent major challenges to vaccine systems. Pakistan cohort respondents indicated that economic evaluation and modeling economic benefits; budgets, monitoring and resource tracking; and immunization systems analysis were the sub-disciplines that required the highest levels of skill-building in their workplaces.

Conclusion: There is a continued need for a vaccine delivery system capacity-building curriculum that provides the technical skillset and necessary materials for resource allocation, costing, economic evaluation, and immunization system analysis. The TVEE curriculum has had a positive impact on immunization officials, EPI staff, and policymakers in Pakistan. Currently we are conducting a global online course for all the six regions spanning over 8 weeks from Oct to Dec 2020, focusing mainly on SARS CoV-2 Vaccine.

Keywords: Immunization Economics, Capacity building, Sustainable Immunization Financing

4.72

A SURVEY TO ASSESS MUCOSAL AND HUMORAL IMMUNITY IN BIN QASIM TOWN, KARACHI, PAKISTAN

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Background: To better understand why WPV1 persists in polio endemic regions, and other such areas in Pakistan, it is important to know the proportion and age of children that lack mucosal immunity despite repeated OPV campaigns. It is known that mucosal immunity rapidly wanes however it is less well understood to what extent this immunity wanes in populations repeatedly vaccinated with OPV. This study was conducted with the following objectives; 1) To quantify the proportion of children lacking mucosal immunity to poliovirus type 1 (PV1) in Bin-Qasim in presence (or absence) of humoral immunity, 2) To quantify proportion of children silently excreting wild poliovirus type 1 (WPV1), 3) To identify the intestinal flora overgrowth among children lacking mucosal immunity to PV1 and compared them with age matched positive controls in case-control fashion.

Methods: A community based open label intervention study was carried out at 2 sites in Bin Qasim Town, Karachi, from September 2019 to November 2019. The study population consisted of children ages 0-15 years which was divided into four age groups: 0-11 months, 3-5 years, 8-10 years and 13-15 years. A total of 610 children were included in the study. After assessing eligibility and taking written informed consent, baseline stool and blood collection was done followed by clinical examination and anthropometry. The children were then given bOPV and were followed after 7 days for second stool sample.

Results: Overall 14 children (5%) were excreting sabin like polio virus type 1 at enrollment and 7 children (2%) at follow ups. 7 (5%) children in the 0-11 month age group were excreting WPV1 at enrollment and only 4 children (3%) at 7 days follow up, only 1 child (1%) in the 3-5 years age group was excreting WPV1 at enrollment and at follow up, only 2 children (1%) in the 8-10 years of age group were excreting WPV1 at enrollment and only 1 (1%) at follow up while 4 children (3%) in the 13-15 years of age group were excreting WPV1 at enrollment and only 2 (1%) at follow up. The data about the proportion of children lacking mucosal immunity to poliovirus type 1 is still under analysis. Moreover, the stool samples of the children lacking mucosal immunity are also under processing for detection of intestinal floral overgrowth.

Conclusion: A very small proportion of children in each of the age groups were excreting sabin like poliovirus at follow up.

Keywords: Humoral Immunity, Mucosal Immunity, Survey

4.73

PERCEPTIONS OF HEALTH PROFESSIONALS REGARDING MINIMALLY INVASIVE PERCEPTIONS OF HEALTH PROFESSIONALS REGARDING MINIMALLY INVASIVE TISSUE SAMPLING (MITS) TO IDENTIFY THE CAUSE OF DEATH IN STILLBIRTHS TISSUE SAMPLING (MITS) TO IDENTIFY THE CAUSE OF DEATH IN STILLBIRTHS AND NEONATES: RESULTS FROM A QUALITATIVE STUDY

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Background: Minimal invasive tissue sampling (MITS) procedure is developed to support determination of cause of death as an alternate to conventional autopsy, especially in countries where complete diagnostic autopsy is not routine. To ensure successful implementation of MITS, for a study to determine cause of death in premature births and stillbirths in south Asia, it is important to understand health professionals' attitudes and perceptions related to MITS.

Methods: A qualitative study conducted at National Institute of Child Health (NICH), Karachi, Pakistan. Focus group discussions (FGDs) and Key-informant interviews (KIIs) were conducted with health professionals: doctors, nurses, trainees, clinicians, bioethics experts and public health experts to explore their perceptions and views on acceptability of MITS. Data were analyzed using NVivo 10 software.

Results: A total of 12 interviews (FGDs=4; KIIs=8) were conducted. Four overarching themes were identified: (I) acceptability of MITS; (II) perceived benefits of the MITS procedure; (III) factors facilitating the implementation of MITS; and (IV) health system requirements for implementing the MITS procedure. MITS was considered as a positive development for the health system. Diagnostic accuracy and identification of less common causes of death were highlighted as two main benefits of MITS. Emerging facilitators for MITS acceptability were effective counseling, building trust with parents, fast procedure time, and approaching families within a few hours of death. Lack of skilled staff, poorly equipped healthcare facilities and potential high cost to conduct MITS were identified as challenges for MITS implementation.

Conclusions: This formative research provided opportunity in exploring health professionals' views and attitudes towards MITS. Such insights are crucial in ensuring successful implementation and integration of a new technique into existing health systems, in addition to identifying factors influencing its

acceptability and facilitation amongst health professionals.

Keywords: Minimal invasive tissue sampling, Cause of death, Neonates, Stillbirth, Qualitative study

4.74

PERCEPTIONS OF PARENTS AND RELIGIOUS LEADERS REGARDING MINIMAL INVASIVE TISSUE SAMPLING TO IDENTIFY THE CAUSE OF DEATH IN STILLBIRTHS AND NEONATES

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Background: Minimal invasive tissue sampling (MITS) procedure is developed to support determination of cause of death as an alternate to conventional autopsy, especially in countries where complete diagnostic autopsy is not routine. To assess feasibility of implementing MITS for a study to determine cause of death in premature births and stillbirths in south Asia, views and perceptions of parents and religious leaders were explored on acceptability of MITS.

Methods: A qualitative study was conducted at the National Institute of Child Health (NICH) hospital of Karachi, Pakistan. Focus group discussions (FGDs) were conducted with parents of newborns who visited well-baby clinics of NICH hospital for post-natal check-ups. Key-informant interviews (KIIs) were conducted with religious leaders. Data were analyzed using NVivo 10 software.

Results: A total of 13 interviews (FGDs=8; KIIs=5) were conducted. Three overarching themes were identified: (I) acceptability of MITS; (II) concerns affecting implementation of MITS; and (III) religious and cultural perspectives. Participants' acceptance of MITS was based on personal, religious, cultural and

social beliefs. Parents widely recognized the need for this procedure in cases where couples had experienced multiple stillbirths, neonatal deaths and miscarriages. Counseling of parents was considered vital to address emotional concerns of parents and family. Religious leaders indicated acceptability of MITS procedure from a religious perspective and advised that respect for the deceased and consent of guardians is mandatory when performing MITS.

Conclusions: This qualitative study provided a unique opportunity to understand views of parents and religious leaders towards performing MITS. Generally, MITS appears to be an acceptable method for identifying cause of death in neonates and stillbirths, provided that the deceased is respected and buried without any delays and parents counseled appropriately. Findings from this research are essential in approaching families for MITS's consent.

Keywords: Minimal invasive tissue sampling, Cause of death, Neonates, Stillbirth, Parents, Religious leaders, Perceptions

4.75

ACCURACY OF PEDIATRIC RISK OF MORTALITY (PRISM) III SCORE IN PREDICTING MORTALITY OUTCOMES IN A PEDIATRIC INTENSIVE CARE UNIT IN KARACHI

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Background With the advancements in medicine and increasing access to modern technology, pediatric intensive care units (PICU) are becoming a vital part of any health care setting. PICUs play a key role in saving the life of young patients. Various scales have been designed by researchers to aid in predicting the mortality of a

patient admitted in PICU. Pediatric Risk of Mortality (PRISM) and Pediatric Index of Mortality (PIM) are among the most commonly used scales. Calculating the risk of mortality enables the physicians to classify the patients and helps in identifying which patients require more urgent care and resources.

Methods A hospital-based prospective study was carried out at PICU in a tertiary care hospital in Karachi from December 2017 to June 2019. All patients between the age of one month and 12 years were included in our study after informed consent from parents/guardians. A standard questionnaire was used and the PRISM III score was calculated at 24 hours of admission. All necessary investigations were carried out, and all statistical analyses were carried out using SPSS v.23 (IBM, Armonk, NY).

Results A total of 407 patients were included in our study with the majority being males (54.5%). The mean age was 27±33 months. The mean duration of stay of patients in PICU was 80.15±36.58 hours. The mortality rate in our study was 37.35 % (n=152). The need for mechanical ventilation, use of inotropic drugs, higher temperatures, and low Glasgow Coma Scale scores were associated with poor survival. It was noted that as the PRISM III score increased, the mortality rate also increased. In our study, we found that PRISM III had good predictive power in our population. The area under the curve was 0.903±0.016 (p

Keywords: PRISM, mortality risk, intensive care unit

4.76

ANAESTHETIC TECHNIQUE FOR OVARIAN GERM CELL TUMOUR WITH ACUTE KIDNEY INJURY IN A YOUNG ASIAN WOMAN

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Introduction: Malignant ovarian germ cell tumours (MOGCTs) are a group of tumours commonly seen in adolescent and young females. MOGCTs represents ovarian tumour load of 3-5% higher incidence is seen in Asian females. Dysgerminoma comprises 25-35% of all ovarian malignancies. Yolk sac tumour (YST) is the second commonest. Malignancies are known to put stress on renal function by infiltration or obstruction of the urinary tract and by the administration of nephrotoxic chemotherapeutic agents. The prevalence of perioperative acute kidney injury (AKI) is around 13% in non-cardiac surgical patients, which instigated perioperative morbidity and mortality hence Anaesthesia techniques need to be modified to prevent it.

Case Report: We report a case of mixed germ cell tumour, which presented with acute kidney injury in an unmarried 22-year-old Asian girl. The case demonstrated that an aggressive approach with multidisciplinary teamwork ascertained outstanding clinical outcome. The patient was successfully managed by a fertility-sparing surgery; pre-emptive invasive lines, a thoracic epidural and renal protective strategies under general anaesthesia. She underwent three cycles of Bleomycin, Etoposide and Cisplatin (BEP) therapy after that the patient's pathophysiology returned to normal within weeks and she was declared tumour-free. Furthermore, three-year follow up scans and biomarkers were evident for tumour negativity.

Conclusion: MOGCT devises excellent clinical outcome once it presents at an early stage and the patient undergoes proposed treatment strategies, including fertility-sparing surgery and BEP therapy. MOGCT's rare presentation such as major vessels invasion and AKI needs multidisciplinary (gynaecology, nephrology, oncology and anaesthesiology) team approach to target the required clinical outcome.

Keywords: Ovarian germ cell tumour, Acute kidney injury, General anaesthesia

4.77

COST ESTIMATION IN CONJUNCTION WITH A MULTI-REGIONAL, MULTI-COUNTRY TRIAL OF ANTENATAL ULTRASOUND IN FIVE LOW- AND MIDDLE-INCOME COUNTRIES: LESSONS LEARNED IN PAKISTAN

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Background: Improving maternal health has been a goal of international health agencies for the last two decades with the aim of reducing maternal and child deaths and improving access to services such as antenatal care, particularly in low- and middle-income countries (LMICs). Limited studies have estimated antenatal care (ANC) and delivery costs in Pakistan.

Methods: We collected data on resource use and costs as part of a large, multi-country clinical trial assessing the use of routine screening ultrasound (US). We assessed typical outpatient ANC and hospital-based (facility) care for pregnant women, with selective complication-related data collection. All costs were estimated from a health system perspective and reported in 2015 United States dollars (USD). We compared average costs across countries for visits, deliveries, higher-risk pregnancies, and complications. We identified lessons learned for country-level stakeholders.

Results: Our study included a diverse mix of countries. Overall, the relative cost of individual ANC and delivery-related healthcare use was consistent among countries, generally corresponding to country-specific income levels. Pakistan and Guatemala had more private ultrasound services available than other countries. A combined Pakistan sample of 7,243 pregnant women had an average of 3.9 ANC visits and those receiving US had 1.7 visits with US. Delivery costs estimates (averaging home,

clinic, hospital) in Pakistan were influenced by hospital-based cesarean section deliveries (11% of patients), and relatively high unit costs for these events. Sensitivity analysis for Pakistan indicated that adjusting hospital-based delivery costs had the greatest impact on estimated average delivery costs.

Conclusions: Overall, there was no clear suggestion that adding antenatal screening US would result in either major cost savings or major cost increases, including in Pakistan. Given the lack of clinical effectiveness evidence and the greater resource constraints of LMICs, it is unlikely that introducing screening US would be economically efficient in these settings..

Keywords: Cost effectiveness, Maternal health, Clinical trial

4.78

FRONTLINE HEALTH WORKERS AND DISTRICT HEALTH MANAGERS VIEW ON OPERABILITY, ACCEPTABILITY, AND USEFULNESS OF DIGITIZATION FOR ROUTINE IMMUNIZATION AND ANTENATAL COVERAGE IN RURAL PAKISTAN AND AFGHANISTAN

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Background: Hayat is an intervention study with focus on digitization of front-line health workers (Lady health Workers (LHW) and vaccinators) through an app and dashboard system. There is little evidence on the factors that facilitate embedding digital technology into mainstream health systems.

Objective: This study aimed to provide the qualitative experiences of frontline health staff and district managers while engaging with Hayat application and dashboard to improve routine childhood immunization and antenatal coverage in 4 district of Pakistan and 3 districts of Afghanistan.

Methods: An Android-based app was developed and used for a 2-year period in 4 districts of Pakistan and 3 districts of Afghanistan with rural district with poor immunization and antenatal coverage selected as intervention sites. We used iterative methods to examine the (1) acceptability and operability of the app, (2) validity of the collected data, and (3) use of the collected data for decision making. Focus group discussions (FGD) were conducted with LHWs and Vaccinators and in-depth interviews were conducted with purposively selected key informants (government district managers) involved with the Expanded Program for Immunization (EPI) and LHW program. Findings were triangulated in line with the three broad research areas.

Results: Digital tracking of immunization and antenatal visit was considered acceptable by vaccinators, LHWs and district managers. The validity of the app data was perceived to be superior to that of data from manual records. Ease of operability, personal recognition, monthly calling and internet package served as enablers. Use of smart phone had positive unintended consequences of increasing reach during Covid-19 pandemic and harsh winter season. Smart phones helped front line workers communicate with one another and give feedback to supervisors to troubleshoot issues on the ground.

Conclusions: Digitization for routine immunization and antenatal coverage has potential to improve the health system through transparency, real time decision making, ease of use and hyper connectivity.

Keywords: Antenatal coverage, immunization, digital technology

4.79

EXPLORING PERSPECTIVES, PREFERENCES AND NEEDS OF A TELEMONITORING PROGRAM FOR WOMEN AT HIGH RISK FOR PREECLAMPSIA IN A TERTIARY HEALTH FACILITY OF KARACHI: A QUALITATIVE STUDY PROTOCOL

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Background In Pakistan, deaths from preeclampsia/eclampsia (PE/E) represent one-third of maternal deaths reported at tertiary care hospitals. To reduce the morbidity and mortality associated with PE/E, an accessible strategy is to support pregnant women at high risk for preeclampsia (HRPE) by closely monitoring their blood pressures at home (i.e., telemonitoring) for the earliest signs of preeclampsia. This could lead to the earliest possible detection of high blood pressure, resulting in an early intervention such as through medications, hospitalization, or delivery of the baby. The study aims to explore the perspectives, preferences, and needs of telemonitoring (TM) for pregnant women at HRPE in Karachi, to inform future implementation strategies.

Methods The study will employ an exploratory qualitative research design. The study will be conducted at the Jinnah Postgraduate Medical Centre (JPMC) hospital and Aga Khan University Hospital (AKUH) in Karachi, Sindh, Pakistan. Data will be collected through key-informant interviews (KIIs) and in-depth patient interviews (IDPIs). IDPIs will be conducted with the pregnant women at HRPE who are visiting the out-patient department/ antenatal clinics of JPMC hospital for antenatal check-ups and immunizations. KIIs will be conducted with the obstetricians, Maternal, neonatal and child health (MNCH) specialists, and health care providers at JPMC, as well as TM experts from Karachi. Study data will be analyzed through

conventional content analysis. Interviews are anticipated to begin in April 2020 and to be completed during the summer of 2020.

Discussion This is the first study to explore the use of the TM program for pregnant women at HRPE in a tertiary health facility in Karachi. The research will help explore perceived benefits associated with the use of a TM program alongside potential facilitators and barriers that may help inform the future implementation of a TM program for pregnant women at HRPE in Karachi.

Keywords: Pregnant women, Telemonitoring, High risk for preeclampsia

4.80

SYSTEMATIC IDENTIFICATION AND DIFFERENTIAL EXPRESSION PROFILING OF PRETERM BIRTH ASSOCIATED PLASMA MIRNAS IN LMICS COHORT

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Introduction: Premature birth (PTB), defined as delivery 37 weeks of gestation) to the active contractions (24-34 weeks of gestation)
Methodology: Sequencing data was pre-processed using the RNA analysis pipeline, sRNAAnalyzer and aligned to multiple human RNAs and miRNAs databases. We removed RNAs and miRNAs with 0 read counts in >50% of samples, or a mean read count 1. Putative miRNA gene targets were detected using the quantitative model by TargetScan, and has the best predictive performance compared with the other comparable tools. miRNA target-gene relationship was identified in controls and cases by examining the correlations between each miRNA, and its proposed target genes. Gene set enrichment analysis was performed for mRNA targets using two-sided hypergeometric tests conducted on Gene Ontology (GO) biological process gene sets using GO gene set visualization application 'ClueGO' within the

Cytoscape environment. We also compared the expression of miRNAs in preterm controls and cases to previously published data. Findings: 15 miRNAs were identified that may play a role in the identification of pregnant women who deliver prematurely; serving as an important foundation to subsequent analyses.

Conclusion: This work intensely focuses on discovering potential biomolecular mechanisms by which miRNAs need to be functionally validated in independent cohort of pregnant women on key tissues, such as, placenta and myometrium, etc..

Keywords: Preterm Birth, DEGs, miRNAs

4.81

MATERNAL AND CHILD HEALTH SERVICES IN NORTHERN PAKISTAN AND AFGHANISTAN: PERFORMANCE OF FRONTLINE HEALTH CARE WORKERS

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Community Health Sciences, Community Health

Introduction: Pakistan and Afghanistan are one of the major contributors to maternal and child mortality in the region.

Objective: To assess performance of frontline health care workers for maternal and child health services in northern Pakistan and Afghanistan

Methodology: A descriptive cross-sectional study was conducted in the Lady Health Workers' (LHW) and Community Health Workers' (CHW) covered areas in three districts of Pakistan and seven districts of Afghanistan using a two-staged cluster sampling technique, in March-April 2019. A household was considered eligible where a child of age <2 years was residing at the time of survey.

Results: A total of 1204 and 1200 households from Pakistan and Afghanistan respectively were interviewed. Almost all the households in Pakistan and 65% in Afghanistan reported that

LHWs and CHWs visited them. 63.4% and 48.4% women exclusively breast fed in Pakistan and Afghanistan respectively. In Pakistan Almost half of the deliveries (48%) were assisted by nurse/ LHV/ midwife. In Afghanistan, 57% were conducted by nurse/ LHV/ midwife. Discussion: Wide disparities were noted between services to be delivered by LHWs and CHWs and actual uptake of these services at community level. LHWs and CHWs were actively involved in provision of polio vaccine. The factors for not seeking professional advice for childbirth and postnatal care and less use of contraceptives can be multifaceted and need further exploration.

Conclusion: Maternal care and family planning services need to be reprioritized from polio towards routine immunization, antenatal services and breast-feeding practices.

Keywords: maternal health, child health, frontline worker

4.82

USING MOBILE PHONES TO IMPROVE YOUNG PEOPLE SEXUAL AND REPRODUCTIVE HEALTH IN LOW AND MIDDLE INCOME COUNTRIES: A SYSTEMATIC REVIEW TO IDENTIFY BARRIERS, FACILITATORS AND RANGE OF MHEALTH SOLUTIONS

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Background: Globally, reproductive health programs have used mHealth to provide sexual and reproductive health (SRH) education and services to young people, through diverse communication channels. However, few attempts have been made to systematically review the mHealth programs targeted to improve young people SRH in low-and-middle-income countries (LMICs). This review aims to identify a range of different mHealth solutions

that can be used for improving young people SRH in LMICs and highlight facilitators and barriers for adopting mHealth interventions designed to target SRH of young people.

Methods: Databases including PubMed, CINAHL Plus, Science Direct, Cochrane Central, and grey literature were searched between January 01, 2005 and March 31, 2020 to identify various types of mHealth interventions that are used to improve SRH services for young people in LMICs. Of 2,948 titles screened after duplication, 374 potentially relevant abstracts were obtained. Out of 374 abstracts, 75 abstracts were shortlisted. Full text of 75 studies were reviewed using a pre-defined data extraction sheet. A total of 15 full-text studies were included in the final analysis.

Results: The final 15 studies were categorized into three main mHealth applications including client education and behavior change communication, data collection and reporting, and financial transactions and incentives. The most reported use of mHealth was for client education and behavior change communication [n = 14, 93%] followed by financial transactions and incentives, and data collection and reporting. Little evidence exists on other types of mHealth applications described in the Labrique et al framework. Included studies evaluated the impact of mHealth interventions on access to SRH services (n=9) and SRH outcomes (n=6) mHealth interventions in included studies addressed barriers of provider prejudice, stigmatization, discrimination, fear of refusal, lack of privacy, and confidentiality. The studies also identified barriers to uptake of mHealth interventions for SRH including decreased technological literacy, inferior network coverage, and lower linguistic competency.

Conclusion: The review provides detailed information about the implementation of mobile phones at different levels of the healthcare system for improving young people SRH outcomes. This systematic review recommends that barriers to uptake mHealth interventions be

adequately addressed to increase the potential use of mobile phones for improving access to SRH awareness and services.

Keywords: mobile phones, young people, sexual and reproductive health

4.83

EXPLORING DIGITAL HEALTH INTERVENTIONS FOR PREGNANT WOMEN AT RISK FOR PREECLAMPSIA AND ECLAMPSIA IN LOW-AND-MIDDLE-INCOME COUNTRIES: A SCOPING REVIEW

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Background: International guidelines recommend self-monitoring and recording of blood pressure (BP) and other symptoms for pregnant women (PW) at high risk for preeclampsia and eclampsia (HRPE/E), to ensure early diagnosis and management. Digital health interventions (DHIs) are increasingly being used in high income countries (HIC) to support PW at HRPE/E for remote monitoring of BP and other disease symptoms. However, there is limited body of evidence on the use of DHIs to support PW at HRPE/E in low-and-middle-income countries (LMICs).

Objective: To identify the range of digital health innovations that have been used to support PW at HRPE/E in LMICs.

Methods: Levac et al. and Arksey et al. methodological framework was used to conduct this scoping review. An electronic search was carried out using five international online databases, between January 1, 2000 and October 20, 2020, to identify the range of DHIs implemented to support PW at HRPE/E.

Results: Out of 3,389 studies, 19 studies met the inclusion criteria. The included studies reported 11 unique DHIs, which were mostly implemented in Southwest Africa and South Asia. The final studies (n=19) were grouped into three types of DHIs including: 1) Predictive

Models (n=5), 2) mHealth applications (n=8), and 3) Devices (n=5). Data collection and management (n= 15) and clinical decision support systems to healthcare providers (n=14), were reported as the key functions of DHIs. These studies reported three major outcomes: 1) maternal health outcomes (n=5), 2) usability and acceptability (n=5), and 3) intervention feasibility (n=9).

Conclusion: Although the current evidence base of DHIs shows some potential for the use of different DHIs to support PW in early diagnosis and management of PE/E, more prospective experimental and longitudinal studies are needed prior to recommending the use of DHIs for PW at HRPE/E in LMICs.

Keywords: digital health interventions, preeclampsia/ eclampsia, LMICs

4.84

ASSOCIATION OF DIARRHEA, RESPIRATORY INFECTIONS, AND GROWTH WITH GEOSPATIAL ENVIRONMENTAL FACTORS IN RURAL PAKISTAN

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Pediatric undernutrition is estimated to cause nearly half of the 5 million deaths annually among children < 5y of age. Mortality in children from undernutrition is highest in developing countries and two of the most common causes are diarrhea and respiratory infections. Geospatial environmental factors have been proposed to be linked with these causes of mortality. We aimed to analyze the relationship between environmental factors such as proximity to hospitals and major highways with diarrhea, acute respiratory infections (ARI), and growth in children from a rural village, Matiari, Pakistan. Data was collected via a prospective

inception cohort study. Anthropometric data (weight, length) was obtained at 0-6, 9, and 24 mo of age. Diarrhea and ARI (signs and symptoms for minimum 2d followed by a 7d symptom free interval) prevalence (number of sick days/observed days*365) was recorded. Latitudes and longitudes were acquired for the children and secondary-care healthcare facilities. Distance of each patient from the nearest hospital was computed in kilometers (km). All continuous variables were expressed as mean (\pm SD) and Pearson correlation coefficient (r) was used for associations (p-value < 0.05 for significance). Our study included 401 children (61% male). The mean age, distance from hospitals, and weight difference from 0-6 till 24 months was 4.2 mo (\pm 1.0), 6.5 km (\pm 3.3), and 2.5 kg (\pm 1.0), respectively. Prevalence of diarrhea and ARI was 48.9% (\pm 33.2) and 53% (\pm 52), respectively. Association between the distance from hospitals and prevalence of diarrhea (r=0.2, p<0.001) and ARI (r=0.16, p=0.002) was statistically significant. More weight increase was also observed for patients closer (less distance) to the hospitals (r=-0.11, p= 0.03). We found that patients closer to hospitals had decreased prevalence of diarrhea and ARI, and improved weight. This could indicate that proximity and connectivity to healthcare centers plays a major role in determining parameters linked to the nutrition status of the patients. This study lays the groundwork for future similar efforts in rural settings where geospatial information is scarce, and work related to other environmental factors is underway.

Keywords: Respiratory infections, Geographic Information Systems, Diarrhea

4.85

PREVENTING INFANT MALNUTRITION WITH EARLY SUPPLEMENTATION (PRIMES) STUDY

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Background Childhood undernutrition is a major health burden and underlying cause of significant childhood mortality as well as morbidity that can persist well into adult life. Exclusive breastfeeding is nature's most free-of-cost intervention to avert infant deaths and is in combination with vaccination, the cornerstone of preventive medicine in children. As part of the project on Preventing Infant Malnutrition with Early Supplementation (PRIMES) this qualitative component aimed to understand local experiences and beliefs related to breastfeeding and early supplementation.

Methodology This was a 'qualitative exploratory study' to understand the perceptions, practices, and experiences of the community on EBF and opinion on early supplementation. The study was conducted at 4 different peri-urban coastal slums of Karachi, Pakistan, namely: Rehri Goth, Ibrahim Haidri, Bhains Colony and Ali Akbar Shah Goth.

Results Community attitudes and practices related to exclusive breastfeeding is varied among the participant. Many have shared that they trust breastfeeding for better infant growth. However, many have socio-cultural barriers and misconceptions which ultimately translated into poor compliance with exclusive breastfeeding. Early supplementation with other sources of milk, especially cow, goat and formula milk are commonly started during early lactation phase. Many participants are influenced with community practices and do not follow the instruction provided by health workers. Further, community perception related to early supplementation with specific product design to address issue of poor growth during early neonatal period is varied among the participants. Many linked it with challenges, like ease of use and other community practice, and accessibility.

Conclusions Exclusive breastfeeding is remained to be challenge in resource poor settings. Early supplementation design to avert risk of neonatal

growth flattering need to be culturally sensitive and easy to be administered at community level.

Keywords: Breastfeeding, Early Supplementation, Mother and Child Health

4.86

SOCIO-CULTURAL BARRIERS TO ACCESSIBILITY AND UTILIZATION OF MATERNAL AND NEWBORN HEALTHCARE: A QUALITATIVE STUDY IN DISTRICT THATTA, PAKISTAN

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Background: Accessibility and utilization of health care play a significant role in preventing complications during pregnancy, labor, and the early postnatal period. However, socio-cultural factors are important determinants of accessing and seeking health care for pregnancy and neonatal care. The aim of this study was to explore the socio-cultural barriers that inhibit women to seek maternal and newborn health care in Thatta, Sindh, Pakistan. **Methods:** This study employed an interpretive research design using purposive sampling approach. Pre-tested semi-structured interview guides were used for data collection. The data were collected through eight focus group discussions with men and women, and 16 in-depth interviews with healthcare workers and analyzed through thematic analysis. **Findings:** The study identified structural, socio-cultural, and individual level multifaceted barriers that inhibit women from seeking maternal and newborn care. Structural barriers included: lack of affordability to seek care, poor transportation infrastructure, and ineffective referral systems. The four identified socio-cultural barriers were: adverse outcome association with seeking care, gender discrepancy in decision making for place of delivery, and detrimental influences on newborn care. Lastly, individual barriers

included: mistrust towards public health facilities and delayed response to symptoms recognition for care seeking behavior during pregnancy. Conclusion and Suggestions: Maternal-newborn health seeking is influenced by multifaceted factors such as cultural myths influencing health-seeking behavior, poor accessibility, and not keeping compliance with prescribed medications or repeat visits It is suggested that health education sessions through participatory action research should be designed and implemented for health promotion and behavioral change mechanism in the community.

Keywords: health-seeking behavior, maternal and newborn care, socio-cultural barriers

4.87

SEVERE ACUTE MALNUTRITION/MODERATE ACUTE MALNUTRITION

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Abstract Background: Malnourished Contributes high morbidity and mortality among children under five. Many cases of acute malnutrition become severe and complicated due to delays in case detection and presentation at health facilities. Worldwide, more than 47 million children under 5 are wasted (weight-for-length/height z-score <-2) and over 144 million children under 5 are stunted (length/height-for-age z-score <-2). Decreasing child mortality and improving child health depend heavily on reducing malnutrition, which is responsible, directly or indirectly, for 35% of deaths among children under five. *Method:* The project is being carried out in an impoverished urban slum, Ibrahim Hyderi Goth (IH), Ali Akbar shah (AG), Bhains colony (BH) and Rehri Goth (RG), situated at the coastal area of Karachi. All children aged 6 to 59 months of age coming to the Primary Health care centers are assessed for Malnutrition by community health workers and physicians. Eligibility is based on

Anthropometry by taking MUAC. All children having MUAC less than 11.5 cm are labelled as severely acute malnourished and children with MUAC 11.5 to 12.5cm as moderately acute malnourished. Results: We have screened 21,404 children from 2nd January to October 2020. 74 (0.3%) children were excluded having danger signs or surgical or medical emergency condition. Total 2628 (12.2%) children were enrolled. Out of them 1932 (9 %) children had moderate acute malnutrition (MAM) and 696 (3.2%) had severe acute malnutrition (SAM). Children enrolled in MAM received 24 Ready to Use Supplementary Food (RUSF) for 6 weeks (1 sachet on alternate day) and children falling in SAM criteria received 42 RUSF for 6 weeks, i.e. 1 sachet per day. 92.4 % children had 75 to 100% compliance, 2.9 % have 50 to 75% and 4.5 % children had 25 to 50 % compliance.

Keywords: Malnutrition, SAM, MAM

4.88

IDENTIFICATION OF POTENTIAL THERAPEUTIC INTERVENING TARGETS FOR THE MANAGEMENT OF PRETERM BIRTH: A MOLECULAR INTERACTIONS ANALYSIS APPROACH

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Introduction: Prematurity is the foremost cause of death in children under 5 years. Genetics contributes to 25-40% of all preterm births (PTB) yet we still need to identify specific targets for intervention based on new genetic pathways Objective: To identify potential therapeutic targets, and corresponding protein cavities and their binding interactions with intervening compounds to manage the challenge of PTB. *Methodology:* We searched 20 genes coding 55 PTB proteins from National Center for Biotechnology Information PubMed database (January-2009 to April-2020). Single Nucleotide

Polymorphisms (SNPs) of concerned genes were extracted from ENSEMBL, and filtration of exonic variants (non-synonymous) was performed. Several in-silico functional prediction algorithms were used to identify damaging variants. Rare coding variants were selected with an allele frequency of $\leq 1\%$ in 1KGD, further supported by South Asian ALFA frequencies and GTEx gene/tissue expression database. Structural protein identification (homology modelling) of the filtered genes and blind docking approach were used to explore the binding cavities and molecular interactions with progesterone (as various synthetic derivate are commonly used to manage PTB) ranked with energetic estimations. Binding cavities were further validated through COACH meta-server. Findings: 4 out of 20 genes were identified with 74 rare pathogenic variants. Of which, 3 genes have partially resolved PTB proteins structures identified with least coverage. We focused on CNN1, the highly expressed gene in female reproductive organs, with maximum structural coverage of 41% to its template (PDB entry '1WYP'). The modeled structure revealed 5 binding cavities with progesterone. Molecular interactions of CNN1 with progesterone were investigated through visual inspections and LigPlot 2D analysis.

Conclusion: Calponin-1 gene and its molecular interaction analysis could serve as an intervention targets for the prevention of PTB.

Keywords: ALFA, Calponin-1, Preterm birth

4.89

EFFECTIVENESS OF PERSONALIZED M-HEALTH COACHING PROGRAM DURING PREGNANCY ON MATERNAL DIET AND OFFSPRING HEALTH: A PARALLEL GROUP RANDOMIZED CONTROLLED TRIAL

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Introduction/Aims: Recommended intake of macro and micro nutrients by pregnant women is essential for optimum fetal development and health during the life course. Antenatal counselling through smart phones needs exploration. This study aims to assess the effectiveness of a web-based m-Health application in improving diet, supplement use (folic acid, iron, calcium and Vitamin D) and lifestyle (substance use, smoking, caffeine intake and physical activity) during pregnancy.

Methods: A randomized control trial is initiated at the Aga Khan University Hospital (AKUH), Karachi since January 2020. We aim to recruit 360 pregnant women in their first trimester having smart phones and without no co-morbid or on medications. Intervention group would be trained to use an m-Health application named as PurUmeed Aaghaz (a hopeful beginning) for collection of dietary and lifestyle information and would receive personalized dietary counselling through 3 push messages weekly. Control group would provide similar information on a paperless questionnaire and would receive standard face-to-face counselling. Participants would be screened at (baseline and 4 follow-ups 6 weeks apart). Every sixth subject would be systematically selected for micronutrient biochemical assessment at the base and end line. Effectiveness of m-Health application would be assessed by a composite Dietary Risk Score and by maternal and offspring outcomes. In addition, infant's blood pressure would be assessed at first birthday. *Results:* Of 119 participant recruited to-date, 20 are excluded due to miscarriage (7), spontaneous abortion (2), change of hospital (6), and family refusing to continue participation (5). Of the remaining 99 participants, 54 (54.5%) have completed their 4 follow-ups and 50 (50%) have been assessed for maternal and offspring outcomes.

Conclusions: This study will be an important step in evaluating the role of m-Health in improving diet, supplement use and lifestyle during pregnancy and in influencing maternal and off-spring outcomes. If proven effective, m-health intervention can be included in antenatal care package at tertiary care hospitals.

Keywords: m-Health, Diet and supplement use during pregnancy, lifestyle during pregnancy

4.90

CONSEQUENCE OF RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTION IN YOUNG INFANTS, KARACHI, PAKISTAN

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Background: Respiratory syncytial virus (RSV) is the most common cause of childhood illness which attacks the lower respiratory tract. It is known to cause long term effects on children's health and is associated with recurrent wheezing in the year following infection and has an association with the development of asthma later in life. The burden of RSV-associated severe acute lower respiratory tract infection in infant's age 0-5 months is higher in developing countries than developed countries. We aim to understand the long-term effects of RSV infection occurring in the first two months of life, including the development of wheeze and asthma. Also, compare the lung function of children who had RSV infection in the first two months of life with that of children who did not have RSV infection.

Methods: A prospective cohort study, where, 6-7-year-old children, residing in peri-urban communities, will be followed for 12 months. It is an extension of ANISA (Aetiology of Neonatal Infection in South Asia) study in which a birth cohort was followed between 2012 and 2013. All eligible 506 children will be visited in their households at baseline, at 6th month and 12th month. Data will be collected on

sociodemographic information, previous health record, family history of disease, screening for atopic dermatitis, rhinitis, difficulty breathing, wheezing, asthma and eczema. Clinical assessment data will include anthropometry, pre and post exercise spirometry.

Conclusion: The outcomes of this study could be helpful for policy makers to promote interventions targeting RSV associated diseases and could be the key determinants for the acceptance of available and upcoming interventions to prevent RSV associated illness in the community. Successful use of the asthma diagnostic technique such as spirometry will provide us with the capability and capacity to evaluate respiratory outcomes in children in future research.

Keywords: RSV, Infants, Pakistan

4.91

UNDERSTANDING WOMEN'S ACCEPTABILITY FOR MOBILE HEALTH SOLUTIONS FOR SELECTION AND USE OF FAMILY PLANNING METHOD: A FEASIBILITY STUDY

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Introduction: The usage of mhealth has increased since the last decade. Usage of mobile in the field of sexual and reproductive health for providing information can increase knowledge. Affordability, acceptability, and availability of family planning services can improve the acceptance of family planning methods in Pakistan. We conducted a qualitative exploratory study to explore women's experience and perception of women for using mobile phones for family planning information. Similarly, the health care provider's perception is also recorded for using mobile apps to improve family planning knowledge and information among women. Further, the study also identifies suitable mHealth intervention to improve access

and information of the family planning method among women of reproductive age.

Methodology: The study explored the perception of women and providers about family planning services through telephonic interviews. Gadap town was selected as a rural area while Azam Basti was considered as an urban area. The data was collected between March-April 2020. Women were contacted with the help of existing staff working in both areas. Women were contacted first where the purpose of the study was explained and their verbal consent was taken and recorded.

Results: The study identified that women in rural areas have access to mobile phones more as compared to urban women. Most of the women of rural areas owned smartphones as compared to urban women, who use their husband's or children's smartphones. Similarly, women in rural areas were more aware of applications such as; youtube, WhatsApp, etc, as compared to urban women. While discussing family planning usage, rural women have used or currently using FP methods as compared to urban women. The women (both urban and rural) know the purpose of family planning. The majority of women in urban were using family planning metho at the time of interview and were satisfied, the only concern that these women showed was related to the side effects, which according to them is "not properly addressed" at the clinics providing family planning services in both areas. The source of information for family planning were communities, peers, LHWs in the communities, and doctors. All women showed satisfaction about the availability of doctors in the clinics. Rural women showed concern about access, as they have to go "in groups" to the clinics because of high distance, while urban women mostly visit the clinics with their husbands. Both urban and rural women mentioned that they don't use mobile phones for getting information about family planning and sexual health, but some women discussed that they take help from the internet to understand issues related to sexual and reproductive health. All of

the women and providers showed their affirmation for the family planning app and considered that it would be a great help to get information or provide information to the women. Providers mentioned that with the help of the app women will have prior knowledge of family planning methods, which will save their time at the facility. On the other hand, women mentioned that they will feel confident if there is an app that can provide information about a particular method including side effects and its management. Further women in the rural areas suggested that the app for family planning should be easy to operate and provide information in the local language, as most of the population are not educated. While women of urban areas suggest that information in Urdu would be more suitable. Few of the women suggested providing information in the app with the help of videos and pictures which would be easy for them to watch and understand.

Discussion and conclusion: Advancement in technology can provide new venues for affordable and accessible information to the women living in rural and urban areas of Sindh. mHealth solutions could be a suitable intervention that will increase affordability, accessibility, and feasibility for family planning methods and usage among women living anywhere in Pakistan.

Keywords: mHealth, family planning, reproductive health

4.92

DUODENAL HISTOPATHOLOGY AND ENTEROPATHOGEN BURDEN IN UNDERNOURISHED CHILDREN WITH ENVIRONMENTAL ENTERIC DYSFUNCTION

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Environmental enteric dysfunction is a subclinical condition of intestinal inflammation, barrier dysfunction and malabsorption associated with growth faltering in children living in poverty. This study explores association of growth parameter with enteropathogen burden in the duodenal aspirate and its histopathology. Sixty-three malnourished children who failed to respond to nutritional intervention underwent endoscopy at the Aga Khan University Hospital, Karachi for histopathological evaluation of their undernutrition. Duodenal aspirates were collected from the second portion of the duodenum and assessed by Taq man Array Card (TAC) analysis for exploration of approximately 40 different enteric pathogens. Regarding growth and morbidity, no difference was noted in HAZ at 24 months or diarrheal episodes between children with or without bacteria, viruses, protozoa or all pathogens. In aspirate, giardia was the most common organism detected on TAC panel (n=38) while on duodenal microscopy, 26 samples confirmed its presence. Conversely, gastric microscopy was more sensitive than duodenal aspirate in detection of *H. pylori* (7 confirmed cases on aspirates and 29 on microscopy). In the context of linear growth, a significantly lower HAZ was observed in microscopically confirmed *H. Pylori* (-3.29 vs -2.56, p=0.014) and giardia cases (-3.17 vs -2.71, p= 0.091), yet this association was not observed in cases confirmed on duodenal aspirate analysis. Concerning histopathology, positive correlations were observed between acute neutrophilic infiltration with counts of positive viruses; chronic inflammation with counts of positive pathogens and positive bacteria; intra-epithelial lymphocytes with counts of positive pathogens, Paneth cell density reduction and total scores with counts of positive viruses; and enterocyte injury with counts of positive pathogens.

In conclusion, duodenal aspirate enteropathogen burden in undernourished children living in enteropathy endemic settings is associated with altered histopathological features. Moreover,

specific pathogens such as *Giardia* and *H. pylori* increases the risk of stunting at 24 months of age.

Keywords: duodenum, enteropathy, malnutrition

4.93

WHAT STOPS US FROM EATING: A QUALITATIVE INVESTIGATION OF DIETARY BARRIERS DURING PREGNANCY IN PUNJAB, PAKISTAN

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Objective: Adequate dietary intake during pregnancy is vital for the health and nutritional status of both mother and fetus. This qualitative study explored the multifaceted barriers to adequate dietary intake during pregnancy in Punjab, Pakistan.

Design: In-depth interviews and focus group discussions were conducted, and then analyzed using thematic analysis.

Setting: Three purposively selected rural districts (Sahiwal, Okara, and Pakpattan) with highest prevalence of maternal and child malnutrition in the province of Punjab, Pakistan
Participants: Mothers with children under age two (n=29), and healthcare providers with at least five years of experience working in the district (n=12)
Results: We identified a combination of physiological, socio-cultural, and structural barriers that inhibited healthful dietary intake during pregnancy. The primary physiological barriers to optimal dietary intake and dietary practices included food aversions and food cravings. Food classification, fear of a difficult childbirth, fear of high blood pressure, and household food politics were the principal socio-cultural barriers. Additionally, two structural barriers, inadequate antenatal counseling and a lack of affordable food options, were identified.

Conclusions: Our study demonstrates that complex barriers prevent pregnant women in the Punjab area from consuming adequate dietary intake, and that antenatal health education programs and structural interventions are needed to support healthful dietary practices during this critical period.

Keywords: pregnancy, food classification, food intake

4.94

EFFECTIVENESS OF A UNIVERSAL SCREENING PROTOCOL FOR ALL NEWBORNS AND YOUNG INFANTS (0-59 DAYS) VS. AD-HOC SCREENING FOR NEONATAL SEPSIS: A SYSTEMATIC REVIEW

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Objective The objective of this review was to evaluate the effectiveness of interventions that universally assess all newborns and young infants (0-59 days) for infection irrespective of the presence or absence of illness.

Methods We conducted a systematic search in PubMed, Embase, The Cochrane Library, Web of Science (Clarivate Analytics), WHO ICTRP Clinical Trials in Children, and ClinicalTrials.gov for relevant literature from inception to March 2020. We included randomized controlled trials and observational studies with a control group. The Cochrane Risk of Bias tool was used to assess the methodological quality of the studies. Outcome measures included neonatal sepsis and possible severe bacterial infection (PSBI) cases identified in children, neonatal all-cause mortality, hospital referral, hospitalization and length of hospital stay. Results Our initial search yielded 4688 articles, 192 of which had relevant titles and abstracts. After reading the full text of these, 6 met our inclusion criteria All 6 of the included studies were randomized control trials. Meta-

analyses of the 6 RCTs showed a 25% reduction in total neonatal mortality (RR 0.75; 95% CI: 0.66-0.86; 6 studies, N = 80,111). The number of deaths averted by the intervention was 11 per 1,000 live births (from 14 fewer to 9 fewer). On the other hand, the intervention did not have a significant impact on recognition of neonatal sepsis (RR 0.96; 95% CI: 0.88-1.04; 3 studies, N = 41,977) or healthcare seeking/referrals (RR 3.16; 95% CI: 0.40-24.77; 3 studies, N = 14,526). Conclusion Our findings suggest that postnatal home-visiting programs to evaluate all newborns and young infants for sepsis have the potential to achieve substantial reductions in mortality if implemented and integrated within the existing healthcare programs in developing countries.

Keywords: sepsis, newborn, screening

4.95

EFFECTIVENESS OF STRATEGIES TO INCREASE KNOWLEDGE AND AWARENESS OF DANGER SIGNS OF INFECTION CAREGIVERS OF YOUNG IN IMPROVING NEONATAL AND INFANT OUTCOMES A SYSTEMATIC REVIEW AND META ANALYSIS

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Introduction This review determines the effectiveness of strategies to increase the knowledge and awareness of danger signs of infection(s) in mothers/fathers/caregiver's/families of neonates and young infants aged 0-59 days in improving neonatal and infant outcomes.

Methods We conducted a systematic search in PubMed, Embase, The Cochrane Library, Web of Science (Clarivate Analytics), WHO ICTRP Clinical Trials in Children, and ClinicalTrials.gov for relevant literature from

inception to March 2020. We included randomized controlled trials (RCTs) and observational studies with a control group. The Cochrane Risk of Bias tool was used to assess the methodological quality of the studies. Outcome measures included care-seeking, neonatal and young infant mortality, referrals, hospitalizations, and cost-effectiveness.

Results Out of the 11272 retrieved articles, we included 33 in this review primarily from Asia and Africa. Meta-analyses shows that home-based counselling with identification and management of sepsis had a significant impact on reducing neonatal mortality (RR 0.83; 95% CI 0.73 to 0.94, I² 76%) and improved careseeking (RR 1.85; 95% CI 1.31 to 2.60, I² 100%). Decline in mortality was seen for combination of home visits and community sessions (RR 0.67; 95% CI 0.51 to 0.87, I² 0%) and group sessions alone (RR 0.78; 95% CI 0.64 to 0.95, I² 64%), careseeking significantly improved for group sessions (RR 1.36; 95% CI 1.03 to 1.80, I² 99%) and home-visits and community sessions (RR 1.43; 95% CI 1.09 to 1.87, I² 84%).

Conclusion There was significant statistical heterogeneity in our pooled studies but findings suggest that community-based strategies to improve identification of neonatal danger signs show improvement in neonatal outcomes. These interventions must be integrated into conventional newborn care programs particularly in developing countries.

Keywords: danger signs, Care-seeking, Neonatal Mortality

4.96

MATERNAL AND NEONATAL OUTCOMES OF COVID-19: A PROSPECTIVE COHORT STUDY

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Introduction: COVID-19 pandemic has raised concerns about its potential adverse effects on maternal and perinatal outcomes. This study aimed to compare the outcomes of pregnant women exposed to COVID-19 infection with unexposed pregnancies. **Methodology:** A multi-country prospective longitudinal study was conducted in 18 countries including Pakistan. Pregnant women were considered 'exposed' if they had contact with index case, and/or presence of >2 symptoms, and/or positive SARS-CoV-2 RNA PCR diagnostic test. For each 'exposed' woman, two concomitant 'non-exposed' pregnant women were enrolled and were followed until hospital discharge. Women were recruited from the OB/GYN out-patient and delivery suites at the Aga Khan University Hospital, Karachi from April to September, 2020. **Results:** We recruited 100 'exposed' and 200 'non-exposed' pregnant women. Of the 100 exposed women, 92% tested positive for COVID-19 and only 34% were symptomatic. Cough (29%), fever (23%), and shortness of breath (11%) were the most common symptoms. There was no difference in the incidence of ICU admission between the two groups (p=0.341), however, one maternal death was recorded in the exposed group. The odds of C-section were significantly lower in the non-exposed group (OR=0.45, 95% CI=0.27-0.74, p=0.002). There were no differences in preterm births, ICU admissions, neonatal oxygen requirement, length of hospital stay, and the number of mother-infant dyads rooming-in between the two groups. Exclusive breastfeeding was more prevalent in the non-exposed group (OR=1.51, 95% CI=1.16-1.97, p=0.002). Only two neonates born to mothers in the exposed group tested positive for COVID-19, one at 24 and other at 72 hours of life. Both neonates were preterm, admitted to NICU, and required non-invasive respiratory support.

Conclusion: We did not observe any major maternal and neonatal adverse outcomes in the cohort except one maternal death that occurred in another hospital. Current evidence shows that breastfeeding is safe and its benefits outweigh the potential risk of transmission, and therefore, should be promoted with proper preventive measures.

Keywords: Mothers, Neonates, COVID-19

4.97

MISSING OUT ON 70% OF HEALTH DATA - UNDERSTANDING THE ENABLERS, BARRIERS AND FACILITATORS TO PARTICIPATION OF PRIVATE PROVIDERS' IN AN HIS (HEALTH INFORMATION SYSTEMS) INTERVENTION IN EIGHT DISTRICTS OF PAKISTAN

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Objective: The private sector constitutes 70% of the health service in Pakistan. In recent decades, the private sector has evolved in to a dynamic and vibrant strength to reckon with and there has been push for evidence utilization of data for decision-making but reporting of data from private providers (clinics) remains a challenge. We aimed to understand barriers and facilitators of their engagement in routine reporting to an HIS intervention.

Methodology: We carried out an exploratory qualitative study where we combined an inductive, data-driven approach. Semi-structured questionnaires were administered to 24 private providers with private practices, including those who declined to participate in the intervention (n=6), 12 staff members and 7 managers in eight districts who liaise with them on a monthly basis.

Results: Private providers found data recording and maintenance to be an extremely resource-intensive and time-consuming process with little utility and monetary incentive. This was compounded by the fear of income tax audits, medico-legal litigation, and possible negative patient feedback through follow-ups on patient satisfaction as well as doubt of its substantive utilization. However, specialized private providers with advanced qualifications, and especially those who had had previous experience in the public health sector were more receptive but wanted to see periodic and tangible dissemination of collated data as well as strengthening and integration of the data collection infrastructure.

Conclusion: Including data from the private sector in an integrated HMIS system will be absolutely critical for gaining a true picture of health statistics. Understanding and alleviating barriers to their inclusion and participation can strengthen their engagement.

Keywords: MNCH, Health Data, DHIS

4.98

SUBSTANTIAL AND SUSTAINED REDUCTION IN UNDER-5 MORTALITY, DIARRHEA, AND PNEUMONIA IN OSHIKHANDASS, PAKISTAN: EVIDENCE FROM TWO LONGITUDINAL COHORT STUDIES 15 YEARS APART

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Background: Oshikhandass is a rural village in northern Pakistan where a 1989–1991 verbal autopsy study showed that diarrhea and pneumonia were the top causes of under-5 mortality. Intensive surveillance, active community health education and child health interventions were delivered in 1989–1996; here we assess improvements in under-5 mortality,

diarrhea, and pneumonia over this period and 15 years later.

Methods: Two prospective open-cohort studies in Oshikhandass from 1989 to 1996 (Study 1) and 2011–2014 (Study 2) enrolled all children under age 60 months. Study staff trained using WHO guidelines, conducted weekly household surveillance and promoted knowledge on causes and management of diarrhea and pneumonia. Information about household characteristics and socioeconomic status was collected. Hurdle models were constructed to examine putative risk factors for diarrhea and pneumonia. Results: Against a backdrop of considerable change in the socioeconomic status of the community, under-5 mortality, which declined over the course of Study 1 (from 114.3 to 79.5 deaths/1000 live births (LB) between 1989 and 1996), exceeded Sustainable Development Goal 3 by Study 2 (19.8 deaths/ 1000 LB). Reductions in diarrhea prevalence (20.3 to 2.2 days/ Child Year [CY]), incidence (2.1 to 0.5 episodes/ CY), and number of bloody diarrhea episodes (18.6 to 5.2%) seen during Study 1, were sustained in Study 2. Pneumonia incidence was 0.5 episodes /CY in Study 1 and 0.2/CY in Study 2; only 5% of episodes were categorized as severe or very severe in both studies. While no individual factors predicted a statistically significant difference in diarrhea or pneumonia episodes, the combined effect of water, toilet and housing materials was associated with a significant decrease in diarrhea; higher household income was the most protective factor for pneumonia in Study 1.

Conclusions: We report a 4-fold decrease in overall childhood mortality, and a 2-fold decrease in childhood morbidity from diarrhea and pneumonia in a remote rural village in Pakistan between 1989 and 2014. We conclude that significant, sustainable improvements in child health may be achieved through improved socioeconomic status and promoting interactions between locally engaged health workers and the community, but that continued efforts are

needed to improve health worker training, supervision, and the rational use of medications.

Keywords: Diarrhea, Pneumonia, Under-5 mortality, Community-based healthcare

4.99

ASSESSING THE READINESS AND ASSOCIATED FACTORS OF HEALTHCARE PROVIDERS ABOUT INTIMATE PARTNER VIOLENCE SCREENING OF WOMEN AT THE EMERGENCY DEPARTMENT OF A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN – AN ANALYTICAL CROSS-SECTIONAL STUDY

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Abstract Background Intimate Partner Violence (IPV) is a significant public health issue with serious health consequences for women. Healthcare providers, particularly working in the Emergency Department (ED) play an important role in screening and giving referrals to the IPV victims. However, screening of these victims is not practiced in healthcare settings of Pakistan. Therefore, it is important to identify IPV screening readiness of healthcare providers of ED in Pakistan. Purpose To assess readiness along with demographic and occupational factors associated with the readiness of the healthcare providers regarding screening of IPV among women attending the ED at a tertiary care hospital in Karachi, Pakistan.

Method This Analytical Cross-sectional study utilized the total population sampling method for data collection. Readiness was assessed using the Domestic Violence Healthcare Provider Survey Scale (DVHSS). The instrument was distributed online to 184 eligible participants (nurses and doctors) out of which 145 participants responded. Descriptive statistics, t-

tests, ANOVA, and simple linear regression was used to analyse the data.

Finding On average, healthcare providers scored moderately on readiness indicators identified by DVHSS. Moreover, the type of profession and training status were important determinants of readiness to screen for IPV. The nurses had higher perceived self-efficacy (Beta=3.032 units, $p=0.0002$), system support (Beta=1.05 units, $p=0.037$), fears of offending patients (Beta=2.22 units, $p=0.014$), victim-blaming attitudes (Beta=3.314 units, $p=0.001$) and lesser provider/patient safety (Beta=1.13 units, $p=0.018$) concerns than doctors. Likewise, the trained providers had higher perceived self-efficacy (Beta=3.323 units, $p=0.008$) and system support (Beta=1.75 units, $p=0.019$) scores than untrained providers. However, factors including age, years of experience, marital status, and gender were statistically insignificant towards the readiness of the healthcare providers.

Conclusion Healthcare providers play an important role in screening and responding to IPV. However, in the current study setting the healthcare providers were not ready to screen patients for IPV. The study findings will help in planning appropriate interventions for enhancing healthcare providers' readiness and ultimately in improving the IPV screening process in healthcare settings of Pakistan.

Keywords: Intimate Partner Violence, Screening, Healthcare Providers

4.100

QUANTIFICATION OF IGG IN LYMPHOCYTE SUPERNATANT ASSAY AS A BIOMARKER OF PEDIATRIC TB

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Background: Pakistan ranks 6th in the top 30 highest TB burden countries. Amongst all cases reported in the year 2019, 13% of cases were

reported in children. A majority of pediatric population remain undiagnosed due to non-standardized scoring criteria, and non-availability of sensitive diagnostic tests. Previously, Antibody in Lymphocyte Supernatant (ALS) assay was performed in pediatric population with sensitivity and specificity of 78% and 86% respectively. To enhance the sensitivity of ALS assay enrichment of CD19+B cells from PBMCs isolation was carried out for the quantification of B cells in ELISA. Methods: In this study, GeneXpert +ve pediatric TB (cases=48) aged between 1-18 years and age and sex matched (controls=49) were enrolled. B cells were harvested by using positive (Dynabeads) from PBMCs and cultured unstimulated. The IgG antibody secretion within the culture supernatants were measured by ELISA using BCG vaccine and Mtb. Sonicate antigens.

Results: We observed a higher response of IgG in supernatant from TB cases compared to healthy controls at 48 hrs with BCG antigen (case=0.7269±0.4922; control=0.4423±0.300, $p=0.0014$ MWU test). Sorting of CD19+ B cells showed a similar higher response in cases (BCG=0.1480, SON=0.114) vs. controls (BCG=0.072; SON=0.075; $p=0.003$, $p=0.02$).

Conclusion: Our findings indicates that ALS test can be used as a discriminatory biomarker for the diagnosis of active TB infection in children which can help in prompt management, and prevention of complications that eventually reduce the disease burden and morbidity. The modification in the existing ALS assay has significantly improved the sensitivity but moderately increased the specificity. These findings need to be further validated in larger longitudinal cohort studies. References: 1. WHO. World Health Organization. Global Tuberculosis Report. 2019:1-270. AKU ERC# 4203

Keywords: TB, ALS, Biomarker

4.111

MENSTRUAL HYGIENE KNOWLEDGE AND PRACTICES AMONG ADOLESCENT GIRLS AND WOMEN IN RURAL PAKISTAN, INSIGHT FROM A MIXED METHOD SURVEY

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Introduction Menstruation is a natural phenomenon for women which occurs in adolescence and continues throughout their reproductive life and has unique challenges that affect physical, social and psychological well-being of adolescent girls and women. Despite its importance, the subject of menstrual practices among girls in Pakistan has limited data and requires more robust research. Methods This cross-sectional study was conducted utilizing a mixed methods approach to explore knowledge and practices and its contextual determinants among girls during their reproductive years. Structured interviews were conducted with 736 adolescent girls and women of age 14-49 years in 2019 in rural Sindh. We conducted In-depth Interviews with men, Focused Group Discussions with adolescent girls (10-19 years) and women of age (20-49 years) and did thematic analysis to produce the results.

Results Majority of adolescent girls and women were not aware of menstruation before the onset of menarche, leading to feelings of anxiety, pain, fear, and shame. Descriptive findings showed that menstruation was a barrier to the usual routine of women (74.6%). More than a third (39.8%) of menstruating women did not use an absorbent and had the misconception that using anything (cloth/pad) will stop their menses. There was a significant difference in knowledge score of adolescent girls and women however this did translate in significant differences of

practices. Almost all (94.8%) respondents had the opinion that young girls face problems at occurrence of menarche and most of them (84.9%) were in favour of providing information about menstruation to young girls in advance (before experiencing menarche).

Conclusion Our study revealed major gaps in the knowledge and practices of adolescent girls and women during their menstruation which needs to be addressed by creating awareness and innovative low-cost solutions through community-based approaches.

Keywords: Menstruation, Adolescents, Rural

4.112

STRATEGIES TO IMPROVE COVERAGE OF TYPHOID CONJUGATE VACCINE (TCV) IMMUNIZATION CAMPAIGN IN KARACHI, PAKISTAN

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The emergence and spread of extensively drug-resistant (XDR) typhoid in Karachi, Pakistan led to an outbreak response in Lyari Town, Karachi utilizing a mass immunization campaign with typhoid conjugate vaccine (TCV), Typbar TCV®. The mass immunization campaign, targeted Lyari Town, Karachi, one of the worst affected towns during the XDR typhoid outbreak. Here we describe the strategies used to improve acceptance and coverage of Typbar TCV in Lyari Town, Karachi. The mass immunization campaign with Typbar TCV was started as a school- and hospital-based vaccination campaign targeting children between the age of 6 months to 15 years old. A dose of 0.5 mL Typbar TCV was administered intramuscularly. A mobile vaccination campaign was added to cope with high absenteeism and non-response from parents in schools and to cover children out of school. Different strategies were found to be effective in increasing the vaccination coverage and in tackling vaccine

hesitancy. Community engagement was the most successful strategy to overcome refusals and helped to gain trust in the newly introduced vaccine. Community announcements and playing typhoid jingles helped to increase awareness regarding the ongoing typhoid outbreak. Mop-up activity in schools was helpful in increasing coverage. Networking with locally active groups, clubs and community workers were found to be the key factors in decreasing refusals.

Keywords: extensively drug-resistant typhoid, outbreak, typhoid conjugate vaccine

4.113

ASSESSMENT OF BREASTFEEDING READINESS AMONG PRETERM NEONATES (30-34 WEEKS OF GESTATION) AT A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN

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Background Oral feeding competency among preterm neonates is a key criterion for hospital discharge. It is often delayed among preterm neonates until 34 weeks gestation as it is considered that their feeding readiness is established thereafter. However, researchers have signified that there are differences in competencies of neonates to engage in breastfeeding. Therefore, it is important to assess the readiness of neonates for initiating breast feeding. According to the researcher's knowledge, no such study has been carried out in the Pakistani context to evaluate breast feeding readiness in preterm neonates and its associated factors, that may guide practice to initiate breastfeeding after safe assessment, before infant's 34 weeks of gestation age.

Purpose The study aimed to assess breastfeeding readiness in preterm neonates (30-34 weeks) and

to identify the association of infant and maternal factors with neonates' breastfeeding readiness, at a tertiary care hospital of Karachi, Pakistan.

Methods A quantitative cross-sectional analytical study was conducted. A total of 58 preterm neonates born between 30 to 34 weeks of gestation were recruited through consecutive sampling approach, to identify the proportion of breastfeeding readiness through Preterm Oral Feeding Readiness Assessment Scale (POFRAS). The infant and maternal factors associated with breastfeeding readiness were assessed through a structured questionnaire assessing their demographic and clinical characteristics. Neonates who were found ready on POFRAS assessment were also assessed for non-nutritive sucking at their mother's breast.

Results Out of 58 preterm neonates, 74.1% presented oral feeding readiness. The mean POFRAS score was 30.8 ± 2.0 ranging from a minimum score of 26 and a maximum score of 36. Along with this, Median age for breastfeeding readiness among preterm neonates was 33 weeks. Gestational age of a newborn was found statistically significant to affect breastfeeding readiness. It was found that with each increased week in gestational age of a preterm neonate, the probability of breastfeeding readiness increases (AOR: 2.32, 95% CI 1.063-5.103, P=0.035). In addition, neonates who presented feeding readiness, also exhibited non-nutritive sucking when placed on their mother's breast.

Conclusion The study concludes that more than half of the study participants were ready for oral feeding before 34 weeks of gestation. It also presents that preterm neonates exhibit feeding reflexes and cues that can be used to assess their readiness for safe transition along with the gestation age as a significant factor associated with breastfeeding readiness. It is recommended that early and safe assessment of preterm neonates feeding readiness should be performed for safe and early transition.

Keywords: Preterm Neonate, Breastfeeding Readiness, POFRAS

4.114

BURDEN OF RESPIRATORY ILLNESS IN PEDIATRIC ICU: REPORT FROM A TERTIARY CARE CENTRE OF AN LMIC

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Objectives: To study the demographic and clinical profile of patients with acute respiratory illnesses admitted to the Pediatric Intensive Care Unit (PICU) of a tertiary care hospital, determine the associated risk factors and predictors of mortality amongst them and to further stratify the burden of respiratory illnesses as defined by the PALS Classification.

Methods: This is a Cross Sectional study conducted at the Pediatric ICU (PICU) of The Aga Khan University Hospital, Karachi. Children (aged 1 month - 18 years) admitted to the PICU with a respiratory illness from 1st January 2017 till 31st December 2019 were included in the study. The demographic and essential clinical details were recorded and tabulated. Risk factors for mortality, need for mechanical ventilation, length of stay (LOS) in PICU and the hospital, and the final outcome were recorded and analyzed. The respiratory illnesses were stratified further as mentioned in the PALS Classification and the Pediatric Risk of Mortality –III (PRISM III) score was also calculated for each patient. Data was analyzed using IBM SPSS Version 21. $P < 0.05$ was taken significant. **Results:** Three hundred children were enrolled in our study (male/female: 190/110). 43.5% of them were malnourished. The mean LOS in PICU was 4.21 ± 4.532 days while the mean stay in hospital was 7.90 ± 6.25 days. Pneumonia contributed to 56.9% of respiratory admissions and 47.1% of mortality, the second most common presentation was of

bronchiolitis (15.3%). 27.9% patients required mechanical ventilation with mean length of ventilation being 5.98 ± 4.91 days and 1% required tracheostomy. Amongst the PALS Classification, most of the cases were classified as parenchymal disease (67.0 %) followed by lower airway disease (22.5%).

Conclusion: Respiratory illnesses are a significant contributor to PICU admissions and are associated with significant mortality risk in presence of high PRISM III score and shock.

Keywords: Respiratory illness, PICU, PALS

4.115

ANTIMICROBIAL RESISTANCE PATTERN OF CULTURE CONFIRMED ENTERIC FEVER CASES IN PAKISTAN, A RETROSPECTIVE LABORATORY SURVEILLANCE, 2017-2019

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Introduction: Antimicrobial resistance (AMR) has severely limited the therapeutic options for enteric fever in high disease burden countries in South Asia. We measured the burden of AMR against *Salmonella Typhi* and *Paratyphi* before the introduction of typhoid conjugate vaccine (TCV) in routine immunization program of Pakistan.

Methodology: During January 2017 to December 2019, retrospective surveillance was conducted and culture confirmed enteric fever cases were enrolled in the study. Sociodemographic and antimicrobial resistance pattern was collected from Aga Khan University AKU and Chughtai laboratory networks located in Punjab and Sindh provinces. We reported the frequency of multidrug resistance (MDR) and extensive drug resistance (XDR). **Results:** We enrolled 16605 blood culture confirmed enteric fever cases 13987 (84%) from AKU and 16%

(2618) from Chughtai Lab network. Among the 74% (10321/13987) cases at AKU, 20% (2056/10321) were MDR and 80% (8265/10321) were XDR. Out of the 46% (1214/2618) cases from Chughtai lab, 72% (877/1214) were MDR and 28% (337/1214) were XDR. Highest number of cases were observed in year 2019, 57% (8029/13987) from AKU and 88% (2313/2618) from Chughtai lab.

Conclusion: An increasing trend has been observed over a period of three years in the number of enteric cases depicting S. Typhi multi drug resistance pattern. Owing to the substantial burden of the disease, incorporating TCV in routine immunization will not only aid in minimizing the incidence of typhoid cases also reduce the emergence of drug-resistant typhoid strains. Further collaborative efforts in terms of providing hygienic methods of waste disposal and provision of clean drinking water will ultimately reduce healthcare costs and save lives.

Keywords: Salmonella Typhi, Enteric Fever,,TCV

4.116

HEALTH INEQUITIES AND BOTTLENECKS IN HEALTH SERVICES DELIVERY IN BALUCHISTAN

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Introduction: Mother and child health (MCH) indicators are poor for Baluchistan. Maternal mortality rate is 298/100,000 live births with haemorrhage, sepsis, and obstructed labor as main causes. Neonatal Mortality Rate is 40/1000 live births whereas mortality in children less than five years of age is 89/1000 live births. Asphyxia, and prematurity in neonates, while

pneumonia, and diarrhea are the major causes of illness in children. Mortality in children < 5 years of age is high in the lowest two wealth quintiles. Poverty has been linked to stunting, poor antenatal care, and poor health services.

Methods: We studied the bottlenecks of service delivery to MCH using EQUitable Impact Sensitive Tool (EQUIST), that links objectives, targets, in a single framework to analyse various scenarios, undertaking economic modelling and impact analysis.

Results: We identified accessibility and continuity of care in antenatal care (ANC), availability and accessibility emergency obstetric and newborn care (EMONC), to integrated management of neonatal and childhood illnesses (IMNCI), and accessibility to immunization plus services as major bottlenecks to health care services. Availability of antenatal care and infant and child feeding practices had a lesser degree in bottleneck severity. Causes of major bottlenecks in the form of insufficient procurement, capacity gaps, and inadequate equipment for availability, insufficient number and deployment of providers for accessibility of human resource, misconceptions and lack of awareness in community in terms of continuity of care in addition to unpredictable means of transportation need to be addressed. Quality of care needs evaluation for providers lacking required skills, equipment, infrastructure, and or motivation. Addressing causes of bottlenecks can avert 237 child deaths including 140 neonates, and 312 stunting cases at 2.69 USD per capita in a defined population over a period of five years.

Conclusions: Monitoring, evaluation and scaling up of existing community outreach and center-based programs can improve MCH services.

Keywords: Maternal, Child, Bottleneck

4.117

IMPACT OF TYPHOID CONJUGATE VACCINE AGAINST CULTURE CONFIRMED S.TYPHI AMONG CHILDREN AGED 9 MONTHS TO 15 YEARS IN SINDH

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Introduction: Globally, 14.3 million typhoid cases and 222,000 typhoid-associated deaths reported annually. Mortality related to typhoid disease constitutes about~90% in South and Southeast Asia. It has been seen that the potency of the typhoid conjugate vaccine (TCV) has shown to reduce the burden of the disease. The study aimed to measure the effectiveness of TCV during a catch-up campaign against S. Typhi culture confirmed cases among children across Pakistan.

Methodology: During January, 2020 to June 2020, culture confirmed S Typhi cases aged 9 months to 15 years at the time of campaign were approached. All the participants residing in the area during the campaign and provided consent were enrolled from Karachi and Hyderabad site. Sociodemographic, antimicrobial resistance and vaccination information was obtained from eligible participants. Results: Overall, 968 S. Typhi confirmed cases were enrolled out of which 793 (82%) were from Karachi and 175 (18%) were from Hyderabad. A large proportion of the participants were from 9 months to less than 5-years age group among both cities, 381 (48%) from Karachi and 100 (57%) from Hyderabad respectively. 32% (256/793) participants from Karachi and 45% (78/175) from Hyderabad reported history of typhoid vaccination and those who did receive vaccination were mostly during the catch-up campaign i.e. 64% (163/256) in Karachi and 58% (78/175) in Hyderabad.

Conclusion: Substantial findings from this study focuses on the need for developing safe and cost effective methods for implementing mass immunization programs along with vigilant surveillance for monitoring and controlling the spread of typhoid disease. As the incidence of S. Typhi cases is increasing, introduction of TCV vaccine in combination with strong surveillance system can play a pivotal role in reducing the burden of typhoid cases in our cultural settings.

Keywords: *Salmonella Typhi, Typhoid Conjugate Vaccine, Pakistan*

4.118

NEWBORN SCREENING PROGRAM FOR CONGENITAL HYPOTHYROIDISM: A SHORT-TERM FOLLOW-UP STUDY

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Background: Newborn screening (NBS) is an Essential Public Health Program. At our center NBS based on dried blood spot (DBS) for congenital hypothyroidism (CH) was introduced in Jan 2019. The CH is an endocrine disorder, which if left untreated may lead to seriously impaired mental and physical development. The short-term follow-up well-being of individuals identified by newborn screening represents a meaningful measurement of the performance of the newborn screening system. The aim of this study was to perform a clinical audit to evaluate the short term follow-up of NBS program for CH. *Methods:* This audit was performed from January 2019 to October 2020 at Biochemical Genetics laboratory (BGL), Section of Clinical Chemistry, Dept. of Pathology and Lab Medicine, AKU. A project team was developed including Pathologist, Pediatric endocrinologist and incharge technologist BGL. Four quality indicators were defined, including: • Coverage of Newborns screened (total newborns screened/total babies born) • Dried blood Spot (DBS) specimen rejected • Positive screening

results received and communicated • Confirmed cases of CH out of the positive cases. The DBS specimens were collected from newborns delivered at AKU after 24 hours of birth. The thyroid stimulating hormone (TSH) was analyzed by Fluorometric enzyme immunoassay kits by Lab systems Diagnostic on Varioskan™ LUX multimode micro plate reader (Thermo scientific). The TSH results ≥ 10 mIU/L were taken as positive.

Results: During 21 months period, 8392 neonates were screened with mean age of 48 ± 12 hours and 47% (n=3944) being boys. The four indicators were as follows: • Coverage of Newborns screened, during 21 months period NBS coverage was 98%. • Total 0.7% (n=60) DBS specimen were rejected and most common cause of rejection was DBS cards not dried properly. • Positive results received were 0.99 % (n=51) had TSH levels >10 mIU/L and 100% of these were communicated. • Confirmed cases of CH out of the positive cases, out of 51 patients screen positive for CH, 6 patients were confirmed to have CH, so the incidence was 1:1398.

Conclusions: The outcome assessment is important for tracking performance and to improve the quality of the newborn screening system.

Keywords: newborn screening, congenital hypothyroidism, follow-up

5.1

DEALING WITH NCOVID 19 – CARE IN ORTHODONTICS: A REVIEW

Introduction: Recently a pandemic outburst in Wuhan, China with mild flu-like symptoms to acute fatal conditions. Pathological organisms found in the respiratory tract of infected individuals had RNA genome sequence of beta-coronavirus called Novel Coronavirus 2019 (nCoV). The aim of the study was to assess orthodontic considerations during NCOVID pandemic. Search methods: Electronic and manual searches in databases including PubMed, WHO, CINAHL, and Cochrane Central Register of Controlled Trials were conducted until April 2020. Settings and Sample Population: Study was conducted in tertiary care hospital among all the orthodontic patients. Clinical Manifestations: Coronavirus has an incubation period of 14 days and patients may be symptomatic or asymptomatic. Symptoms of NCOVID patients may vary from high grade fever, tiredness, dry cough to severe shortness of breath. Severity in symptoms may lead to Acute Respiratory Distress Syndrome (ARDS), cardiac arrhythmias and shock. Research evidence supports that immunocompromised patients have poor prognosis and increased mortality rate. *Orthodontic Protocols:* Orthodontists should defer all the elective procedures and regular clinics except non-deferrable orthodontic emergencies. Arrange NCOVID screening counters at the clinic's entrance. Prefer negative pressure operating rooms and avoid using air fans or aerosol generating devices. The dental chair must be protected with biodegradable plastic bags. Patients with positive symptoms of NCOVID should only be catered for non-deferrable orthodontic emergencies.

Conclusions: Dentists are considered at the highest risk for cross infections among health care professionals. Orthodontists are recommended to arrange regular virtual meetings with their patients by tele-orthodontics

softwares and request them to visit clinics only in emergencies following strict ADA protocols.

Keywords: Cross-infection, dental healthcare, treatment modalities

5.2

EVALUATING THE DIAGNOSTIC ACCURACY OF GENEXPERT MTB/RIF ASSAY FOR THE DIAGNOSIS OF TUBERCULOSIS

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Background: Tuberculosis (TB) is one of the major global public health concern particularly affecting population of low-income countries. Early detection of disease coupled with other parameters help in treatment and reducing disease transmission.

Methods: The current study was conducted to assess the sensitivity and specificity of the GeneXpert MTB/RIF (Cepheid Sunnyvale, CA, United States) in comparison to conventional techniques used for the diagnosis of TB. Our study is one of the first ones from Pakistan investigating and assessing the performance of GeneXpert. We recruited eight hundred clinically TB suspects initially and included seven hundred and sixteen clinically TB suspects in the final analysis.

Results: The results of GeneXpert were compared with Mycobacteria Growth Indicator Tube (MGIT) and Ziehl-Neelsen (ZN) staining. In comparison to MGIT and ZN staining the sensitivity of GeneXpert with 95 % confidence interval (CI) was (99.7 %, CI 0.98-0.99) and (95.1 %, CI 0.92-0.97) respectively. The positive and negative predictive values with 95 % CI were (97.1 %, CI 0.94-0.98) and (99.7 %, CI 0.98-0.99) when results of GeneXpert were compare with MGIT results.

Conclusion: The results of this study confirms the performance of GeneXpert. With high

sensitivity and rapid detection, GeneXpert is ready to be considered as preferred diagnostic tool for TB.

Keywords: Tuberculosis, Diagnosis, Sensitivity

5.3

AIRWAY MANAGEMENT IN COVID-19 PATIENTS OUTSIDE OPERATING ROOM: A SURVEY OF CURRENT PRACTICES AMONG ANAESTHESIOLOGISTS, INTENSIVE CARE AND EMERGENCY PHYSICIANS OF PAKISTAN.

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Tracheal intubation in COVID-19 patients is a critical procedure for patients and involved staff alike. This survey examines compliance of frontline healthcare workers of Pakistan to safe airway management guidelines and common adverse events/problems faced. An online survey was sent to anaesthetist, intensive care and emergency physicians practicing airway management in COVID-19 patients all over Pakistan, based on consensus guidelines by leading organizations in the field. (1) Sample size of 285 was achieved in thirty-six days. Intubations were largely performed by anaesthetist and deteriorating respiratory failure (89%) was the most frequent indication for emergency or urgent intubation. Availability of trained staff, use of intubation checklist, presence of limited staff (max. 3) during intubation and use of appropriate PPE were positive findings. One-third of these professionals reported that their workplaces did not have negative pressure rooms for high aerosol generating procedures. 63.3% responders do not perform airway assessment before intubation. One-third of the respondents do not prefer bag mask ventilation before first attempt intubation. However, when required, preferred technique of holding face mask varies: 34.9% used single handed technique, 42.3% prefer two hands C-E technique and 22.3% have used both

hands V-E grip technique. Classic rapid sequence intubation is the favored technique (67.3%). Device of choice for first attempt at laryngoscopy was Macintosh laryngoscope (51.6%) followed by video laryngoscopes with disposable blades (24.2%), which reflects limited availability of advance airway equipment at remote locations. The availability of rescue devices in case of unanticipated difficult airway is variable but importantly, supraglottic airways either laryngeal mask airway (70.1%) or I-gel (38.1%), bougie (82.2%) and ETT stylet (68.7%) were present at majority places. There is paucity of other laryngoscope blade types (29.2%) and videolaryngoscope (44.5%). Frequency of airway related adverse events including hypoxemia (69.8%) and failed first attempt intubation (35.2%) were significant. Fifty-eight percent participants have reported significant hypotension episodes during or after tracheal intubation that required treatment with vasopressors. This survey offers an important insight into airway management practices for COVID patients in Pakistan. It is a low-middle income country and national guidelines must be developed that should address improving the outcomes of these high risk patients with limited resources

Keywords: COVID-19, Airway Management, Healthcare Professionals

5.4

INTRAMYOCARDIAL HYDATID CYSTS IN INTERVENTRICULAR SEPTUM: A CASE REPORT

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Introduction: Hydatid cyst is a rare disease caused by *Echinococcus granulosus*, a parasitic flatworm that has definitive hosts, like dogs, and intermediate hosts, like sheep and humans. [1-4] It is endemic in livestock raising countries. It is ingested via contaminated food and penetrates

through the intestinal mucosa, allowing it to reach the liver, lungs and, rarely, the heart via the portal and systemic circulation. [1,3,5-7]

Case Presentation: Cardiac Hydatid Cysts comprise of 0.2-2% of patients presenting with hydatid cyst, mostly affecting left ventricle (60%) and rarely involving interventricular septum (4%). [1-3,7-10] Here, we present a case of a 47-year old with a history of multi-loculated hydatid cysts in the right ventricle six years back. Radio-imaging revealed left pericardial hydatid cyst with cardiomegaly. Patient has post-surgical complications and has a bilobed hydatid cyst in right upper lobe of his lung. Patient underwent a successful Video-Assisted-Thoroscopic-Surgery, however, two years later he presented in the emergency with infection at the chest tube infection site. The chest tube was replaced, and patient was discharged.

Conclusion: Hydatid Cyst with cardiac involvement can be fatal, therefore, surgical excision is the gold standard treatment. [5,8,9,11]. Albendazole chemotherapy can be administered to prevent recurrence along with a five year follow up of the patient post-operatively. [3,5,8,12,13]

Keywords: Intramyocardial, Hydatid Cysts, Recurring

5.5

FIRST REPORTS OF EFFECTS OF INSULIN, HUMAN-LIKE INSULIN RECEPTORS AND ADAPTER PROTEINS IN ACANTHAMOEBA CASTELLANII

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The insulin receptor (IR) and insulin-like growth factor 1 receptor (IGF1-R) play key roles in growth, regulation of nutrient metabolism and carbohydrate homeostasis. Insulin-like molecules in prokaryotes and other early life have been reported. However, an account of

metabolic effects of insulin, transcriptomic evidence of expression of glucose transporting channels (GLUT) and homology modelling of IR and IGF1-R like proteins in unicellular life-forms have yet to be established. *Acanthamoeba* spp. has existed for about 2 billion years and is one of the earliest mitochondriate unicellular eukaryotic cells on Earth. Despite *Acanthamoeba* spp. being grown in a medium called peptone-yeast-glucose (PYG) for over 50 years, the mechanism and regulation of glucose uptake by IR or IGF1-R molecules in this microbe has not yet been reported. Several methods were utilized to validate the effects of insulin on trophozoites of *A. castellanii*, including: growth assays with insulin, estimation of glucose and potassium (K⁺) entry into the cell, and histology showing anabolic effects on proteins. Bioinformatic computational tools and homology modelling demonstrated the involvement of IR like proteins, GLUT, and adapter proteins in mediating the IR cascade. Growth assays showed proliferative effects in a dose range of 2.98-5.97 $\mu\text{mol/mL}$ of insulin. After insulin exposure, *A. castellanii* trophozoites displayed enhanced Periodic acid-Schiff (PAS) staining. Amino acid sequence similarities and homology modelling revealed ACA1_163470 in *Acanthamoeba* spp. to be a homolog of human-IR. *Acanthamoeba* protein ACA1_336150 shares similarities with IGF1-R. Additionally, some proteins like ACA1_060920 have attributes of GLUT like channels on homology modelling and show similarity with human GLUT. Knowledge of IR and insulin effects in *Acanthamoeba* spp. contributes to its biology and advances current understanding behind the evolution of IR and IGF1-R signalling cascade. DOI: 10.1038/s41598-020-63435-4

Keywords: *Acanthamoeba* spp., Insulin, GLUT

5.6

ELUCIDATION OF CELLULAR TARGETS AND EXPLOITATION OF THE RECEPTOR-BINDING DOMAIN OF SARS-COV-2 FOR VACCINE AND MONOCLONAL ANTIBODY SYNTHESIS

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The pandemic caused by novel severe acute respiratory syndrome coronavirus (SARS-CoV-2) has resulted in over 452 822 deaths in the first 20 days of June 2020 due to the coronavirus virus disease 2019 (COVID-19). The SARS-CoV-2 uses the host angiotensin-converting enzyme 2 (ACE2) receptor to gain entry inside the human cells where it replicates by using the cell protein synthesis mechanisms. The knowledge of the tissue distribution of ACE2 in human organs is therefore important to predict the clinical course of the COVID-19. Also important is the understanding of the viral receptor-binding domain (RBD), a region within the spike (S) proteins, that enables the entry of the virus into the host cells to synthesize vaccine and monoclonal antibodies (mAbs). We performed an exhaustive search of human protein databases to establish the tissues that express ACE2 and performed an in-depth analysis like sequence alignments and homology modeling of the spike protein (S) of the SARS-CoV-2 to identify antigenic regions in the RBD that can be exploited to synthesize vaccine and mAbs. Our results show that ACE2 is widely expressed in human organs that may explain the pulmonary, systemic, and neurological deficits seen in COVID-19 patients. We show that though the S protein of the SARS-CoV-2 is a homolog of S protein of SARS-CoV-1, it has regions of dissimilarities in the RBD and transmembrane segments. We show peptide sequences in the RBD of SARS-CoV-2 that can bind to the major histocompatibility complex alleles and serve as effective epitopes for

vaccine and mAbs synthesis. DOI: 10.1002/jmv.26212

Keywords: SARS-CoV-2, vaccines, COVID-19

5.7

COVERT PATHWAYS TO THE CRANIAL CAVITY: COULD THESE BE POTENTIAL ROUTES OF SARS-COV-2 TO THE BRAIN?

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Severe acute respiratory syndrome virus 2 (SARS-CoV-2) induced central nervous system disease has now been recognized as a complication of coronavirus disease (COVID-19) in addition to its multisystem organ infection. How does the central nervous system (CNS) get involved? The possible routes by which SARS-CoV-2 enters the CNS is now an active niche of research worldwide. We had previously hinted the pathway via the nose to the brain across the olfactory mucosa and cribriform plate. Here we detail three pathways by which the infection can ascend to the brain and have highlighted routes that can lead to CNS involvement from other body cavities like the mouth and pharynx. The spaces contained within the ensheathed olfactory nerves connected to the cerebrospinal fluid of the cranial cavity, in particular, has been described in addition to other routes of ascending infection toward the CNS. We implore others to investigate these covert yet important passages to understand the pathogenesis of Neuro-COVID in our fight against SARS-CoV-2 that has changed the lives of the human race in the ongoing pandemic. DOI: 10.1021/acscemneuro.0c00604

Keywords: Neuro-COVID, SARS-CoV-2, COVID-19

5.8

EVIDENCE OF THE COVID-19 VIRUS TARGETING THE CNS: TISSUE DISTRIBUTION, HOST-VIRUS INTERACTION, AND PROPOSED NEUROTROPIC MECHANISMS

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The recent outbreak of coronavirus infectious disease 2019 (COVID-19) has gripped the world with apprehension and has evoked a scare of epic proportion regarding its potential to spread and infect humans worldwide. As we are in the midst of an ongoing pandemic of COVID-19, scientists are struggling to understand how it resembles and differs from the severe acute respiratory syndrome coronavirus (SARS-CoV) at the genomic and transcriptomic level. In a short time following the outbreak, it has been shown that, similar to SARS-CoV, COVID-19 virus exploits the angiotensin-converting enzyme 2 (ACE2) receptor to gain entry inside the cells. This finding raises the curiosity of investigating the expression of ACE2 in neurological tissue and determining the possible contribution of neurological tissue damage to the morbidity and mortality caused by COVID-19. Here, we investigate the density of the expression levels of ACE2 in the CNS, the host-virus interaction and relate it to the pathogenesis and complications seen in the recent cases resulting from the COVID-19 outbreak. Also, we debate the need for a model for staging COVID-19 based on neurological tissue involvement. DOI:

10.1021/acschemneuro.0c00122

Keywords: COVID-19, SARS-CoV-2, Loss of smell and Taste

5.9

GIANT PNEUMATOCELE SECONDARY TO ASPERGILLUS NIDULANS IN AUTOSOMAL DOMINANT HYPER-IGE SYNDROME CHILD

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Autosomal Dominant Hyper-IgE Syndrome (AD-HIES) is a rare primary immunodeficiency condition characterized by elevated serum IgE and pneumatoceles following recurrent pneumonia. To the best of our knowledge, this is the first reported case of a pulmonary pneumatocele secondary to aspergilloma due to *Aspergillus nidulans* in an AD-HIES patient. A 10-year-old boy was admitted with a high-grade fever and cough with bilateral wheeze. CT scan revealed a large pneumatocele in the left lung and culture revealed *Aspergillus nidulans*. A diagnosis of pneumatocele secondary to a fungal lung abscess was made and thoracotomy with decortication of the lung was performed. This case brings into question the mechanism of pathogenicity projected by *Aspergillus nidulans*, since it has exclusively been seen in patients diagnosed with Chronic Granulomatous Disease (CGD) thus far. *Aspergillus nidulans* can lead to mortality if misinterpreted as *Aspergillus fumigatus*, making it clinically imperative to recognize it in patient populations at risk.

Keywords: *Aspergillus Nidulans, Autosomal Dominant Hyper-Ige Syndrome, Pneumatocele*

5.10

Can Neurotropic Free-Living Amoeba Serve as a Model to Study SARS-CoV-2 Pathogenesis?

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Of the single-celled eukaryotic microbes, *Naegleria fowleri*, *Balamuthia mandrillaris*, and *Acanthamoeba* spp. are known to cause fatal encephalitis in humans. Being eukaryotes, these cells have been used as a model for studying and understanding complex cellular processes in humans like cell motility, phagocytosis, and metabolism. The ongoing pandemic caused by SARS-CoV-2 that infects multiple organs has emerged as a challenge to unravel its mode of infection and the pathogenicity resulting in eukaryotic cell death. Working with these single-celled eukaryotic microbes provided us the opportunity to plan bioinformatic approaches to look into the likelihood of studying the known and alternative mode of infection of the SARS-CoV-2 in eukaryotic cells. Genome databases of *N. fowleri*, *B. mandrillaris*, and *Acanthamoeba* spp. were used to explore the expression of angiotensin-converting enzyme 2 (ACE2), androgen-regulated serine protease precursor (TMPRSS2), CD4, CD147, and furin that are known to be cardinal for SARS-CoV-2 in recognition and binding to human cells. It was hypothesized that if a receptor-dependent or phagocytosis-assisted SARS-CoV-2 uptake does occur in free-living amoebae (FLA), this model can provide an alternative to human cells to study cellular recognition and binding of SARS-CoV-2 that can help design drugs and treatment modalities in COVID-19. We show that, of the FLA, ACE2 and TMPRSS2 are not expressed in *Acanthamoeba* spp. and *B. mandrillaris*, but primitive forms of these cell recognition proteins were seen to be encoded in *N. fowleri*. *Acanthamoeba* spp. and *N. fowleri* encode for human-like furin which is a known SARS-CoV-2 spike protein involved in host cell recognition

and binding. doi:
10.1021/acschemneuro.0c00653

Keywords: SARS-CoV-2, *Acanthamoeba* spp., COVID-19

5.11

CHRONIC COVID SYNDROME: NEED FOR AN APPROPRIATE MEDICAL TERMINOLOGY FOR LONG-COVID AND COVID LONG-HAULERS

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With the ongoing pandemic of coronavirus diseases (COVID-19) caused by SARS-CoV-2, there has been a surge in research and publications related to its pathogenesis and the clinical presentation of the affected patients. Many aspects of this novel virus have raised confusion including the naming of the virus and the disease it causes, the staging of its clinical presentation to highlight a few such occurrences. An emerging aspect of the clinical presentation related to COVID-19 is the long-term effects, which in the absence of any consensus has been termed as long-covid and long-haulers in recent publications. As the COVID-19 is a zoonotic infection and comes under a medically related disease, the term chronic covid syndrome (CCS) would be a more traditional way of symbolizing the so-called long-covid and long-haulers in COVID-19. Though the renaming of this chronic state of now well-recognized chronicity seen in COVID-19 would not affect its prognosis, this is much needed to recognize this entity with a more appropriate nomenclature as published work is making its way into databases like Google Scholar and PubMed. This article is protected by copyright. All rights reserved.

Keywords: COVID-19, long-haulers, Chronic COVID Syndrome

5.12

KNOWLEDGE, ATTITUDES AND PRACTICES TOWARDS CORONAVIRUS DISEASE 2019 (COVID-19) AMONG PAKISTANI RESIDENTS: DIGITAL DIVIDE AND LOW LITERACY VULNERABILITIES

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Background: Coronavirus disease (COVID-19) has accentuated the need for speedy access to information. Digital divide and socio-demographic disparity creates an information hiatus, consequently unhealthy practices, for COVID-19, particularly in low- and middle-income countries (LMICs). Objectives: We assessed knowledge, attitudes and practices (KAP) and their determinants regarding COVID-19 in Pakistan during March – April 2020. Methods: 905 adults ≥ 18 years (males and females) participated: 403 on web-based survey (WBS); 365 from Urban Survey (US); and 137 from Rural Survey (RS). Frequency of adequate KAP for the three population was determined based on available global guidelines. Multivariable logistic regression analysis determined factors of adequacy of KAP and association of knowledge with attitudes and practices.

Results: Mean age of the participants was 33.5 (+ SD 11.1) years, 51% were females. More females and young adults (18-30 years) participated in WBS. US and WBS participants had significantly higher adequate knowledge (2-7 times) and practices (4-5 times) towards COVID-19. Adequate knowledge had a significant influence on healthy attitudes and practices against COVID-19, after adjustment for covariates. Overall, two-third of the population had high levels of fear about COVID-19 and it was highest among the RS population.

Conclusion: Substantial gap exist in KAP, particularly among rural population and underscores the variation in access to information according to level of education and access to internet. Thus, a comprehensive, contextually congruent awareness raising strategy is urgently needed against COVID-19.

Keywords: knowledge, attitude, COVID-19

5.13

VALIDATION OF COVID 19 EMERGENCY TRIAGE TOOL (CORVETT) AMONG ADULTS IN THE EMERGENCY DEPARTMENT

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Background: The COVID 19 Emergency Triage Tool was developed to fasten the process of accurate screening, and subsequent isolation area allocation in the emergency department. In the present study we aim to validate CorVETT as a tool for accurate screening and subsequent isolation area allocation among adults presenting with COVID 19 symptoms in the emergency department.

Methods: This was a cross-sectional study conducted in the emergency department of Aga Khan University Hospital. The methodological framework of Transparent Reporting of multivariable prediction model for individual Prognosis and Diagnosis (TRIPOD) type I was adopted. The algorithm tested consists of four sequential stages; presenting features, vitals, associated features like chest pain, cyanosis (peripheral or central), respiratory distress, coma or convulsions and high risk conditions. The cumulative score of four stages categorizes patient as COVID or non-COVID and was assigned non isolated or isolated bed. Prediction model for the presence of relevance (event) was obtained by dividing data into two parts; training (n = 450) and validation (n = 115). The probability of event was estimated using linear

logistic regression with training data. Selection of variables was based on complete enumeration algorithm and Akaike information criterion (AIC). Predictive capacity of the model was assessed using a ROC (receiver operating characteristic) analysis through set of validation data. The discriminative capacity was evaluated using area under ROC curve (AUC) estimated by a 95% confidence interval. P-value less than 0.05 was considered statistically significant. The statistical analysis was performed on "R" (version 3.4.1, 2017) and Statistical Package for Social Science (SPSS, version 21.0, 2016).

Results: In our study 595 patients were enrolled, 349 (59%) were male and 246 (41%) female. The mean age of study sample was 55.35 ± 17.08 . Majority of patients were admitted in the emergency department isolation facility 412 (69%). The patients who were discharged from ED with quarantine instructions were 183 (31%). 381(64%) of our patients were COVID 19 PCR positive and 214(36%) were negative. Out of 381 positive patients 238(62%) were males and 143(37%) females. The mean prediction score for CorVETT was 4.57 ± 3.12 with 5.91 ± 2.38 in COVID positive patients and 2.2 ± 2.86 in COVID negative patients with a p-value of

Keywords: Triage Tool, Covid19, validation

5.14

TO COMPARE RISK FACTORS AND OUTCOMES OF COVID-19 PATIENT WITH C. AURIS AND NON-C. AURIS CANDIDEMIA.

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Introduction: The ongoing coronavirus disease (COVID-19) pandemic has overwhelmed healthcare systems worldwide. Secondary Candida spp. including Candida auris bloodstream infections in COVID-19 patients is being documented. C. auris, a global health threat, leads to severe disease with high

mortality rates. We aimed to compare risk factors & outcomes of COVID 19 patients with C.auris & non-C.auris candidemia.

Methods and Results: We included 21 COVID 19 patients, from April 4,2020 to September 23, 2020. Three of our patients had C. auris candidemia, 17 had non-C. auris candidemia, one patient's catheter tip was colonized with C. auris. We compared host factors, clinical and laboratory parameters of these patients. Seventy-five percent of the C. auris patients and 35% non-C. auris patients had central line associated blood stream infection. C. auris patients had longer duration of hospital stay. Prior broad spectrum antibiotics were given in all the patients in both groups. Raised beta D-glucan was seen in 25% C. auris patients and 35% non-C. auris patients. Antifungal therapy was given in 100% C. auris and 82% non-C. auris patients. Microbiological clearance from blood was seen in 67% C. auris patients and 30% non-C. auris patients. Other laboratory parameters were comparable between both groups. Seventy-five percent C. auris and 71% non C. auris patients received treatment for COVID 19. Seventy-five percent C. auris and 76% non-C. auris patients received mechanical ventilation. Fifty percent of C. auris while 60% of non-C. auris patients died.

Conclusion: Our observations show an increasing number of critically ill COVID-19 patients develop candidemia which also has high mortality. Colonization with Candida species prior to candidemia was significantly associated with C. auris candidemia versus non-C.auris candidemia. These observations may help guide early appropriate therapy in such patients.

Keywords: COVID 19, Candida spp, C.auris

5.15

SCREENING FOR TRIAZOLE RESISTANCE IN CLINICALLY SIGNIFICANT ASPERGILLUS SPECIES; REPORT FROM PAKISTAN

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Background: Burden of aspergillosis is reported to be significant from developing countries including those in South Asia. The estimated burden in Pakistan is also high on the background of tuberculosis and chronic lung diseases. There is concern for management of aspergillosis with the emergence of azole resistant *Aspergillus* species in neighbouring countries in Central and South Asia. Hence the aim of this study was to screen significant *Aspergillus* species isolates at the Microbiology Section of Aga Khan Clinical Laboratories, Pakistan, for triazole resistance.

Methods: A descriptive cross-sectional study, conducted at the Aga Khan University Laboratories, Karachi, from September 2016-May 2019. One hundred and fourteen, clinically significant *Aspergillus* isolates [*A. fumigatus* (38; 33.3%), *A. flavus* (64; 56.1%), *A. niger* (9; 7.9%) *A. terreus* (3; 2.6%)] were included. The clinical spectrum ranged from invasive aspergillosis (IA) (n=25; 21.9%), chronic pulmonary aspergillosis (CPA) (n=58; 50.9%), allergic bronchopulmonary aspergillosis (ABPA) (n=4; 3.5%), severe asthma with fungal sensitization (SAFS) (n=4; 3.5%), saprophytic tracheobronchial aspergillosis (n=23; 20.2%). Screening for triazole resistance was performed by antifungal agar screening method. The minimum inhibitory concentration (MIC) of itraconazole, voriconazole and posaconazole against 41 isolates, a subset of the collection, were tested and interpreted according to the Clinical and Laboratory Standards Institute broth microdilution method. **Results:** All the isolates were triazole-susceptible on agar screening.

MICs of all three azole antifungals for 41 tested isolates were found to be ≤ 1 ml/L; all isolates tested were categorized as triazole-susceptible, including 4 isolates from patients previously on triazole therapy for more than two weeks.

Conclusion: Triazole resistance could not be detected amongst clinical *Aspergillus* isolates from Karachi. However, environmental strains remain to be tested for a holistic assessment of the situation. This study will set precedence for future periodic antifungal resistance surveillance in our region on *Aspergillus* isolates.

Keywords: Aspergillosis, Itraconazole, Voriconazole

5.16

SERIAL POPULATION BASED SEROSURVEY OF ANTIBODIES TO SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 IN A HIGH AND LOW TRANSMISSION AREA OF KARACHI, PAKISTAN

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The current pandemic has delineated the importance of community-based serial serosurveys for estimating the true burden of the disease especially in areas where testing is sub-optimal. Household transmission of infection is a key concern in closed congested urban areas especially when lockdown measures are in place. A repeated cross-sectional survey was conducted in between April and June 2020 in high- and low transmission districts of Karachi, Pakistan, using a random sampling technique. We compared seroprevalence with overall reported coronavirus cases of these districts to comprehend the level of under reported cases from RT-PCR testing. Age and gender stratified estimates of seroprevalence were determined and the role of household transmission was assessed through conditional risk of infection (CRI). All household members were eligible to

participate irrespective of their age and status of infection. Symptoms were assessed during household visits along with collection of serum samples which were tested for antibody using chemiluminescence. Bayesian regression model was used to adjust seroprevalence. A total of 2004 participants were enrolled from 406 households. In April 0.4% (95% CI 0 - 1.3) and 0.2% (95% CI 0-0.7) tested positive in high- and low-transmission-neighborhoods respectively compared with 15.1% (95% CI 9.4 -21.7) and 8.7% (95% CI 5.1-13.1) in June. Conditional risk of infection was obtained to be 0.41(95% CI 0.28-0.52) and 0.31 (95% CI 0.16-0.47) respectively with only 5.4% of participants being symptomatic. Prompt rise is seen in seroprevalence from baseline with a high likelihood of infection within household. There is a high chance for an individual to catch the infection given exposure to another infected within the household, irrespective of any symptoms. Enhanced surveillance for COVID-19 especially in low-transmission areas can determine the risk of household transmission and the real direction of the infection curve.

*Keywords:*Seroprevalence, Coronavirus, Pakistan

5.17

A PILOT STUDY ON FINDING OF PATIENS WITH SUSPECTED COVID IN HIGH RESOLUTION COMPUTED TOMOGRAPHY

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Progression of novel corona virus has increased up to 200 countries and number of cases are increasing day by day. Aim of this study is to analyze finding of MD HRCT in patients who were suspected covid, their relevance with PCR. Data consist of 63 patients including 46 males and 17 females with the history of cough, sob or are suspected for covid. Duration of study was from May 2020 to October 2020. Obtained results showed that males have higher percentage of covid as compare to females.

Acquired results showed that among total cases 40 percent of scans were negative whether 60 percent of scans were positive for COVID 19.47 patients were those who went both HRCT and PCR and among those 64% HRCT and 36% PCR were positive. Attained result showed that HRCT is an effective scan to rule out covid moreover HRCT in combination with PCR may provide more effective results in order to detect novel corona virus. Study limitation include inadequate availability of data, technical error like difficulty to hold breath during scans, false positive results, misinterpretation and suspicion by radiologist due to combination of respiratory diseases in lungs.

*Keywords:*Covid, Hrct Covid, Ct Hrct

5.18

CORRELATION OF COMPUTERIZED TOMOGRAPHY (CT) SEVERITY SCORE FOR COVID-19 PNEUMONIA WITH CLINICAL OUTCOMES

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Introduction: Various CT severity scores have already been described in literature since the start of this pandemic. One pertinent issue with all of the previously described severity scores is their relative challenging calculation and variance in inter-observer agreement. The severity score proposed in our study is relatively simpler, easier to calculate and apart from a trained radiologist, can easily be calculated even by physicians with good inter-observer agreement. Therefore, a rapid CT severity score calculation can give a clue to physician about possible clinical outcome without being dependent on radiologist who may not be readily available especially in third world countries.

Objective: The objective of this study is to develop a simple CT severity score (CT-SS) with good inter-observer agreement and access its correlation with clinical outcome. *Methods:*

This retrospective study was conducted by the Department of Radiology and Internal Medicine, at the Aga Khan University Hospital Karachi, from April 2020 to August 2020. Non-probability consecutive sampling was used to include all patients who were positive for COVID-19 on PCR, and underwent CT chest examination at AKUH. Severity of disease was calculated in each lobe on the basis of following proposed CT severity scoring system (CT-SS). For each lobe the percentage of involvement by disease was scored – 0% involvement was scored 0, 50% involvement was scored 2. Maximum score for one lobe was 2 and hence total maximum overall score for all lobes was 10. Continuous data was represented using mean and standard deviation, and compared using independent sample t-tests. Categorical data was represented using frequencies and percentages, and compared using Chi-squared tests. Inter-observer reliability between radiologist and physician for the 10 point CT-SS rated on 0-10 was assessed using the Kappa statistic. A p-value < 0.05 was considered significant for all analyses.

Results: A total of 73 patients were included, the majority male (58.9%) with mean age 55.8 ± 13.93 years. The CT-SS rated on 0-10 showed substantial inter-observer reliability between radiologist and physician with a Kappa statistic of 0.78. Patients with CT-SS 8-10 had a significantly higher ICU admission & intubation rate (53.8% vs. 23.5%) and mortality rate (35.9% vs. 11.8%; $p = 0.017$), as compared to those with CT-SS 0-7. Conclusion: We conclude that the described CT severity score (CT-SS) is a quick, effective and easily reproducible tool for prediction of adverse clinical outcome in patients with COVID 19 pneumonia. The tool shows good inter-observer agreement when calculated by radiologist and physician independently.

Keywords: COVID-19, CT severity score, CT features of COVID-19

5.19

AWARENESS OF COVID-19: WHAT DO PAKISTANIS PERCEIVE? A LARGE SURVEY OF 1200 RESIDENTS

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Background: The Novel Coronavirus Disease (COVID-19) has created havoc globally as countries worldwide struggle to combat this pandemic. Since prevention and social isolation are known to be the only ways to prevent the spread of COVID-19, this has created challenges among the lower-middle income countries (LMIC) including Pakistan, as it battles between an under-resourced healthcare, an economic shutdown, and widespread myths and misconceptions. Therefore, we conducted a study to evaluate the knowledge, attitude and perceptions regarding COVID-19 as public understanding is vital to help facilitate the control of this outbreak.

Methods: A pre-validated online questionnaire was distributed among the general population of Pakistan from 1st to 12th June 2020. Descriptive statistics were analyzed using SPSS v25. Adequate knowledge was assigned as a score of >4 (range: 0-8) and good perception as a score of >3 (range: 0-5). Chi-square test was used to determine the significance of difference in knowledge and perception of COVID-19 among socio-demographics. Logistic regression analysis was run to identify factors associated with adequate knowledge and perception. $P < 0.05$ was considered as significant.

Results: A total of 1200 respondents participated in this study with a wide range of age groups and education. Majority of the respondents had adequate knowledge (93.3%) with a mean score of 6.59 ± 1.35 , and good perception (85.6%) with a mean score of 4.29 ± 0.82 . Significant differences in knowledge and perception were

observed among genders, age groups, education and between students and employees in the healthcare and non-healthcare department. A multivariable analysis revealed an advanced degree and a female gender to be significant predictors of adequate knowledge and perception. *Conclusions:* Albeit the surge of COVID-19 cases in Pakistan, the participants demonstrated an overall adequate knowledge and good perception towards COVID-19. Perhaps, a potential hint towards noncompliance practices in following preventive protocols requires further educational interventions that target safe health practices and complications of this infection.

Keywords: Attitude, Perception, Knowledge

5.20

A BLINDED RANDOMIZED CONTROLLED TRIAL OF GARGLING AGENTS IN REDUCING INTRA-PHARYNGEAL VIRAL LOAD AMONG LABORATORY CONFIRMED CORONAVIRUS (COVID-19) PATIENTS:

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Background: To compare the effectiveness of 1% Hydrogen peroxide, 0.2% Povidone-Iodine and 2% hypertonic saline in reducing intra-oral viral load in COVID-19 positive patients. And to explore if Neem extract (*Azadirachta indica*) can be used as an antiviral gargle against COVID-19 positive patients.

Methods: It will be a parallel group, quadruple blind-randomized controlled trial to be carried out at the Aga Khan University Hospital (AKUH), Karachi, Pakistan. Laboratory confirmed Covid-19 positive, hospital admitted patients will be recruited. There will be four study groups. Group A (n=10) patients using 0.2% Povidone-Iodine gargles nasal lavage for 20-30 seconds, thrice daily for 6 days. Group B

(n=10) patients will be subjected to 1% Hydrogen peroxide, Group C (n=10) will use Neem extract solution (*Azadirachta indica*) and Group D (n=10) will use 2% hypertonic saline for a similar time period. Study participants will continue to get their routine inpatient medical care. Baseline swab will be taken from the posterior pharyngeal wall on day 1 and the end-point swab will be taken on day 7. Primary outcome is the reduction in the intra-oral viral load confirmed with real time PCR. Secondary outcome is the change in inflammatory biomarkers (IL-2, IL-4, IL-6, IL-10, TNF- α , IFN- γ and IL-17). Cytokine analyses will be carried out using multiplex ELISA. Repeated measures ANOVA will be used to compare the reduction in intra-oral viral load and the change in the inflammatory biomarkers in the study groups. A p-value of

Keywords: Gargles, viral load, Covid-19

5.21

THE MORTALITY RATE OF CCHF (CRIMEAN CONGO HEMORRHAGIC FEVER) AND ASSOCIATED PREDICTIVE FACTORS IN PATIENTS ADMITTED THROUGH ED – AN AKUH EXPERIENCE

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Background: Crimean-Congo hemorrhagic fever (CCHF) is one of the most deadly zoonotic viral infection known to humankind, with a fatality rate reported as 4- 30% depending on geographic location, viral serotypes and access to quality health care. Since there is no specific therapy available, early prediction of the clinical course of the disease could be lifesaving. Thrombocytopenia, elevated liver enzymes, prolonged bleeding times, fibrinogen levels, FDP, raised troponin and ferritin levels are the most frequently reported factors to predict the clinical course of the disease. We aim to determine the prognostic factors and outcome of CCHF patients.

Methods: A total of 56 patients diagnosed CCHF (PCR positive), admitted through the Emergency Department of Aga Khan University Hospital, between January 2010 and December 2019, were included. Non-parametric statistical tests were used for analysis. A p-value of 640 mg/dl (AUROC = 0.87;0.75-0.94), and SGOT >2140 mg/dl (AUROC = 0.87;0.76-0.95; 95% CI, P < .01 for all).

Conclusion: CCHF presents with a different clinical spectrum in Pakistan when compared to that reported internationally. Fibrinogen, D-dimer, SGPT, SGOT, PT can be used early in the course of illness to predict mortality.

Keywords: Crimean-congo hemorrhagic fever, mortality, prognosis

5.22

GLOBAL VARIATION IN COVID-19 MORTALITY RATES IN THE INITIAL PHASE

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Abstract Background: The novel coronavirus SARS-CoV-2 has caused devastation in over 200 countries. Italy, Spain, and the United States have been most severely affected by the first wave of the pandemic. Reasons why some countries were worse affected than other countries are still unknown. Here we identified the most and lesser affected countries and explored environmental, host, and infrastructure risk factors that may explain differences in mortality burden of SARS-CoV-2. **Methods:** We identified the top 10 countries/US states with the highest deaths per population until May 2020. For each of these 10 case countries, we identified 6 control countries with similar population size and at least 3 times lower deaths per population. We extracted data for 30 risk factors from publicly available trusted sources. We compared case and control countries using a

non-parametric Wilcoxon rank-sum test. We did a secondary cluster analysis to explore the relationship between the number of cases per population and the number of deaths per population using a scalable EM clustering algorithm. **Findings:** Statistically significant differences were found in 16 out of 30 investigated risk factors. Most important among these include temperature, neonatal and under 5 mortality rates, percentage under 5 deaths due to acute respiratory infections (ARI) and diarrhea, and tuberculosis (TB) incidence (p-value

Keywords: COVID19, Pediatrics, Infectious Diseases

5.23

AN IN SILICO APPROACH TO ANALYZE HCV GENOTYPE-SPECIFIC BINDING-SITE VARIATION AND ITS EFFECT ON DRUG-PROTEIN INTERACTION

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Introduction: Genotype variation in viruses can affect the response of antiviral treatment. Several studies have established approaches to determine genotype-specific variations; however, analyses to determine the effect of these variations on drug-protein interactions remain unraveled. We present an in-silico approach to explore genotype-specific variations and their effect on drug-protein interaction. **Methods:** We have used HCV NS3helicase and fluoroquinolones as a model for drug-protein interaction and have investigated the effect of amino acid variations in HCV NS3 of genotype 1a, 1b, 2b and 3a on NS3-fluoroquinolone interaction. We retrieved 687, 667, 101 and 248 nucleotide sequences of HCV NS3 genotypes 1a, 1b, 2b, and 3a, respectively, and translated these into amino acid sequences and used for genotype variation analysis, and also to construct 3D protein models for 2b and 3a

genotypes. For 1a and 1b, crystal structures were used. Drug-protein interactions were determined using molecular docking analyses.

Results: Our results revealed that individual genotype-specific HCV NS3 showed substantial sequence heterogeneity that resulted in variations in docking interactions.

Conclusion: We believe that our approach can be extrapolated to include other viruses to study the clinical significance of genotype-specific variations in drug-protein interactions.

Keywords: Virus, genotype variations, protein interaction

5.24

GENETIC AND ANTIRETROVIRAL DRUG RESISTANCE MUTATION ANALYSIS OF POL GENE FROM PAKISTANI HIV-1 INFECTED INDIVIDUALS

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Background: Antiretroviral therapy (ART) is greatly threatened by the emergence of HIV drug resistance mutations (DRM) in the HIV genome, which can lead to failure of ART. Apart from genetic factors, non-compliance of drug and/or use of sub-optimum therapy can lead to the emergence of DRMs. In Pakistan HIV currently exists as a concentrated epidemic, however, the ART coverage is very low and drug adherence is poor. ART is selected assuming without baseline genotyping. Recently Pakistan has experienced some surge in treatment failures, however, the true burden of DRM in the country is not known. In this study, we perform the genetic and drug resistance analysis of the pol gene from Pakistani HIV-positive ART-naïve and ART-experienced individuals.

Methods: In this study, HIV-1 pol was sequenced from 146 HIV-1 positive individuals,

divided as ART-naïve (n=37) and ART-experienced (n=109). The sequences were also used to determine HIV-1 subtypes, the prevalence of DRM, and pol genetic variability. *Results:* DRM analysis revealed the predominance of certain DRMs against reverse transcriptase inhibitors in both naïve and experienced group. Moreover, protease inhibitor-resistant mutations M46I and I54V were also observed in the ART-experienced group. Genetic analysis revealed high genetic variability for most DRM sites in both the groups, however, ART-naïve groups had an overall higher rate of evolution.

Conclusion: High prevalence of DRMs, especially against first-line treatment in both naïve and experienced groups is concerning and warrants that genotyping be carried out before the start of ART and periodically during the therapy so that right ART combination can be chosen, which can ensure the therapeutic efficacy of antiretroviral drugs.

Keywords: HIV-1, Drug resistance mutations, Genetic variability

5.25

NEUROLOGICAL MANIFESTATIONS IN COVID-19 CAUSED BY SARS-COV-2

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The recent outbreak of COVID-19 caused by SARS-CoV-2 coronavirus has turned the world into chaos with its ominously high rate of transmissions. As the SARS-CoV-2 infection has become pandemic, the scientific community is in a race against time to beat the COVID-19 by unravelling molecular targets and discover epitopes in the protein sequences of SARS-CoV-2 for vaccines/antibodies synthesis. It has been reported that in addition to the conventional respiratory complaints of flu, patients are also exhibiting neurological signs and symptoms. Recently, the report of a patient with COVID-19 exhibiting loss of the involuntary process of

breathing controlled by the inspiratory area in the brainstem is alarming. Additionally, neurological deficits reported in uncomplicated and complicated patients with COVID-19 from hospitals in Wuhan, China, are convincing enough that the neurological deficits could be ongoing in the recent outbreak without getting noticed. As the recent outbreak has now spread to almost all of the continents and has become pandemic, we are in the early phases of our attempts to understand the syndromic complexity of the COVID-19. The SARS-CoV-2 causing COVID-19 can take two pathways to involve the brain. Early occurrences of loss of smell, ataxia, and convulsions should be further evaluated for CNS involvement by SARS-CoV-2.

Keywords: SARS-CoV-2, COVID-19, Neurological deficits

5.26

UPDATES ON WHAT ACS REPORTED: EMERGING EVIDENCES OF COVID-19 WITH NERVOUS SYSTEM INVOLVEMENT

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With the ongoing pandemic of coronavirus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), our knowledge of the pathogenesis of COVID-19 is still in its infancy. Almost every aspect of the pathogen remains largely unknown, ranging from mechanisms involved in infection transmission, interplay with the human immune system, and covert mechanisms of end-organ damage. COVID-19 has manifested itself worldwide with a syndromic appearance that is dominated by respiratory dysregulations. While clinicians are focused on correcting respiratory homeostasis, echoing the original SARS, SARS-CoV-2 is also invading other end-organs, which may not exhibit overt clinical features. Nervous system involvement was not initially considered to play a significant role in patients with

COVID-19. However, since this viewpoint was initially published, multiple studies have been released regarding the possible neurovirulence of SARS-CoV-2. In our previous viewpoint, we implored our colleagues to recognize the covert tactics of SARS-CoV-2 and emphasized that symptoms like anosmia, dysgeusia, ataxia, and altered mental status could be early signs of the neurotropic potential of this virus. The past few weeks, after the viewpoint surfaced, it was noticed that it has enabled clinicians and healthcare professionals to compute the neurovirulence associated with SARS-CoV-2 in COVID-19 patients, as evidenced by very recently reported studies

Keywords: COVID-19, SARS-CoV-2, Neurological COVID-19

5.27

POTENTIAL NEUROINVASIVE PATHWAYS OF SARS-COV-2: DECIPHERING THE SPECTRUM OF NEUROLOGICAL DEFICIT SEEN IN CORONAVIRUS DISEASE-2019 (COVID-19)

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Coronavirus disease-2019 (COVID-19) was declared a global pandemic on 11 March 2020. Scientists and clinicians must acknowledge that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has the potential to attack the human body in multiple ways simultaneously and exploit any weaknesses of its host. A multipronged attack could potentially explain the severity and extensive variety of signs and symptoms observed in patients with COVID-19. Understanding the diverse tactics of this virus to infect the human body is both critical and incredibly complex. Although patients diagnosed with COVID-19 have primarily presented with pulmonary involvement, viral invasion, and injury to diverse end organs is also prevalent and well documented in these patients, but has been largely unheeded. Human organs

known for angiotensin-converting enzyme 2 (ACE2) expression including the gastrointestinal tract, kidneys, heart, adrenals, brain, and testicles are examples of extrapulmonary tissues with confirmed invasion by SARS-CoV-2. Initial multiple organ involvement may present with vague signs and symptoms to alert health care professionals early in the course of COVID-19. Another example of an ongoing, yet neglected element of the syndromic features of COVID-19, are the reported findings of loss of smell, altered taste, ataxia, headache, dizziness, and loss of consciousness, which suggest a potential for neural involvement. In this review, we further deliberate on the neuroinvasive potential of SARS-CoV-2, the neurologic symptomology observed in COVID-19, the host-virus interaction, possible routes of SARS-CoV-2 to invade the central nervous system, other neurologic considerations for patients with COVID-19, and a collective call to action

Keywords: COVID-19, SARS-CoV-2, Brain

5.28

TARGETING CNS RELATED PROTIST PATHOGENS: CALCIUM ION DEPENDENCY IN THE BRAIN-EATING AMOEBAE

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Of the free-living amoebae (FLA) *Naegleria fowleri*, *Balamuthia mandrillaris*, and *Acanthamoeba* spp. are known to cause encephalitis. Coined with the term "brain-eating amoebae" (BEA), infection of the central nervous system with FLA has a high mortality rate. A combination of diagnostic delay, lack of new drug development, and incomplete understanding of the dependencies of FLA have resulted in the failure of introducing safer and effective drugs. We inferred that being a shape-changing entity the FLA should have a dependency on calcium (Ca²⁺) ions that could

be targeted to cripple the pathogenicity of the FLA. We used genomic, transcriptomic, and proteomic information available on FLA in online databases to evidence the presence of various Ca²⁺ ion influx regulating channels, reviewing adapter proteins at first and then targeting human-like voltage-gated Ca²⁺ channels with nifedipine and verapamil that are used clinically for noninfectious diseases to see their effect in trophozoites of *Acanthamoeba* spp. in particular.

Keywords: *Acanthamoeba* spp, Ca²⁺ channels, free-living amoebae (FLA)

5.29

IMMUNE PATHOGENIC RESPONSE AND HEMATOPATHOGENIC EFFECTS IN COVID-19 PATIENTS; ROLE OF MACROPHAGES AND T-CELLS

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The recent outbreak of COVID-19, triggered by SARS-CoV-2, has posed massive threats to the global health system and lead to scientists around the world trying to establish drugs and vaccines to curb the infection. Symptoms of COVID-19 vary from asymptomatic to severe with the severe group exhibiting the features of secondary hemophagocytic lymphohistocytosis (sHLH) characterized by cytokine storm and a dysregulated adaptive immune response. Some prominent features observed in the severe group include selective loss of CD4⁺ T cells, CD8⁺ T cells along with T-cell exhaustion, lymphopenia, and increased expression of T-cell inhibitory molecules. Furthermore, the variation in the signs and symptoms of COVID-19 seen in different patients is attributed to the diversity in the type and number of alveolar and interstitial macrophages at the time of infection. The aim of this study is to provide a narrative review of the literature on immune response to COVID-19

which can help clinicians in developing effective therapeutic interventions targeting different stages of the immune response to control the infection.

Keywords: Cytokine storm, macrophages, T-cells and COVID-19

5.30

THE CORRELATION BETWEEN ADENOVIRUS-36 INFECTION AND OBESITY IN PAKISTANI POPULATION

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Background: Obesity is a complex metabolic disorder and is reflected as a low-grade inflammatory disorder that can lead to many serious health issues such as diabetes, cardiovascular diseases, infertility, etc. Few reports published have shown that obesity can be caused by a viral infection, primarily by adenoviruses, where adenovirus 36 is massively studied in different populations as an etiological agent of obesity. Many other researchers have worked on several factors associated with obesity in the Pakistani population; however, the association of obesity with adenovirus 36 infection has not been established yet. Therefore, the aim of this study was to determine the correlation between obesity and adenovirus 36 infections in the Pakistani population and to understand the role of the intermediary markers, such as interleukin-18 (IL-18) in adenovirus-mediated obesity along with IL-18 polymorphism(s).

Methods: In this study, males and females of 18-60 years of age falling in different Body Mass Index (BMI) categories were recruited. The presence of human adenovirus 36 antibodies and Interleukin 18 is underweight, normal weight, overweight and obese individuals were analyzed by the ELISA method, while levels of IL-18 polymorphism were analyzed by tetra-arm PCR. *Results:* Our data provide evidence that

adenovirus 36 infection is associated with obesity in the Pakistani population (p

Keywords: Obesity, ADENOVIRUS-36, Interleukin-18

5.31

KNOWLEDGE, ATTITUDE AND PRACTISES OF ANAESTHESIA PERSONNEL TOWARDS NEEDLE STICK INJURIES IN A TERTIARY CARE HOSPITAL”

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Introduction: Needle stick injury (NSI) is a wound from needle piercing of intact skin that has been in contact with body fluids before the exposure. NSI is an occupational hazard faced by anaesthesia personnel. A comprehensive understanding of the risks and safe practices is essential for establishing a risk free environment when handling needles.

Objectives: To assess knowledge, attitude and practises of anaesthesia personnel towards needle stick injury at Aga Khan University Hospital. To determine the prevalence of needle stick injury amongst anaesthesia personnel at Aga Khan University Hospital. *Setting:* Operating theatres and post-anaesthesia care unit at Aga Khan University Hospital. *Duration:* 6 months from December 2018 to May, 2019 *Design:* Cross-Sectional Study *Subjects and Methods:* 162 anaesthesia personnel filled a questionnaire. Respondents who gave 50% or more correct answers for disease transmission and post-exposure prophylaxis were considered to have adequate knowledge. A positive attitude involved awareness of patient’s disease status, taking appropriate measures after a NSI and reporting it. A good practise involved appropriate protective measures taken to prevent a NSI.

Results: A total of 162 responses were obtained (106 males, 56 females; Mean age: 31 years). 27

responses were obtained from faculty, 40 from residents, 39 from anaesthesia technicians and 56 from nurses. 56 (35%) responders reported to have a NSI. Only 41 (25%) of the responders were found to have adequate knowledge. Among the 56 (35%) responders who had a NSI, 49 (87.5%) had a positive attitude. 96% of the participants followed good practices.

Conclusion: Majority of anaesthesia personnel were found to have a good attitude and followed good practices. However, they still lacked adequate knowledge especially about post exposure prophylaxis. Although entirely preventable, NSI were still common and requires implementation or revision of existing policies and attainment of safe needle devices.

Keywords: Knowledge, needle stick injury, anaesthesia personnel

5.32

ANALYSIS OF TEMPORAL CHANGES IN HIV-1 CRF01_AE GAG GENETIC VARIABILITY AND CD8 T-CELL EPITOPE EVOLUTION

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Introduction: Currently, little is known about time-dependent evolution of HIV-1 CRF01_AE, a dominant recombinant form associated with HIV-1 epidemics worldwide. Since gag is a highly immunodominant HIV-1 protein, we performed a comparative analysis of the CRF01_AE gag protein's time-dependent changes and evolution.

Methods: A total of 3105 HIV-1 CRF01_AE gag sequences representing 17 countries from the timeline 1990-2017 were obtained. The sequences' phylogenetic relationship and epidemic dynamics were analyzed through a Maximum Likelihood tree and Bayesian Skyline plot, respectively. Genomic variability was measured through Shannon entropy and time-

dependent immunoevolution was analyzed using changes in proteasomal degradation pattern, CTL epitopes and HLA restriction profile. **Results:** The most recent common ancestor of the HIV CRF01_AE epidemic was estimated to be 1974±1. A period of exponential growth in effective population size began in 1982, fluctuated and then stabilized in 1999. Genetic variability (entropy) consistently increased, however, epitope variability remained comparable with the highest variability occurring in 2000-2004; the highest number of novel CTL epitopes present in 1995-1999, which were lost over time.

Conclusion: The HIV-1 CRF01_AE epidemic spread is predominant in countries within Asia, where population immunogenetic pressures may have played a role in initial changes and then adaptation/stabilization of epitope diversity within the gag sequences.

Keywords: HIV-1 CRF01_AE, genetic variability, epitope evolution

5.33

ASSESSING THE EFFECTIVENESS OF INTERVENTIONS FOR NEGLECTED TROPICAL DISEASES; A SYSTEMATIC REVIEW

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Background: Neglected tropical diseases (NTDs) are a variety of communicable diseases (including but not limited to soil transmitted helminths, Schistosoma species, Chlamydia trachomatis and Leishmaniasis) that are prevalent throughout the world, especially in tropical countries. Most of these infections affect children, pregnant women and young adults resulting in significant morbidity.

Methods: We aim to systematically analyse the effectiveness of mass drug administration (MDA), WASH, vector control, health education

and micronutrients supplementation in preventing NTDs in children. Our inclusion criteria included randomized control trials (RCTs) and quasi-randomised studies with a control group that had either standard of care or a placebo and ages 0 to 18 years. Relevant electronic databases were searched without any date or language filters. Two review authors independently screened studies for relevance, extracted data, assessed risk of bias and rated the quality of the evidence using the GRADE approach. We carried out statistical analysis using Review Manager software.

Results: This review summarizes the findings of 145 studies (221 papers) including 2,53,217 children. 79 studies were RCTs and 66 were quasi randomised. Most of the studies were judged to be at high risk of bias for allocation concealment, blinding of the participants and personnel. Our analysis suggests that MDA including Albendazole and Mebendazole may show a reduction of 58% in the prevalence of *Ascaris*, 36% in the prevalence of *Trichuris* and 56% in Hookworm prevalence compared to groups who did not receive MDA. Health education probably reduces the mean prevalence of active trachoma infections, the intensity of *S. mansoni* and prevalence of *S. mansoni* by 90% compared to the groups who received standard of care. Micronutrient supplements may reduce the prevalence of *S. haematobium* infections by 24%, anemia prevalence by 66% and infection intensity of *S. haematobium* compared to the groups that did not receive micronutrient supplement. Community based MDA probably decreases the prevalence of *S. mansoni* infections and wasting while increasing mean hemoglobin levels compared to school based MDA.

Conclusion: There is limited data on the effectiveness of various intervention but MDA and health education have the potential to reach and impact the community who need it the most. More robust multi-country trials are needed to gauge the actual impact of the various interventions and inform policy.

Keywords: Neglected Tropical Diseases,,Soil Transmitted Helminths, systematic review

5.34

IMAGING PATTERNS OF ENCEPHALOPATHY IN PATIENTS WITH COVID-19

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Objective: The aim of this study was to describe the imaging features of COVID-19 patients who presented with neurological symptoms and encephalopathy.

Methods: This was a descriptive case series. The study was conducted in the Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan. The duration of the study was six months from January to June 2020. All patients who presented with SARS-CoV-2 infection and various neurological symptoms were included after confirmation of COVID-19 by a quantitative reverse transcription–polymerase chain reaction test (PCR) by nasopharyngeal or oropharyngeal swab. All included patients had neuroimaging done from our radiology department with positive imaging findings. We also reviewed the hospital electronic medical records to extract clinical, laboratory and demographic data.

Results: Twelve patients met the inclusion criteria, two of whom were pediatric patients. Seizures and altered mentation were predominant neurological manifestations. There were three cases with acute watershed infarcts (25%), two cases with posterior cerebral artery territorial infarcts (16.7%), two cases of hypoxic ischemic encephalopathy (16.7%), one case of global encephalopathy (8.3%) and one case of posterior reversible encephalopathy syndrome (8.3%). Additionally, there was one case each of cerebral venous sinus thrombosis, small periventricular corona radiata infarcts, and bithalamic ischemic insults (8.3%). *Conclusion:* This article highlights the diagnostic and

therapeutic approaches to SARS-CoV-2 associated encephalopathy that clinicians and radiologists should be aware of as this pandemic progresses.

Keywords: COVID-19, neuroradiology, encephalopathy

5.35

BREAKING SAMPLING BOTTLENECKS USING 3D-PRINTED NASAL SWABS FOR SARS-COV-2 PCR TESTING

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Introduction: SARS-CoV-2 has infected more than 100 million individuals worldwide. The causative agent of COVID-19 is best detected in upper respiratory specimens which need to be collected using a particular swab to collect samples from the nasopharynx, oropharynx or nasal cavity. One of the biggest bottlenecks for testing respiratory specimens for SARS-COV-2 has been the availability of swabs and appropriate transport medium for collection, storage and downstream testing by polymerase chain reaction (PCR) based testing for the virus. We have thus far been dependent on the import of nasopharyngeal, nasal and oral swabs with viral/universal transport medium for SARS-CoV-2 testing.

Objective: At AKU, we have developed and printed our own 3-D swab design for nasal (nostril) sample collection. This has been paired with a laboratory prepared universal transport medium (UTM) to store the swab for testing. We conducted a clinical validation study comparing the 3D-printed nasal swab collected SARS-CoV-2 PCR tests with the standard nasopharyngeal/nasal swab method for SARS-CoV-2. All cases were tested with informed consent at the COVID-19 testing site, AKUH or were in-patients. Results Two hundred and two individuals were tested comprising 150

symptomatic and 52 asymptomatic cases. In total there were 65 True positive and three false positive SARS-CoV-2 PCR tests. There were six false negatives and 129 True Negative samples. This gave the 3D-printed swab sampling a sensitivity of 91% and Specificity of 97.7% as compared with the standard nasal swab method. Further, the concordance between viral load detection through (CT) values indicated a strong accuracy between 3D-printed swab and standard polyester swab sampling, in relation to diagnosis of High, Medium or Low viral load sample detection.

Conclusions: 3D-printed swabs can be printed at 1200 in one day and can provide a rapid, cost-effective local solution for the bottleneck of swab production for respiratory sampling of SARS-CoV-2 PCR testing. This can enhance diagnostic testing capacity across Pakistan.

Keywords: 3D-swab, COVID, sampling

5.36

IgG TO SPIKE AND RECEPTOR BINDING DOMAIN (RBD) PROTEIN OF SARS-COV-2 AS A TOOL TO EVALUATE PROTECTIVE ANTIBODY RESPONSES

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Introduction: SARS-CoV-2 is the causative agent of the COVID-19. Urgent improvements in diagnosis, treatment and management of COVID-19 are required to curtail the impact of this disease. It is important to have tools to measure SARS-CoV2 -induced antibody as a measure of virus induced host protection. This would allow us to identify individuals who are potentially 'protected' against COVID-19 and those who have had prior exposure to the virus. Further, there is a role for convalescent sera in the treatment of COVID-19 and this requires the

identification of potentially useful antibodies in donor sera prior to transfusion to patients.

Methods: SARS-CoV-2 recombinant protein was received from NOVA University Portugal. The IgG assay was developed in collaboration with University of Lisbon. We screened sera in four cohorts of study subjects; 50 health endemic controls collected from a pre-pandemic period (2018-2019). We tested 43 convalescent plasma from recovered COVID-19 positive cases. We tested 200 sera collected from COVID-19 confirmed cases during their in-patient stay; these included cases who had a positive SARS-CoV-2 respiratory PCR test and those who were negative for the same. Patients who were COVID-19 suspects but primarily had a neurological stroke were also included.

Results: ELISA for IgG to Spike protein was used as a screening assay. IgG to RBD of Spike was used as a confirmatory assay. Of the healthy controls tested, five cases had a positive IgG antibody response to SARS-CoV-2 RBD. Of the convalescent plasma tested, 40/43 had a positive IgG RBD response. Of the COVID-19 in patient cases tested, the majority of cases had a positive response to IgG to RBD. This included patients who were COVID-19 suspected but had a negative SARS-CoV-2 test. We found positive IgG responses in stroke patients who had a negative SARS-CoV-2 test. The level of IgG to RBD varied between individuals. As levels of IgG to RBD are found to be associated the development of neutralizing antibodies to SARS-CoV-2, this may correlate with levels of protection present in individuals.

Conclusions: We established a screening and confirmatory assay for measuring protective IgG response to SARS-CoV-2. This has utility in identifying appropriate convalescent plasma for COVID-19 treatment. Also, in the diagnosis of COVID-19 in patients who present with non-respiratory manifestations of the disease.

Keywords: IgG, COVID-19, protective immunity

5.37

STABLISHING MICRO-NEUTRALIZATION ASSAY TO EVALUATE THE VIRAL NEUTRALIZATION TITERS OF SERUM FROM SARS-COV-2 INFECTED INDIVIDUALS

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Introduction: SARS-CoV-2 was declared a pandemic by WHO in March 2020. The virus is responsible for millions of infections worldwide and over a million deaths within a year. Many published studies have demonstrated that individuals recovering from SARS-CoV-2 infection seroconvert and produce high levels of antibodies against the spike protein. The induced antibodies also neutralize the virus efficiently. Similarly, few studies have also showed that cross reactive sera can also exhibit virus neutralization, although the results are conflicting. There is a need for large-scale serology studies to show whether population-level protection occurs after SARS-CoV-2 infection in most individuals and also if cross-reactive sera have sufficient and specific antibodies to effectively neutralize the virus. Here we showed preliminary results for a micro-neutralization assay that can be used to evaluate the viral neutralization titers of serum from SARS-CoV-2 infected individuals.

Methods: SARS-CoV-2 strains were isolated from three different nasopharyngeal specimens. The limiting dilution method was used to obtain a 50% tissue culture infective dose (TCID50). For micro-neutralization assay, serum samples were heat-inactivated and two-fold serially diluted. The dilutions were mixed with a viral solution containing TCID50 of SARS-CoV-2. The serum-virus mixture was incubated with a semi-confluent VERO monolayer. After 4 days of incubation, the wells were inspected by an

inverted optical microscope. The highest serum dilution that protected more than the 50% of cells from CPE was taken as the neutralization titer. Results: We found that the three viral strains exhibited different infection dynamics. Out of the three serum samples, one was found to effectively neutralize the virus at 1:10 titer.

Conclusion: The results suggest that the micro-neutralization assay that can be effectively used to evaluate the viral neutralization titers of serum from SARS-CoV-2 seroconverted individuals.

Keywords: SARS-CoV-2, micro-neutralization assay, antibody titer

5.38

UNDERSTANDING TRANSMISSION DYNAMICS OF SARS-COV-2 IN PAKISTAN

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Background: The trajectory of SARS-CoV-2 infections is of concern in populous, low-middle income Pakistan. We describe the observational causality of COVID-19 cases with a particular focus on the metropolis, Karachi.

Methods: Retrospective cross-sectional analysis of 54,017 SARS-CoV-2 polymerase chain reaction (PCR) tests at Aga Khan University Hospital, a tertiary care facility in Karachi, Pakistan. Geospatial mapping of countrywide data was done with particular emphasis on Karachi and Sindh province. Findings Thirty-three percent of cases tested were positive for SARS-CoV-2. From first diagnosis in late February, COVID-19 cases increased slowing, mostly associated with travelers. Infections peaked in mid-June and subsequently declined. The mean age of COVID-19 cases was 39 ± 17 y. The majority of COVID-19 cases were males aged 21-40 years, with a lower odds ratio of

disease in females. However, significantly more males were tested than females across all age groups. However, within each gender there was no difference between COVID-19 positivity rates. In Sindh, SARS-CoV-2 test positivity was predominantly associated with urban centers mainly, Karachi. The trajectory COVID-19 was in concordance with local lockdowns, transport restrictions and the implementation of universal masking. Geospatial mapping of COVID-19 cases revealed an association with a dense population with a lower socio-economic status. Increased testing but lower positive COVID-19 cases were associated with a higher income setting. Interpretation Increased reporting of COVID-19 in Pakistani males was attributed to a gender bias in testing. SARS-CoV-2 transmission was associated with urban rather than rural settings where, increased testing was associated with a high income setting whilst higher positive rates with a lower income, more dense population. Reducing the gender bias in testing together with equitable testing and tracing across all socio-demographic settings would be key to avoid under surveillance of SARS-CoV-2 transmission in the population.

Keywords: COVID_19, transmission, epidemiology

5.39

SARS-COV-2 GENOME ANALYSIS OF STRAINS IN PAKISTAN REVEALS GH, S AND L CLADE STRAINS AT THE START OF THE PANDEMIC

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Abstract Background: A populous country with a high infectious disease burden and limited healthcare infrastructure, the increasing burden of SARS-CoV-2 infections in Pakistan have been watched with great trepidation. As of mid-

July there are 262,000 COVID cases with 5,500 deaths with an estimated case fatality rate of (2%).

Methods: We conducted whole genome sequencing (WGS) of SARS-CoV-2 strains from Karachi, Pakistan isolated in March and May, 2020. Phylogenetic analysis was conducted and genome diversity was investigated.

Results: Isolates from travelers clustered with strains from China, Iran, Turkey, Saudi Arabia, India, USA and Australia. Five of eight SARS-CoV-2 strains from Karachi belonged to GH clade with Spike glycoprotein D614G, Ns3 gene Q57H and RNA dependent RNA polymerase (RdRp) P4715L mutations. Two were S clade (ORF8 L84S and N S202N) and one was a L clade strain. Additional Pakistani isolates comprised two L and one I clade strain. A GH and L strain had Orf1ab L3606F mutation indicating further evolutionary transitions.

Conclusions: This first description of SARS-CoV-2 strains from Pakistan reveals strains of L, G, S and I clades isolates circulating from March at the start of the pandemic in the country. Continuing molecular epidemiology of SARS-CoV-2 strains in the context of COVID-19 severity is required to understand transmission patterns and related host factors of the disease in Pakistan.

Keywords: SARSCoV-2, Strain, diversity

5.40

INITIAL SCREENING OF THE FIRST FEW CASES OF COVID-19 PRESENTING AT THE AGA KHAN UNIVERSITY HOSPITAL, KARACHI, PAKISTAN

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Introduction: In resource constrained settings, symptom-based screening can effectively

prioritize testing and increase diagnostic accuracy. This study elucidates the epidemiological and clinical predictors of COVID-19 and evaluates symptom-based screening criteria indicative of SARS-CoV-2 infection, in patients presenting to the Aga Khan University Hospital (AKUH) in Karachi, Pakistan during the initial stage of the pandemic.

Methods: All patients with suspected or confirmed COVID-19 infection from AKUH were included. Data was extracted retrospectively from medical records. Calls were made to patients to acquire missing information. Multivariate regression and sensitivity and specificity analysis with positive and negative predictive values were reported to identify risk factors and assess the performance of symptom screening for identification of probable and confirmed infection.

Results: Between February and March 2020, 473 patients underwent symptom triage and a SARS-CoV-2 PCR test at AKUH. Of these, 53 tested positive; 46 (88.5%) were symptomatic and 6 (11.5%) were asymptomatic. The univariate-adjusted odds of a positive test were increased for patients reporting fever (1.903 (95% CI: 0.99-3.64)), cough (1.72 (95% CI: 0.89-3.33)), shortness of breath (2.82 (95% CI: 1.27-6.22)), and myalgia (5.81(95% CI: 2.94-11.48)), which also corresponded to a statistically significant OR (5.32 (95% CI: 2.47-11.45)) in the multivariate model. Sensitivity and specificity analysis of symptom screening at triage yielded an estimated negative predictive value of 93.3% that was associated with a combination of fever and cough, followed by 89.80% for shortness of breath and 88.0% for myalgia. *Conclusion:* Among a cohort of Pakistani patients, systemic symptoms/signs such as fever, cough, shortness of breath and myalgias were predictive of positive SARS-CoV-2 assays, with myalgia being the strongest independent predictor. Symptom-based prediction models that include rapidly ascertainable clinical findings, have sufficient

predictive value to identify individuals with a higher probability for COVID-19.

Keywords: COVID-19, SARS-CoV-2 symptoms

5.41

TRANSCRIPTOMIC PROFILING OF DISEASE SEVERITY IN PATIENTS WITH COVID-19 REVEALS ROLE OF BLOOD CLOTTING AND VASCULATURE RELATED GENES

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COVID-19 caused by SARS-CoV-2 manifests as a range of symptoms. Understanding the molecular mechanisms responsible for immunopathogenesis of disease is important for treatment and management of COVID-19. We examined host transcriptomes in moderate and severe COVID-19 cases with a view to identifying pathways that affect its progression.

Methods: RNA extracted from whole blood of COVID-19 cases was analysed by microarray analysis. Moderate and severe cases were compared with healthy controls and differentially regulated genes (DEGs) categorized into cellular pathways.

Results: DEGs in COVID-19 cases were mostly related to host immune activation and cytokine signaling, pathogen uptake, host defenses, blood and vasculature genes, and SARS-CoV-2- and other virus affected pathways. The DEGs in these pathways were increased in severe compared with moderate cases. In a severe COVID-19 patient with an unfavourable outcome we observed dysregulation of genes in platelet homeostasis and cardiac conduction and fibrin clotting with disease progression.

Conclusions: COVID-19 morbidity is associated with cytokine activation, cardiovascular risk and

thrombosis. We identified DEGs related to dysregulation of blood clotting and homeostasis, platelet activation pathways and to be associated with disease progression. These can be biomarkers of disease progression and also potential targets for treatment interventions in COVID-19.

Keywords: COVID-19, transcriptome, disease severity

5.42

ASSOCIATION OF BLOOD GROUP WITH DISEASE SEVERITY IN COVID-19 PATIENTS

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Background: Blood groups are considered to have impact on the occurrence and severity of coronavirus disease. It was reported that blood group O individuals were less vulnerable to Covid-19 infection while individual with group A were more likely to have severe disease and mortality. The aim of this study was to find out association of disease severity with blood group among Covid-19 patients.

Methodology: A descriptive observational study conducted on 369 Covid-19 patients with known blood group admitted to medicine department of Aga Khan Hospital. Data collected on a predesigned questionnaire containing details of patient demographics, comorbid conditions, clinical presentation, and laboratory parameter. Multiple logistic regression was used to determine the association.

Result: In our study among 369 patients of COVID-19, Blood group B has a highest distribution (39.8%), followed by O (30.0%), A (21.9%) and AB (8.1%). 69.9% had mild to moderate disease while 30.0% had severe disease. Age, gender, hypertension, diabetes mellitus, and hemoglobin level, were all associated with

disease severity among COVID-19 patients in univariate analysis on P-value for selection (< 0.25). The final model showed that the odds of disease severity is 3.62 higher among male (OR: 3.62, 95% CI: 2.15 – 6.08), 2.00 times higher among diabetic patients (OR: 2.00, 95% CI: 1.10 – 3.01) as compared to female and non-diabetic respectively. However, there was no significant association found between blood group and disease severity.

Conclusion: In our population individual with any particular blood group are not prone to severe disease. However, age, male gender and diabetic are found to be significant factor for disease severity among Covid-19 patients.

Keywords: Blood group, covid-19, Disease severity

5.43

REDUCING DROPLET SPREAD AND AEROSOLIZATION DURING EMERGENT TRACHEAL INTUBATION FOR COVID-19 PATIENTS: LESSONS LEARNT THROUGH A DESCRIPTIVE CASE SERIES FROM A UNIVERSITY TEACHING HOSPITAL IN PAKISTAN

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Objective: The primary objective of this study was to review airway management practices and methods being adopted to reduce the risk of droplet spread and airborne transmission for earliest COVID patients from a tertiary care hospital.

Methodology: The study was conducted from March to April 2020 in the Department of Anaesthesiology, Aga Khan University Hospital, Karachi, Pakistan. The file records for patients who underwent emergent or urgent tracheal intubation were reviewed. The anaesthetic consultants who did these tracheal intubations were asked to be part of this study with their

consent and were requested to fill out a form about methods which they adopted to reduce the risk of droplet spread and airborne transmission. The patient's identity was kept confidential.

Results: The file records which were reviewed for emergent or urgent tracheal intubation, ten patients were confirmed COVID positive while five were suspected. The consultants used either N95 or powered air purifying respirator (46.6 vs. 53.3%) as personal protective equipment (PPE) in all patients. Although a modification of facemask holding called vice grip (V-E) technique is suggested, most of us still applying the older method (73.7%). Rapid sequence induction and intubation was the technique of choice and success rate was 100% at first attempt. Videolaryngoscope was used as primary device for intubation in all (100%) patients. None of the anaesthesiologists who intubated these COVID-19 patients experienced any symptoms or had to go under isolation within infective period of 14-21 days due to viral transmission.

Conclusion: Tracheal intubation in COVID-19 patients poses a risk for attending healthcare providers, as this highly contagious virus is transmitted by droplet or aerosol. In conclusion, appropriate and timely use of techniques that can reduce the droplet spread and aerosolization during airway management is of paramount importance.

Keywords: COVID-19, Tracheal intubation, Droplet spread

5.44

NEUTROPHILS TO LYMPHOCYTE RATIO: A COST EFFECTIVE

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Background and Objectives: Neutrophil to lymphocyte ratio (NLR) can be easily calculated from white cell differential count and is considered an auspicious marker for predicting

different diseases including sepsis. We aim to compare the efficacy of NLR as a sepsis marker by comparing it with other markers of sepsis such as C reactive protein, procalcitonin and sequential organ failure assessment (SOFA) score. *Methods:* Across-sectional analytical study, conducted at the Aga Khan University Hospital From July 2019 to December 2019. Total of 168 patients admitted to medicine department with diagnosis of Sepsis on arrival or during hospital stay were enrolled. The neutrophil to lymphocyte ratio was calculated from venous sample taken on admission and compared to the level of C-reactive protein, procalcitonin, culture reports and SOFA score as a predictor of Sepsis.

Results: Among the total 163 patients 55.3% were male with Median age of the cohort was 68.40 (IQR19.5) years in males and 64.0(18.0IQR) in females. Procalcitonin was performed in 121(72%)and CRP performed in 61(36.3%) patients. NLR showed significant associations with all the tested lab parameters of sepsis such as C - reactive protein (p=0.02), procalcitonin (p=0.01), and SOFA score (p=0.01). Values when analyzed according to culture positive showed higher values in culture positive samples but were not statistically significant.

Conclusion: Neutrophil to lymphocyte ratio is cheap and rapidly available predictor of sepsis and has shown significant correlation with other relatively expensive and non-rapidly existing marker of inflammation and sepsis. However, large prospective studies are needed to prove its real effectiveness as a marker of sepsis and its prognosis.

*Keywords:*Neutrophil to lymphocyte ratio, C-reactive protein, Procalcitonin,Sepsis

5.45

HOST TRANSCRIPTOME OF DIABETIC INDIVIDUALS WITH LATENT TUBERCULOSIS INDICATES INCREASED DOWNREGULATION OF IMMUNE ACTIVATION AND HOST METABOLIC GENES

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Background: One third of the world's population is thought to have latent disease (LTBi) caused by infection with Mycobacterium tuberculosis (MTB). Diabetes causes a change in immune activation genes and is thought to result in unfavourable outcomes in TB. We investigated the impact of LTB on DM cases in a TB endemic region using a host blood transcriptome approach.

Methods: We studied host blood transcriptome analysis in healthy endemic controls (EC), those with latent TB (LTB), diabetic individuals (DM) and DM with LTB using the Clariom S Array 21,448 gene set, Affymetrix. Cellular pathway analysis of significant differentially expressed genes (DEGs) up- or down-regulated (log FC (fold change) < -2 or > 2; FDR adjusted P value

*Keywords:*TB, Diabetes, Transcriptome

5.46

FISTULA REPAIR USING AN AUTOLOGOUS GRAFT IN A 38 YEAR OLD FEMALE WITH INFECTIVE ENDOCARDITIS & RUPTURED AORTIC ROOT ABSCESS

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A 38 year old female with no known comorbidities or previous history of heart disease presented to the hospital with a 3 day history of drowsiness and shortness of breath. Transthoracic echocardiography revealed large vegetations on the aortic valve and tricuspid valve. In addition, there was severe aortic regurgitation with a possible abscess on the non-coronary cusp of the aortic valve. The patient was admitted and a provisional diagnosis of disseminated tuberculosis, infective endocarditis, and sepsis. Surgical intervention was planned. Intraoperative findings revealed that a fistula had formed connecting the aorta and right atrium, which was closed with an autologous graft derived from the patient's pericardial tissue. Vegetations were removed and the aortic valve was replaced with a metallic valve. This case report presents a patient with complicated infective endocarditis with a ruptured aortic root abscess. Mechanical complications associated with infective endocarditis such as in our case are rare among patients with infective endocarditis. Surgical intervention should be considered as an option in complicated cases of infective endocarditis when standard therapy fails.

Keywords: Infective Endocarditis, aortic root abscess, infectious diseases

5.47

KNOWLEDGE AND PRACTICES REGARDING NOSOCOMIAL INFECTIONS AMONG NURSES WORKING IN HOSPITALS OF ISLAMABAD, PAKISTAN.

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Background: Hospital acquired infections are one of the main preventable health-related issues both for patient safety and medical staff. Nosocomial infections are usually caused by the transmission of pathogens from one patient to another through health care workers who do not

wash their hands while checking between patients or those who do not follow the infection control measure such as the use of gloves, hand disinfectants.

Methods: A cross-sectional study based on a self-administered questionnaire was used. The study was carried out in public and private tertiary teaching hospitals in Islamabad. A sample of 356 nurses including 185 from a public hospital and 171 from a private hospital through stratified random sampling proportion to size for collecting information regarding knowledge and practices about Nosocomial infection was selected.

Results: Most of the participants, 212 (59.6%) were age between 20-29 years. Among the participants 221(62.1%) were females and 135 (37.9%) were the male staff. Regarding knowledge level, 194(54.5%) participants had good knowledge about Nosocomial infection and as far as practice is concerned, 204(45.5%) of the participants had good practices regarding Nosocomial infection. Conclusion: Overall, the knowledge and practices of the nursing staff were good. Based on the facility, knowledge of the private hospital was better as compared to the knowledge of the participants.

Keywords: Nosocomial infections, Knowledge attitude, health care

5.48

EXTENSIVELY DRUG RESISTANT SALMONELLA TYPHI CAUSING OSTEOMYELITIS OF THE RIBS

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Introduction: Salmonella Typhi is a pathogen endemic to South and South East Asia as well as parts of Africa. Extensively drug resistant (XDR) strains have emerged in recent years which are resistant to Ceftriaxone and Ciprofloxacin – the current first-line choice of

antibiotics. We report an extremely rare case of osteomyelitis of the ribs due to XDR S. Typhi.

Case Report: This case follows a 55-year old woman from Quetta with complaints of a low-grade fever and dry, non-productive cough for the past 8 months as well as a soft mass in the anterolateral portion of her left chest from the 7th to 9th rib. She had previously been prescribed several courses of antibiotics but none were able to alleviate her symptoms. A pus sample from the mass was sent for bacterial culture which revealed S. Typhi which was resistant to first-line antibiotics including Ceftriaxone and Ciprofloxacin and sensitive to Imipenem, Meropenem and Azithromycin. CT scan showed marked inflammatory changes and soft tissue thickening in and around the mass. The mass was surgically resected with no complications. The patient was managed in-hospital on appropriate antibiotics. She was discharged home after 4 days on the same medications. The patient is healthy and well on 1-month followup.

Discussion: XDR S. typhi first emerged in Hyderabad, Pakistan in 2016, and has since spread rapidly to other parts of the country and beyond. While Azithromycin currently shows acceptable levels of activity against the pathogen, recent literature describes strains of XDR typhoid with reduced sensitivity to even Azithromycin. With treatment becoming increasingly difficult, preventative measures are crucial. The introduction of the promising typhoid conjugate vaccine to the EPI in Pakistan is an important first step to controlling the spread of this worrying disease.

Keywords: XDR Typhoid, Salmonella Typhi, Ribs

5.49

PROGNOSTIC VALUE OF LABORATORY MARKERS IN A COHORT OF HOSPITALIZED ADULT COVID-19 PATIENTS IN A LMIC

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Background: The World Health Organization has declared coronavirus disease 2019 (COVID-19) a public health emergency of global concern. Updated analysis of laboratory abnormalities might help identify the risk factors of disease mortality. *Objective:* To assess laboratory markers associated with mortality among adult inpatients with COVID-19.

Methods: 423 patients were included in our single center observational study from March to May 2020. Out of these, 250 inpatients with a median age of 54 years and consisting of 70.4% males were confirmed to have COVID-19 on RT-PCR. A systematic assessment of epidemiological, demographic, clinical, laboratory findings and outcome was performed and compared with a cohort of 173 age and gender-matched non-COVID-19 patients.

Results: Overall mortality of COVID-19 was 19.2% and on multivariate analysis patients with ischemic heart disease and presenting complaints of fever and dyspnea were found to be significantly at risk for mortality while lymphocyte percentage was found to be negatively associated. Higher values of CRP, LDH, D-dimer, PT, APTT, INR, NLR, serum procalcitonin and serum ferritin were found to be associated with mortality in COVID-19 patients. *Conclusion:* Monitoring of laboratory makers like CRP, LDH, D-dimer, PT, APTT, INR, NLR, serum procalcitonin and serum ferritin are not only essential for management of hospitalized COVID-19 patients but can be used to identify those at higher risk of mortality.

Keywords: COVID-19, BIOMARKERS, PROGNOSTIC

5.50

CLINICAL CHARACTERISTICS ASSOCIATED WITH CEFTRIAXONE-RESISTANT BACTERIAL MENINGITIS AT A TERTIARY CARE HOSPITAL IN PAKISTAN

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Background: The objective of this study was to determine clinical characteristics, co-resistances, and adverse outcomes associated with bacterial meningitis resistant to ceftriaxone at a tertiary care hospital in Pakistan.

Methods: All patients admitted at Aga Khan University Hospital, Karachi with a diagnosis of bacterial meningitis and available antibiotic susceptibility analyses were included. Data on demographic and clinical characteristics of included patients was then retrospectively collected from medical records. We compared characteristics across ceftriaxone-resistant and susceptible groups using chi-squared and Mann-Whitney U tests as appropriate. Logistic regression models were used to assess impact of ceftriaxone resistance on various outcome indicators. $p < 0.05$ was considered threshold for statistical significance.

Results: The median age was 55 (29) years, and our sample included 50 males and 51 females. Ceftriaxone resistance was associated with higher age ($p=0.043$), hypertension ($p=0.012$), diabetes mellitus ($p=0.016$), ischemic heart disease ($p=0.092$), inpatient mortality ($p=0.001$), co-resistance to ciprofloxacin ($p=0.001$), gentamicin (0.001), ampicillin (<0.001), and amoxicillin/clavulanic acid (<0.001). Presentation with fever ($p=0.043$) was associated with ceftriaxone susceptibility. On multivariable regression analysis, ceftriaxone resistance was found to increase the risk of inpatient mortality (6.22 [1.85-20.92]), but it

was not independently associated with ICU admission (0.69 [0.19-2.52]) and prolonged length of stay (0.85 (0.23-3.21)).

Conclusion: The significant associations of ceftriaxone resistance with some comorbidities reported by our study highlight the need to shift towards use of other antimicrobial agents in the empirical therapy of such patients. Furthermore, care needs to be observed when using ciprofloxacin, gentamicin, ampicillin, and amoxicillin/clavulanic acid in ceftriaxone resistant meningitis patients due to the risk of co-resistance. Ongoing surveillance and careful monitoring of susceptibility patterns of causative organisms is critical. To tackle this problem in Pakistan, we need larger scale multi-center studies to provide more robust data from other provinces and cities as well. Our study can be used as a platform for them to potentially improve empirical therapies provided to bacterial meningitis patients in Pakistan.

Keywords: meningitis, drug resistance, ceftriaxone

5.51

COMPARISON OF DURATION OF IMMUNITY FOLLOWING IPV AND FRACTIONAL DOSE IPV: A COMMUNITY BASED RANDOMIZED CONTROL TRIAL IN PAKISTAN

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Fractional dose (one-fifth of full intramuscular dose) of inactivated poliovirus vaccine (fIPV) administered intradermally is used as IPV dose-sparing strategy. We compared the rate of decline of poliovirus antibodies (PVA) in recipients of single or 2 doses of either fIPV or IPV. Objectives • To compare the immunogenicity and seroconversion of PV2 induced by of two doses IPV versus two doses of fractional IPV administered at 14-18 weeks

and 9 months (+28 days) of age. • To compare the immunogenicity of single dose IPV versus single dose fractional IPV administered at 14-18 weeks of age. *Methods:* A community-based randomized controlled trial was conducted in Karachi, Pakistan. Children aged 14 weeks were randomized into fIPV or full IPV (study arms A, B) and received 1 vaccine dose at age 14 weeks and 1 at age 9 months. Children aged 9 months were randomized into single dose fIPV or full IPV (study arms C, D) and received vaccine at age 9 months. Polio Virus Antibodies were measured at age 14, 18 weeks and 10, 21 months.

Results: Seroprevalence of poliovirus type 2 antibodies in 170/250 (68%) children after 2 IPV or fIPV doses at age 10 months in A and B reached 100% vs 99% ($P = .339$), and at 21 months, 86% vs 67% ($P = .004$). Between age 10 and 21 months antibody log₂ titers dropped from ≥ 10.5 to 6.8 in A, from 9.2 to 3.7 in B, 9.8 to 5.2 in C and 8.5 to 3.8 in D.

Conclusions: There was a significant decline in antibody titers 12 months following the second IPV dose. The slope of decline was similar for full IPV and fIPV recipients. The results provide further evidence that fIPV is a viable option for IPV dose-sparing.

Keywords: IPV, fIPV, polio

5.52

IMPACT OF TOPV CAMPAIGNS ON P2 SEROPREVALENCE AND STOOL SHEDDING: A POST CAMPAIGN 2 EVALUATION FROM A HIGH RISK CVDPV2 COUNTRY

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In accordance with the end game strategies for polio eradication a synchronized switch plan from tOPV to bOPV was implemented globally in 2016. There were multiple cVDPV2

outbreaks throughout the world. Majority of outbreaks were controlled by using mOVP2 and IPV. In Pakistan, National technical advisory group (TAG) recommended two tOPV nationwide campaigns. As the live P2 vaccine were not used in routine, hence the children born post the switch remain naive to this vaccine. *Objective* • To assess the baseline P2 seroprevalence of children in the peri-urban areas of Karachi. • To assess the seroprevalence after two tOPV campaigns. • To assess the p2 viral excretion among children received tOPV in campaigns. *Methods* This is a cross sectional survey in which 250 children of either gender, aged 1 month to 5 years of age residing in 4 peri urban sites at Karachi will be enrolled. All the children enrolled from the study sites will be assessed for the baseline P2 prevalence, humoral immunity (seroconversion and seronegative) and mucosal immunity (P2 viral excretion) following the two doses of vaccine (tOPV) given one month apart. Blood samples will be collected at 3 time points, baseline before campaign, 28 days post 1st campaign and 28 days post 2nd campaign. Stool samples will be collected at 6 time points, baseline before campaign, 7th & 14th days post 1st campaign and 7th, 14th & 28th following 2nd campaign.

Results: This is an ongoing study and results are expected by mid- 2021 Benefits to the Global Polio Eradication Initiative This study is to understand the baseline P2 antibody seroprevalence and then the seroconversion 45 after first and second dose of tOPV a month apart. The study also helps us to understand the 46 proportion of children who remain seronegative post two doses of tOPV.

Keywords: tOPV, CVDPV2, seroprevalence

5.53

FACTORS ASSOCIATED WITH VACCINE TYPE PNEUMOCOCCAL CARRIAGE IN CHILDREN UNDER 2 YEARS OF AGE IN A RURAL POPULATION IN PAKISTAN

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Introduction Pneumococcal carriage is a prerequisite for disease with children being the main reservoir and transmitters. Here, we look at factors associated with Vaccine type (VT) carriage in children under 2 years of age in a rural population in Pakistan.

Methodology Children were enrolled and nasopharyngeal swabs collected using standard WHO guidelines. Serotyping was done using CDC standardized Multiplex PCR. The serotypes were classified as vaccine type (VT) and non-vaccine type (NVT) based on their inclusion in the ten valent vaccine (PCV10). Results From 2014–2018, 3140 children were enrolled. Factors negatively associated with VT carriage were: primary education of 1 to 5 years (aOR 0.7, 95%CI 0.5-0.9), history of difficulty in breathing (aOR 0.7, 95%CI 0.6-0.9), exposure to smoke (aOR 0.8, 95% CI 0.6-0.9), child fully immunized (aOR 0.7, 95%CI 0.5-0.9) and being enrolled in 3rd (aOR 0.6, 95%CI 0.4-0.8) and 4th year of study (aOR 0.6, 95%CI 0.5-0.9) whereas history of runny nose was positively associated (aOR 1.6, 95% CI 1.2-1.9). Conclusion Various socio-demographic and clinical factors were associated with VT carriage. A child having received all three doses of PCV10 significantly reduced the odds of carrying a VT serotype.

Keywords: PCV 10, Nasopharyngeal carriage, Vaccine-Type serotypes

5.54

SERO-REPLACEMENT WITH NON-VACCINE SEROTYPES POST-INTRODUCTION OF PCV10 IN THE NASOPHARYNX OF CHILDREN IN A RURAL COMMUNITY IN PAKISTAN

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Introduction Pakistan was one of the first south Asian countries to introduce the ten-valent Pneumococcal Conjugate Vaccine (PCV10) at national level in a 3+0 schedule without catchup immunization in 2013. Effects of PCV10 are being undermined by the emergence of non-Vaccine Type serotypes replacing Vaccine Type ones in both carriage and disease.

Methods From 2014 to 2018, children under the age of 2 years were randomly selected from a continually updated line listing of all children in two rural union councils of Matiari, Sindh in Pakistan. Nasopharyngeal swabs were collected using standard WHO guidelines by trained staff and were processed at Infectious Disease Research Laboratory at The Aga Khan University campus in Karachi using culture on sheep blood agar and Multiplex PCR methods described by CDC, USA. The serotypes were then classified as either vaccine type (VT) and non-vaccine type (NVT). We collected detailed information on sociodemographic, clinical history and vaccination status and looked at carriage rates of VT and NVT serotypes over time in the vaccination and unvaccinated children.

Results Of the 3140 children enrolled, pneumococcal isolates were detected in 2370 (75%). VT carriage decreased from 16.1% to

9.6% (p-value < 0.001) over 4 years. There was a significant decline in VT serotypes 6B, 9V/9A and 19F only. The carriage of serotype 19A significantly increased from 4.0% to 6.8% (p-value

Keywords: PCV 10, Nasopharyngeal carriage, sero-replacement

5.55

INDIRECT PROTECTION FROM TEN-VALENT PNEUMOCOCCAL VACCINE IN A RURAL COMMUNITY IN PAKISTAN- RESULTS FROM A TIME SERIES CROSS SECTIONAL STUDY

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Introduction Ten valent pneumococcal vaccine PCV10 was introduced in Pakistan's Expanded Program on Immunization in 2012 as a 3+0 schedule without catchup immunization. Here we describe the direct and indirect effect of introduction of PCV10 on nasopharyngeal colonization in children in Pakistan. *Methods* From 2014 to 2018, children under the age of 2 years were randomly selected from a continually updated line listing of all children in two rural union councils of Matiari, Sindh in Pakistan. Nasopharyngeal swabs were collected using standard WHO guidelines by trained staff and were processed at Infectious Disease Research Laboratory at The Aga Khan University campus in Karachi using culture on sheep blood agar and Multiplex PCR methods described by CDC, USA. We collected detailed information on sociodemographic, clinical history and vaccination status. We looked at carriage rates of Vaccine Type (VT) and Non-Vaccine Type (NVT) serotypes over time in the vaccination and unvaccinated children. *Results* Of 3140 children enrolled, pneumococcal isolates were detected in 2370 (75%). Carriage over the period of 4 years decreased from 80.8% to 72.8% (p-

value for trend 0.001). VT carriage decreased from 16.1% to 9.6% (p-value for trend < 0.001). VT carriage decreased from 11.3% to 8.1% (p-value 0.031) in the vaccinated group and from 17.4% to 10.3% (p-value 0.003) in the non-vaccinated group. Most significant decline was seen in serotypes 6B, 9V/9A and 19F. Proportion of fully vaccinated children increased from 41.0% to 68.4% (p-value for trend 0.001). Direct effect of the vaccine was calculated to be 33.5% (95% CI 19.5%-55.0%) and indirect effect to be 44.1% (95% CI 28.1% -56.6%).

Conclusion We saw substantial decline in VT pneumococcal carriage which was evident in both vaccinated and unvaccinated groups. This is indicative of herd immunity and will potentially translate to decrease in pneumococcal disease burden in the population.

Keywords: PCV 10, Nasopharyngeal carriage, Herd immunity

5.56

SENSITIVITY AND SPECIFICITY OF DIFFERENT CUT-OFF VALUES OF ADENOSINE DEAMINASE LEVELS IN TUBERCULOUS PLEURAL EFFUSION

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Abstract Objective: To assess the sensitivity and specificity of different cut-off values of pleural fluid Adenosine Deaminase (ADA) levels as a diagnostic tool for tuberculous pleural effusion. *Methods:* This prospective study was conducted at Aga Khan University, Pakistan. Pleural fluid of adult patients with TB and without TB was tested for ADA levels. Sensitivity, specificity, negative predictive value (NPV) and positive predictive value (PPV) were then calculated using different cut-offs. *Results:* Of 155 patients, 46 (29.7%) were categorized as TB while 109 (70.3%) as non-TB group. The ADA levels were

seen to be significantly elevated in TB as compared to non-TB patients (median TB: 72.17±68.13; Non-TB: 23.21±36.54; p value:

Keywords: ADA levels, TB pleuritis, pleural effusion

5.57

COMPUTING THE EFFECTS OF SARS-COV-2 ON RESPIRATION REGULATORY MECHANISMS IN COVID-19

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been established as a cause of severe alveolar damage and pneumonia in patients with advanced Coronavirus disease (COVID-19). The consolidation of lung parenchyma precipitates the alterations in blood gases in COVID-19 patients that are known to complicate and cause hypoxemic respiratory failure. With SARS-CoV-2 damaging multiple organs in COVID-19, including the central nervous system that regulates the breathing process, it is a daunting task to compute the extent to which the failure of the central regulation of the breathing process contributes to the mortality of COVID-19 affected patients. Emerging data on COVID-19 cases from hospitals and autopsies in the last few months have helped in the understanding of the pathogenesis of respiratory failures in COVID-19. Recent reports have provided overwhelming evidence of the occurrence of acute respiratory failures in COVID-19 due to neurotropism of the brainstem by SARS-CoV-2. In this review, a cascade of events that may follow the alterations in blood gases and possible neurological damage to the respiratory regulation centers in the central nervous system (CNS) in COVID-19 are related to the basic mechanism of respiratory regulation in order to understand the acute respiratory failure reported in this disease. Though a complex metabolic and respiratory dysregulation also occurs with infections caused by SARS-CoV-1 and MERS that are known to contribute toward deaths of the patients in the past, we highlight here the role of systemic dysregulation and the CNS respiratory

regulation mechanisms in the causation of mortalities seen in COVID-19. The invasion of the CNS by SARS-CoV-2, as shown recently in areas like the brainstem that control the normal breathing process with nuclei like the pre-Bötzinger complex (pre-BÖTC), may explain why some of the patients with COVID-19, who have been reported to have recovered from pneumonia, could not be weaned from invasive mechanical ventilation and the occurrences of acute respiratory arrests seen in COVID-19. This debate is important for many reasons, one of which is the fact that permanent damage to the medullary respiratory centers by SARS-CoV-2 would not benefit from mechanical ventilators, as is possibly occurring during the management of COVID-19 patients.

Keywords: Computing the Effects of SARS-CoV-2 on Respiration Regulatory Mechanisms in COVID-19, SARS-CoV-, CNS

5.58

TARGETING THE FEAST OF A SLEEPING BEAST: NUTRIENT AND MINERAL DEPENDENCIES OF ENCYSTED ACANTHAMOEBA CASTELLANII

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Acanthamoeba spp. cause a corneal infection, Acanthamoeba keratitis (AK), and a cerebral infection, granulomatous amoebic encephalitis (GAE). Though aggressive chemotherapy has been able to kill the active trophozoite form of Acanthamoeba, the encysted form of this parasite has remained problematic to resist physiological concentrations of drugs. The emergence of encysted amoeba into active trophozoite form poses a challenge to eradicate this parasite. Acanthamoeba trophozoites have active metabolic machinery that furnishes energy in the form of ATPs by subjecting carbohydrates and lipids to undergo pathways including glycolysis and beta-oxidation of free fatty acids, respectively. However, very little is

known about the metabolic preferences and dependencies of an encysted trophozoite on minerals or potential nutrients that it consumes to live in an encysted state. Here, we investigate the metabolic and nutrient preferences of the encysted trophozoite of *Acanthamoeba castellanii* and the possibility to target them by drugs that act on calcium ion dependencies of the encysted amoeba. The experimental assays, immunostaining coupled with bioinformatics tools show that the encysted *Acanthamoeba* uses diverse nutrient pathways to obtain energy in the quiescent encysted state. These findings highlight potential pathways that can be targeted in eradicating amoebae cysts successfully.

Keywords: *Acanthamoeba* spp, *Acanthamoeba* keratitis (AK), Cysts

5.59

OCULAR COVID-19: EYES AS A RESERVOIR TO CONCEAL AND SPREAD SARS-COV-2

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Ocular tissues can serve as a reservoir for the SARS-CoV-2 virus which can not only cause conjunctivitis but also serve as a resource of infection transmission to others. Additionally, the eye and its tear drainage apparatus can track the SARS-CoV-2 from the eye into the respiratory tract of the patient. The potential ocular presence of the SARS-CoV-2 in the eye of a patient can target ACE2 receptors in the endothelium of the conjunctival vessels and use the lacrimal sac a potential space to evade immune detection and clinical isolation. The recently reported case of COVID-19 after the acquisition of SARS-CoV-2 from a COVID-19 patient should alert the healthcare professionals dealing with COVID-19 patients as wearing masks alone cannot guarantee protection against infection transmission. Further studies, like isolation of SARS-CoV-2 from the eyes of

patients with COVID-19, needed to identify the eyes as a potential source of SARS-CoV-2 infection trans-mission.

Keywords: COVID-19, SARS-CoV-, Eyes

5.60

HERALDING HEALTHCARE PROFESSIONALS: RECOGNITION OF NEUROLOGICAL DEFICITS IN COVID-19

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The 2019 novel coronavirus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a zoonotic disease that is dominated by pulmonary symptoms. However, recent reports of isolation of the virus from cerebrospinal fluid (CSF) coupled with radiological evidence of zones of necrosis in the brain, have elucidated the neurotropic potential of SARS-CoV-2. The acute respiratory failure seen in patients with COVID-19 is alarming and could be due to the effects of SARS-CoV-2 on the central respiratory regulatory centers in the brainstem. Appropriate interventions can be implemented to prevent severe outcomes of neurological invasion by SARS-CoV-2 to reduce the morbidity and mortality of patients with COVID-19. It is of paramount importance that the scientific community alerts the healthcare professionals of the pieces of evidence that can herald them on the covert neurological deficits in progress in COVID-19.

Keywords: COVID-19, SARS-CoV-, CNS

5.61

REPURPOSING DRUGS: CA²⁺ ION DEPENDENCY THAT CAN BE EXPLOITED TO TREAT KERATITIS CAUSED BY ACANTHAMOEBA CASTELLANII

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Acanthamoeba castellanii is a free-living amoeba (FLA) and a protist pathogen that has persisted in the environment since the emergence of early unicellular eukaryotic life forms on this planet. Unlike other FLA, *Acanthamoeba* spp. are the causative agent of *Acanthamoeba keratitis* (AK), which is a vision-threatening corneal infection difficult to manage with present-day drug therapy. AK in humans has emerged as a challenging ocular infection to treat due to the prolonged treatment regimen and if left untreated, the disease causes blindness. Even in the patients who complete the treatment for over a year, residual corneal damage impacting the vision is seen. Though considered to be rare, epidemics have been recently reported in south-east England with an increased emergence of cases with AK. As *Acanthamoeba* spp. survive in water and soil as FLA, use of contaminated water to clean contact lens has continued to be a source of acquiring AK. Factors like antimicrobial drug resistance and lack of specific drugs directed against discrete molecular targets in *Acanthamoeba* are the possible reasons that contribute toward treatment failures in AK

Keywords: *Acanthamoeba castellanii*, *Acanthamoeba keratitis*, Calcium

5.62

NEUROLEPTIC DRUG TARGETS A BRAIN-EATING AMOEBA: EFFECTS OF PROMETHAZINE ON NEUROTROPIC ACANTHAMOEBA CASTELLANII

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Acanthamoeba spp. has recently been reported to express diverse group of ion channels and receptors that are expressed by human cells

which bind drugs that are used in noninfectious diseases. Bioinformatics computational tools, growth assays, and 3D structural modeling have enabled the discovery of primitive muscarinic receptors, voltage-gated calcium channels, and ion transport pumps such as Na-K ATPase in this protist pathogen. The significance of the reported receptors and ion channels in the biology of *Acanthamoeba* is yet to be determined. We selected promethazine, which is a known antagonist of proteins like dopaminergic, histaminergic, muscarinic receptors, and calmodulin, to determine its effects on the growth and proliferation of trophozoites and cysts of *Acanthamoeba* spp. In order to elucidate the receptors involved in the effects produced by promethazine, we also performed individual experiments on *Acanthamoeba* trophozoites and cysts in the presence of the agonist of the above-mentioned receptors. Our results show that promethazine in the range of 60-100 µg/mL proved to be amoebicidal for *Acanthamoeba* trophozoites and at slightly higher doses ranging around 125-250 µg/mL also showed partial cysticidal effects. We also show the evidence of homology between the human targets of promethazine and similar targets in *Acanthamoeba* by the use of bioinformatic computational tools and 3D modeling. Promethazine and its structural analogs, because of being FDA-approved, have a wider margin of safety that can be tested as potential anti- *Acanthamoeba* agents in diseases like keratitis and encephalitis caused by this protist pathogen.

Keywords: *Acanthamoeba* spp, *Acanthamoeba keratitis*, CNS

5.63

"PROPOSALS FOR AMENDMENTS IN THE DIAGNOSIS AND TREATMENT OF ENCEPHALITIS CAUSED BY FREE-LIVING AMOEBAE"

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Encephalitis caused by Free-living amoebae (FLA) has a mortality rate of around 95- 98%, a fraction that has not changed in the past decades. Pathogenic FLA include *Acanthamoeba*, *Balamuthia mandrillaris*, and *Naegleria fowleri* that are known to target the brain after an extra cerebral infection in the case of *Acanthamoeba* and *Balamuthia mandrillaris*, or directly the brain, as in the case of the *Naegleria fowleri*. The *Acanthamoeba* spp. and *Balamuthia mandrillaris* cause granulomatous amoebic encephalitis (GAE) while *Naegleria fowleri*, the so termed "brain eating amoeba" causes primary amoebic meningoencephalitis (PAM). The attempts to obtain a speedy diagnosis and an aggressive treatment protocol are the areas where advances can make a difference and reduce the mortality rates. At first, we highlight the reasons behind the diagnostic delays and treatment failures and provide proposals to establish a quick diagnosis in both PAM and GAE. Secondly, we emphasize the use of a transcriberial device, and a prompt, but vigilant surgical reduction of the intracranial pressure in these patients which could be life-saving. We also debate that an exudate obtained from the olfactory region by irrigation via a modified transcriberial device or by conventional methods, instead of a cerebrospinal fluid sample, could serve as a source of obtaining amoeba in PAM for a real-time polymerase chain reaction-based definitive diagnosis of PAM.

Keywords: *Acanthamoeba castellanii*, Brain-eating Amoeba, CNS

5.64

TORN FROM THE HEADLINES: ROLE OF PUBLIC AWARENESS AND BENCH- TO-BEDSIDE RESEARCH IN PREVENTION AND TREATMENT OF ACANTHAMOEBA KERATITIS

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Corneal infection caused by *Acanthamoeba* spp., with or without the use of contact lenses, is considered to be a sporadic corneal disease. However, once the *Acanthamoeba* keratitis (AK) sets in, the vision of the patient is threatened and blindness occurs as a consequence in untreated cases. Because of the rare occurrences of AK worldwide, there has been little, if any, interest in the past in raising awareness for prevention of this vision-threatening keratitis in the public in general and contact lens wearers in particular. The latter group of individuals are, in particular, more likely to be victims of AK. Recently, the details of AK and its potential to cause blindness have captured the attention of international media and news outlets because of a sudden surge in the incidence of AK in the United Kingdom.

Keywords: *Acanthamoeba castellanii*, *Acanthamoeba* keratitis, Eyes

5.65

EVIDENCE OF HUMAN-LIKE CA²⁺ CHANNELS AND EFFECTS OF CA²⁺ CHANNEL BLOCKERS IN ACANTHAMOEBA CASTELLANII

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The evolution of voltage-gated calcium channel (Cav) in eukaryotes is an area of interest for biologists worldwide. The CLAN CL0030 and its family Ion_Trans 2 PF 07885 have been known to be present in prokaryotes, but the origin of these ion channels in *Acanthamoeba* spp. is yet to be determined. We inferred the origin of primitive forms of two-pore channels like proteins, human-like Cav 1.1 of L-type, and Cav subunit alpha-2/delta-1 in *Acanthamoeba* spp. early during evolution. By in-depth investigation into genomics, transcriptomics, use of bioinformatics tools and experimentations done with drugs like amlodipine and gabapentin on *Acanthamoeba* spp., we show the evidence of

primitive forms of these channels in this protist pathogen. Genomics and transcriptomics of proteins ACA1_167020, 092610, and 270170 reflected their cellular expression in *Acanthamoeba* spp. We performed amino acid sequence homology, 3D structural modeling, ligand binding predictions, and dockings. Bioinformatics and 3D structural models show similarities between ACA1_167020, 092610, 270170, and different types of known human Cav.

Keywords: *Acanthamoeba castellanii*, Brain-eating Amoeba, Calcium

5.66

DRUG TARGETING IN ACANTHAMOEBA KERATITIS: RATIONAL OF USING DRUGS THAT ARE ALREADY APPROVED FOR OCULAR USE IN NON-KERATITIS INDICATIONS

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Acanthamoeba spp. is known to cause sight-threatening *Acanthamoeba* keratitis (AK) and usually, fatal encephalitis called granulomatous amoebic encephalitis (GAE). Though a successful prognosis of AK depends upon an early diagnosis, the availability of safer drugs to successfully treat AK remains a challenge. The rarity of AK has made the pharmaceutical industry reluctant to invest in the development of drugs against this vision threatening keratitis. After AK was recognized as an orphan disease, a funded project, the Orphan Drug for AK (ODAK), the drug polyhexamethylene biguanide (PHMB) has been studied in *Acanthamoeba* polyphaga keratitis model. There are reports that *Acanthamoeba* can persist causing an active infection despite treatment with chlorhexidine or PHMB. Recent discoveries of cell surface receptors and druggable proteins in pathogenic variants of *Acanthamoeba castellanii* have revived the interest of repurposing of some anticholinergic drugs like atropine that are

already used in non-infectious ocular disorders. The evidence of the presence of human-like muscarinic receptors in *Acanthamoeba* spp., that are known targets of atropine, supports the possible forte of repurposing atropine and its structural analogs in AK. Furthermore, very convincing indications have come from retrospective studies where atropine was reported to treat cases of AK without the use of any concurrent anti-amebic agents. Since atropine is already given as an adjuvant drug in cases of AK, this novel action of atropine has the potential to make it the drug of choice in AK if large-scale human trials provide definitive results.

Keywords: *Acanthamoeba castellanii*, Brain-eating Amoeba, Eyes

5.67

INNOVATIVE METHODOLOGY IN THE DISCOVERY OF NOVEL DRUG TARGETS IN THE FREE-LIVING AMOEBAE

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Department of Biological and Biomedical Sciences

Despite advances in drug discovery and modifications in the chemotherapeutic regimens, human infections caused by free-living amoebae (FLA) have high mortality rates (~95%). The FLA that cause fatal human cerebral infections include *Naegleria fowleri*, *Balamuthia mandrillaris* and *Acanthamoeba* spp. Novel drug-target discovery remains the only viable option to tackle these central nervous system (CNS) infection in order to lower the mortality rates caused by the FLA. Of these FLA, *N. fowleri* causes primary amoebic meningoencephalitis (PAM), while the *A. castellanii* and *B. Mandrillaris* are known to cause granulomatous amoebic encephalitis (GAE). The infections caused by the FLA have been treated with drugs like Rifampin, Fluconazole, Amphotericin-B and Miltefosine. Miltefosine is an anti-leishmanial agent and an experimental anti-cancer drug. With only rare

incidences of success, these drugs have remained unsuccessful to lower the mortality rates of the cerebral infection caused by FLA. Recently, with the help of bioinformatic computational tools and the discovered genomic data of the FLA, discovery of newer drug targets has become possible

Keywords: Acanthamoeba spp, Ca, CNS

5.68

IMPACT OF EDUCATION INTERVENTION ON KNOWLEDGE OF INFECTION CONTROL PRACTICES AMONG HEALTHCARE PROVIDERS DURING COVID -19 PANDEMIC

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Department of Medicine

Introduction Healthcare workers (HCWs) are at an increased risk of exposure to SARS –CoV -2 infection .The objectives of the current study are to assess knowledge, attitude and practices among healthcare workers regarding infection prevention and control (IPC) practices related to COVID-19 and whether training session can be used as an effective educational tool to improve knowledge . *Methodology* This cross sectional study was conducted among HCWs from Sindh .After assessment of baseline knowledge , attitude and practices via pre test a virtual session on COVID-19 IPC practices were conducted which is followed by post test . *Result* Among 240 participant , 141 (59%) were frontline workers dealing with patients with COVID -19 . Only 76 (31 %) had previous training on IPC before pandemic and even during pandemic , few (n = 95 ,40%) had attended any training workshop .Majority (70.4%) of participants work in a facility with established IPC department . There was an overall statistically significant improvement in knowledge before and after education workshop (p value < 0.01).The majority of HCWs believed that poor compliance of personal

protective equipment (PPE) was due to hot climate , Interference in daily work , increased work load and long working hours . The knowledge and reported compliance of hand hygiene were good among majority of participants (> 90%) . A large numbers of HCW (88%) carry hand sanitizer all the time and frequently clean their belongings during current pandemic . Although 75% of HCW believed that PPE can protect them from contracting infections but there was poor compliance of wearing PPE reported while dealing with patients with COVID - 19 .

Conclusion Frequent awareness sessions can help in improving knowledge and believes relate to infection control and practices among HCW .

Keywords: COVID-19, Infection control, HCW

5.69

ROLE OF AWAKE PRONING IN COVID - 19 PATIENTS: AN EXPERIENCE FROM A DEVELOPING COUNTRY

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Department of Medicine

Background . Hypoxemic respiratory failure and acute respiratory distress syndrome (ARDS), leading to mechanical ventilation is a common manifestation in COVID -19 and is associated with a higher morbidity and mortality rate. There is limited evidence about the efficacy of conscious prone positing (PP) in COVID -19 patients with hypoxemia without invasive ventilation. We aim to describe our experience with the use of early proning in awake, non-intubated patients with confirmed COVID-19 *Methods* All admitted SARS-CoV-2 PCR positive patients with hypoxemia, requiring oxygen therapy with or without non-invasive ventilation and treated with prone position(PP) were included in our retrospective observational study . Patients were classified into mild, moderate and severe COVID -19. There was no

targeted numbers of hours for proning per days and patients were kept in prone position according to their tolerance. The primary outcome was avoidance of intubation and secondary outcomes were in hospital mortality and length of hospital stay

Results There were 23 patients included in the study. The mean age was 54.5 ± 11.7 years and majority were male (91.3%). Sixty one per cent of the patients were suffering from severe disease and 82.6% had bilateral lungs involvement with interstitial infiltrate. Most patients were prone for median of 6 days (IQR 4 – 8). Only one patient required transfer to ICU, mechanical ventilation and subsequently died due to severe ARDS. All 22 patients showed consistent progressive improvement in oxygen requirement and PF ratio, mostly after 3-5 days of proning. The mean length of hospital stay was 12 days. All patients except one were discharged in stable condition, on room air or minimal oxygen requirement of 1-2 litres. No major complication of PP was recorded

Conclusions Awake prone positioning is a safe, cost effective and adjunctive therapeutic option that can be applied in patients with moderate to severe COVID-19 to avoid invasive mechanical ventilation. It can also be included in home based management protocol of COVID-19 to improve patient outcomes and decreased burden on health care facilities

Keywords: COVID-19, , awake proning, prone position

5.70

PREDICTORS OF MORTALITY IN HOSPITALIZED PATIENTS WITH INFLUENZA - A FIVE-YEAR EXPERIENCE FROM A TERTIARY CARE CENTRE IN PAKISTAN

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Influenza outbreaks are associated with significant morbidity. The aim of this study was to determine the factors associated with increased mortality in hospitalized patients that were admitted with a diagnosis of influenza at a tertiary care center in Pakistan.

Methods This study included all adult patients with an influenza infection, confirmed by real-time reverse-transcriptase polymerase-chain-reaction (RT-PCR) at Aga Khan University Hospital Pakistan, during five influenza seasons (2013/14 to 2018/19).

Results In our study, 112 patients with laboratory-confirmed influenza virus infection were admitted at our hospital from the 1st of January 2013 to the 31st of December 2018. Eighty-nine patients (79.46%) were managed in either ward or special care units and 23 patients (20.5%) received treatment in the intensive care unit (ICU). The overall mortality in this study was 13.4%, with the mortality rate of ICU patients being 47.8% while the mortality rate of patients treated in special care units and wards was only 4.5%. The mean age of patients with an influenza infection was 58.1 years (± 16.6). Influenza virus type A was found in 87 patients (77.6%), while influenza type B was present in only 25 (22.4%) patients. Out of the 15 non-survivors, 14 had influenza A. Our analysis identified septic shock (Odds ratio 45.24; 95%, Confidence interval 6.20-330; p-value=

Keywords: influenza, mortality, viral infection

5.71

AVAILABILITY OF PERSONAL PROTECTIVE EQUIPMENT (PPE) AMONG US AND PAKISTANI DOCTORS IN COVID-19 PANDEMIC

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Background The coronavirus disease (COVID-19) pandemic has put an excessive strain on healthcare systems across the globe, causing a shortage of personal protective equipment (PPE). PPE is a precious commodity for health personnel to protect them against infections. We investigated the availability of PPE among doctors in the United States (US) and Pakistan.

Methods A cross-sectional study, including doctors from the US and Pakistan, was carried out from April 8 to May 5, 2020. An online self-administered questionnaire was distributed to doctors working in hospitals in the US and Pakistan after a small pilot study. All analysis was done using Statistical Package for Social Science (SPSS) version 23.0 (IBM Corp., Armonk, NY). Results After informed consent, 574 doctors (60.6% from Pakistan and 39.4% from the US) were included in the analysis. The majority of the participants were females (53.3%), and the mean age of the participants was 35.3 ± 10.3 years. Most doctors (47.7%) were from medicine and allied fields. Among the participants, 87.6% of doctors from the US reported having access to masks/N95 respirators, 79.6% to gloves, 77.9% to face-shields or goggles, and 50.4% to full-suit/gown. Whereas, doctors in Pakistan reported to have poor availability of PPE with only 37.4% having access to masks/N95 respirator, 34.5% to gloves, 13.8% to face-shields or goggles, and 12.9% to full-suit/gown. The reuse of PPE was reported by 80.5% and 60.3% physicians from the US and Pakistan, respectively. More doctors from Pakistan (50.6%) reported that they had been forced to work without PPE compared to doctors in the US (7.1%).

Conclusion There is a lack of different forms of PPE in the US and Pakistan. Doctors from both countries reported that they had been forced to work without PPE. Compared to the US, more doctors from Pakistan reported having faced discrimination in receiving PPE

Keywords: PPE, Healthcare workers, Covid-19

5.72

EVALUATION OF VARIATION IN D-DIMER LEVELS AMONG COVID-19 AND BACTERIAL PNEUMONIA IN TERTIARY CARE HOSPITAL.

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Background/Introduction: In the recent outbreak of novel coronavirus infection worldwide, the risk of thrombosis and bleeding should be concerned. We aimed to observe the dynamic changes of D-dimer levels during disease progression to evaluate their value for thrombosis. In this study, we report the clinical and laboratory results of 40 patients with confirmed COVID-19 pneumonia and 10 patients with confirmed community-acquired bacterial pneumonia (CAP). And their concentrations of D-dimer, infection-related biomarkers, and conventional coagulation were retrospectively analyzed. The Padua prediction score is used to identify patients at high risk for venous thromboembolism (VTE). The results found that, on admission, both in COVID-19 patients and CAP patients, D-dimer levels were significantly increased, and compared with CAP patients, D-dimer levels were higher in COVID-19 patients ($P < 0.05$). D-dimer levels after therapy. In conclusion, elevated baseline D-dimer levels are associated with inflammation but not with VTE score in COVID-19 patients, suggesting that it is unreasonable to judge whether anticoagulation is needed only according to D-dimer levels. However, the abnormal changes of D-dimer and inflammatory factors suggest that anticoagulant therapy might be needed. Objective: Evaluation of variation in D-dimer levels among COVID-19 and bacterial pneumonia in tertiary care Hospital.

Material and Methods: Section of Haematology (Coagulation) and Transfusion Medicine, Department of Pathology & Laboratory Medicine, Aga Khan University Hospital Karachi. Year of Study: 2020 Sample size: 50

Methods: Total 3564 D-dimer tests performed In June 2020 out of them 2230 abnormal and 1334 normal noted and D-dimer volume was compared with June 2019 total volume was 244 from 1st June 2019 to 30th June 2019. Cross sectional study was done from 1st June 2020 to 30th June 2020 at the section of Haematology (Coagulation), Aga Khan University Hospital. Two 2 ml tubes of whole blood sample in 3.2% sodium citrate tubes were collected for D-dimer test. Platelet poor plasma was made by centrifugation and was used for testing. D-dimer test was performed by using for quantitative determination of D-Dimer on Sysmex CS-series Instrument. Source of funding None Ethical clearance: (If yes, please provide ERC No) -----

Results: The study population included 40 hospitalized patients with COVID-19 and 10 hospitalized patients with community acquired pneumonia (CAP). For COVID-19 patients, the median age was Both of the COVID-19 patients and CAP patients had 1 or more coexisting medical conditions, and compared with COVID-19 patients, CAP patients were more likely to have coexisting medical conditions, including cardiovascular disease (COVID-19 patients vs CAP patients. Conclusions: Elevated baseline D-dimer levels are associated with inflammation in COVID-19 patients and have limited predictive value for thrombosis. In the treatment of COVID-19 patients, the change of D-dimer levels should be observed dynamically. And the abnormal changes of D-dimer and inflammatory factors suggest that anticoagulant therapy might be needed. Also, although the predictive value of VTE score need to be further studied in COVID-19 patients, it might be useful than baseline D-dimer levels for prophylaxis for venous thromboembolism in COVID-19 patients. Key words: COVID-19, community-acquired bacterial pneumonia (CAP), venous thromboembolism (VTE). Word count 563
Poster Submission.

Keywords: 563, 563, 563

5.73

COST OF ILLNESS OF CHILDREN HOSPITALIZED WITH INVASIVE PNEUMOCOCCAL DISEASE AT 8 SURVEILLANCE HOSPITALS IN SINDH PROVINCE PAKISTAN

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Background: Pakistan prepares to transition from GAVI support and local data on cost of illness of invasive pneumococcal disease (IPD) are critical to informing policy decisions on sustained financial support for Pneumococcal conjugate vaccine (PCV-10). This study quantifies the societal cost of per episode of IPD among children less than 5 years.

Methods: Data on laboratory confirmed IPD hospitalization was prospectively collected from hospital resource utilization questionnaires and caregiver interviews between July 2015 and December 2016. Direct medical costs (hospital stay, medicines, diagnostics); direct non-medical costs (travel and food); and caregiver productivity loss were combined to calculate the societal cost per IPD hospitalization event.

Results: Treatment costs of 56 IPD lab-confirmed cases, (meningitis =34, pneumonia =22), were analyzed. Mean societal cost per hospitalization was US\$341 for IPD meningitis, US\$160 for IPD pneumonia and US\$246 across IPDs. Direct medical costs accounted for 74% of the cost of hospitalized IPD meningitis and 64% of hospitalized IPD pneumonia. Direct medical costs of meningitis was US\$254 per case and pneumonia US\$102 per case. Procedures (diagnostic, surgical) were the largest contributor of the cost of IPD meningitis and medication contributed most to cost of IPD pneumonia. The corresponding indirect medical costs related to patient travel and food were US\$33 for IPD meningitis and US\$28 for IPD

pneumonia. Productivity loss from caregiver's time spent caring for a sick child was US\$54 per IPD meningitis and US\$30 per IPD pneumonia. Modeling these costs to annual incidence of IPD translates into US\$ 908,609 per annum spent on IPD treatment in children < 5 years children in Pakistan. The information can help mobilize government funding support for continuation of PCV10 in Pakistan during ongoing transition from GAVI.

Keywords: Cost of illness, IPD, meningitis, pneumonia, Pakistan

5.74

PREVALENCE OF COLISTIN RESISTANT ACINETOBACTER SPECIES, PSEUDOMONAS AERUGINOSA, KLEBSIELLA PNEUMONIAE BEFORE AND AFTER THE IMPLEMENTATION OF ANTIMICROBIAL STEWARDSHIP PROGRAM: A SINGLE CENTER STUDY

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Background: Colistin is an antibiotic that usually serves as a sanctum in management of colistin resistant organisms especially in combination with carbapenems. Antimicrobial stewardship program deals with the preauthorization of certain drugs including colistin. However, in our study we studied the frequency of patients affected with colistin resistant *K. pneumoniae*, *Acinetobacter* spp. and *P. aeruginosa* before and after the introduction of antimicrobial stewardship program. Study design: We performed a quasi-experimental study in our center to determine the frequency of specific colistin resistant pathogens before and after the introduction of antimicrobial stewardship program.

Results: The results showed an increase frequency of patients infected with colistin

resistant organisms in post ASP period with a prolonged hospital stay and increased mortality.

Keywords: Antimicrobial stewardship program, Antibiotic resistance, Colistin resistance

5.75

HUMAN BRUCELLOSIS: INCIDENCE, DIAGNOSIS AND CLINICAL CHARACTERISTICS IN PATIENTS

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Background: Brucellosis is a known widespread zoonotic disease. Humans may be infected with *Brucella* species either due to direct contact with infected animals or ingestion of raw products of animal origin. The World Health Organization (WHO) estimates that 500,000 brucellosis cases occur each year worldwide. Brucellosis is a major public and animal health problem in many regions of the world, particularly where livestock are a major source of food and income. Despite control programs, it remains endemic in most developing countries. Study design: It is a retrospective observational study from year 1988 to 2019.

Results: The study showed the highest incidence of disease was in year 2016 with male to female ratio of 2.1:1. Species identified were *B. abortus*, *B. melitensis* with positive serological titers of more than or equal to 1:80 or positive blood cultures. Most common symptom in patients was fever.

Keywords: brucellosis, *Brucella* species, Human brucellosis

5.76

LISTERIA MONOCYTOGENES INFECTION IN A TERTIARY CARE HOSPITAL, PAKISTAN - A CASE SERIES

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We describe five cases of listeriosis in adult population recently diagnosed during course of just 14 days in a single clinical setup. Only three cases of *L. monocytogenes* were reported in past 10 years. However this recent outbreak all six patients presented to hospital in sepsis and *L. monocytogenes* infection was reported within 3 days of hospital admission. Except for one, none of the patients reported travel abroad. Risk factor found common in all patients was consumption of dairy products which also were from different sources, four patients were diabetic and only one had cattle exposure. All patients were started on appropriate therapy within 72 hours of bacterium identification. Patients were given dual therapy including ampicillin 2gm every 6 hourly in case of bacteremia and every 4 hourly in case of meningitis and gentamycin 1.7mg per kg per dose. Doses were adjusted according to the creatinine clearance. All patients responded well to treatment.

Keywords: *Listeria monocytogenes*, listeriosis, bacteremia, meningitis

5.77

EXTENDED DRUG RESISTANT *Salmonella typhi* OSTEOMYELITIS: A CASE REPORT

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Background: *Salmonella typhi* infection commonly results in gastroenteritis, bacteremia with or without secondary seeding, or asymptomatic carrier stage. Few cases of *Salmonella typhi* bacteremia later result in seeding and ultimately lead to further complications including osteomyelitis and rarely vertebral osteomyelitis.

Case presentation: We are describing a case of a 38-year-old patient, with no known comorbidities who presented with fever and backache for 4 weeks. Based on the magnetic resonance imaging (MRI) of the spine and positive blood cultures a diagnosis of XDR *Salmonella typhi* osteomyelitis was made.

Conclusion: *S. typhi* has a broad spectrum of clinical manifestations including osteomyelitis however to the best of our knowledge this is the first reported case of XDR *S. typhi* vertebral osteomyelitis. We describe the clinical course of the patient and review the literature regarding the treatment of *S. typhi* vertebral osteomyelitis with a special focus on XDR *S. typhi*. Treatment course and complications in view of this new resistant strain have to be reported in order to devise general guidelines for the management in such particular cases.

Keywords: extended drug resistant *Salmonella typhi*, XDR *S. typhi*, vertebral osteomyelitis

5.78

EPIDEMIOLOGY OF CARBAPENEM-RESISTANT ENTEROBACTERIACEAE INFECTION: A CROSS-SECTIONAL STUDY

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Background: Carbapenem resistant Enterobacteriaceae (CRE) includes organisms that are resistant to carbapenems. The emergence of carbapenem resistance is directly proportional to increase in mortality rate and these organisms show a rapid disease progression compared to carbapenem sensitive Enterobacteriaceae.

Methods: We conducted a retrospective cross-sectional study at a 700-bedded tertiary care hospital in Karachi, Pakistan. All adult patients with CRE infection hospitalized for more than three days, from January 2018 to December 2018. Total 77 patients of median age 48.36 years with 77.9% males and 22.1% females were included. Most common infection source was skin and soft tissue 29.9% followed by respiratory 27.3%. Urinary catheter was placed in 87.0%, central line 44.2%; drain 32.5%, and NG 36.4%. Invasive procedures were performed in 57.1% patients, prior antimicrobial usage in 48.1%, prior hospitalization 71.4%.

Conclusions: We studied in-hospital characteristics of patients with CRE infections and concluded that infections are likely to occur with greater frequency in patients with history of invasive procedures and devices. Male elderly patients with high Charlson comorbidity index, no source control and qsofa score (p 0.008) had poor outcome.

Keywords: carbapenem-resistant Enterobacteriaceae, CRE infection, Epidemiology

5.79

KNOWLEDGE AND PRACTICES FOR ANTIBIOTIC USE IN PARENTS OF CHILDREN < 5 YEARS OF AGE IN SEMI-URBAN RURAL COMMUNITIES IN KARACHI

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Department of Community Health Sciences

Introduction: Knowledge and practices of parents on antibiotic use is a global priority. Anti-microbial resistance (AMR) is driven by misuse of antibiotics, poor sanitation, poverty, and dense populations. **Objectives:** A cross sectional survey was conducted for assessing knowledge and practices on antibiotic use by parents of children < 5 years of age from urban and rural communities of Karachi.

Methods: Parents were interviewed individually (300 pairs) in Rehri Goth and Sultanabad where community-based health management teams conduct primary health care activities. Knowledge was ascertained by 38 questions (score range 0-76) for identifying an antibiotic, common condition where antibiotics are used, route of administration, and development of resistance to antibiotics. Practices had seven questions (score range 0-14) on antibiotic use on doses, frequency, leftovers, and self-medication. Cronbach's alpha showed internal consistency of questions on knowledge and practices.

Results: The husbands and wives mean ages respectively were 32.97 + 7.1 and 27.57 + 5.56 years. Urban pairs tended to be literate, and reported higher income, than rural pairs of parents. Overall mean score (MS) comparison on knowledge respectively did not differ between husbands & wives (37.3 + 5.04 & 37.3 + 5.7) but the attitude score of wives was better in comparison to husbands (4.5 + 4.8 & 3.2 + 1.6). Given the samples were interrelated being fathers and mothers Repeated Measures ANOVA showed significant differences in knowledge and attitude by urban (41.0 + 3.5 & 2.8 + 1.6) and rural (33.7 + 4.1 & 3.6 + 1.4) areas. Mother's attitudes on antibiotic use were better than fathers in both rural and urban areas and significantly more in rural areas P value (

Keywords: Knowledge and practices, Anti-microbial resistance, antibiotic use

5.80

A COMPREHENSIVE BIOINFORMATICS ANALYSIS AND MACHINE LEARNING MODEL FOR MYCOBACTERIUM TUBERCULOSIS

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The progression in the development of next-generation sequencing (NGS) technologies has been revolutionized due to the decrease in the sequencing cost and latest bench-top availability of the sequencing NGS instrument. As a result, it has increased the chances of whole-genome sequencing (WGS) technology to be used for bacterial strain characterization and identification as a routine tool in laboratory testing (Walker et al., 2017). This advancement has significantly prompted the epidemiological reconnaissance of substantial pathogens, for example, the Mycobacterium tuberculosis (MTB) (Dheda et al., 2017; Merker et al., 2017; Walker et al., 2018; Zignol et al., 2018). In

2017, TB remains one of the major concern and one of the 10 leading causes of death worldwide, with 10 million new cases due to the constant rise of multidrug resistant MTB strains (MDR-TB) (WHO, 2018). This project aims for the development of a variant calling pipeline for targeted genes to characterize genome variation in MTB by determine SNPs associated with drug resistance in four first line anti-tuberculosis drugs that includes Isoniazid (INH), Rifampicin (RIF), Ethambutol (EMB) and Streptomycin (STR). As well it will also develop a deep leaning resistance prediction model for genes that makes the MTB strain resistant against EMB anti-TB drug. An automated pipeline for MTB NGS data analysis along with a gene resistance prediction model will help clinical reporting of tuberculosis and its resistance against the drugs for better prognosis and treatments.

Keywords: Machine Learning, MTB, Efflux pumps

5.81

DETERMINANTS OF HEPATITIS B VACCINATION STATUS IN HEALTH CARE WORKERS OF TWO HOSPITALS OF SINDH, PAKISTAN: A CROSS-SECTIONAL STUDY

Aim This study aimed to determine Hepatitis B vaccination status and factors influencing vaccination status in HCWs of two secondary care hospitals at Sindh, Pakistan.

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Methods A Cross-sectional study was conducted from June-July 2020, using a web-based questionnaire in two Aga Khan secondary care hospitals of Sindh, Pakistan. Enrolled a total of 252 HCWs by using a systematic sampling technique to select study participants. Means with standard deviation were reported for all quantitative continuous variables, frequencies,

and percentages for categorical variables. Assessed HCWs on complete, partial, and no vaccination status. Multivariable ordinal logistic regression was used for analysis. Adjusted odds ratios with 95% confidence interval were reported for significant associations. *Results* Our study found that 69.44% (175/252) of the Health Care Workers were completely vaccinated (with three doses). The mean (SD) age of the HCWs were 36.21 (9.36). The prevalence of complete Hepatitis B was high in Nurses with 75.18%. Healthcare workers who have received first-ever Hepatitis B vaccination dose more than ten years ago had significantly higher odds (AOR 8.61, 95% CI 2.75-26.92). However, the primary reason associated with complete vaccination status was the belief of protecting myself, my family, or my patients (AOR 4.87, 95% CI 1.64-14.44). The factors influencing Hepatitis B vaccination appeared to be insignificant with the outcome due to the insufficient data in the categories. For the other recommended vaccines those who received either MMR, Tdap, Varicella, or Meningococcal vaccine, the odds of having complete vaccination status were 58% less (AOR 0.42, 95% CI 0.21-0.83) compared to those who received all recommended vaccine.

Conclusion Two third of the HCWs were completely vaccinated in Aga Khan secondary care hospitals Sindh, Pakistan. Hepatitis B vaccination should be made compulsory to achieve more complete vaccination status numbers. Vaccination policies require to implement for all health care workers

Keywords: Hepatitis B, vaccination, Health care workers

5.82

DETECTION OF LIPOARABINOMANNAN (LAM) ANTIGEN FROM THE URINE OF TUBERCULOSIS-INFECTED CHILDREN BY USING CERES NANOTRAP® MAGNETIC PARTICLES.

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Background: One-quarter of the world's population is infected with tuberculosis (TB). Each year ten million people develop active TB, of which one million are children. According to the WHO-2019 report, 36% of new TB cases remain unreported or undiagnosed, due to the limitations of recent diagnostic tools which are insensitive or have low diagnostic performance. Lipoarabinomannan (LAM) is a TB biomarker that can be detected in urine. LAM is a lipopolysaccharide antigen found in the mycobacterial cell wall and is released from metabolically active or degenerating bacterial cells. In this study, we aim to increase the sensitivity and diagnostic accuracy of the LAM test by using Ceres Nanotrap particles (Ceres Nanosciences, Manassas, VA, USA) to capture specifically LAM antigen in urine specimens from GeneXpert positive children and compare it with age-matched control. **Methodology:** The urine processing protocol was first optimized to capture the LAM antigen by using magnetic Ceres nano trap particles. Urine samples were also spiked with ATCC TB LAM antigen derived from *M. leprae* as a positive control, which was kindly gifted by BEI Resources. Briefly, urine samples from the cohort of GeneXpert positive children (n=12) aged between 1-18 years and their age-matched controls (n=10) from the community were tested on Alere TB LAM strips. Neat (unsorted and non-spiked) urine samples without being processed with Ceres Nano trap particles were also tested on the Alere TB LAM strip to check any background or false result. Urine samples

were sorted using Ceres nano trap particles to augment the sensitivity, after following the processing steps, samples were loaded on Alere TB LAM strips. The appearance of a visible purple/gray band in the patient window was considered as positive for the presence of Mycobacteria LAM antigen in the urine sample.

Results: A significant difference of 42% was observed, when urine samples were sorted with magnetic Ceres nanotrap particles in GeneXpert positive cases when compared to unsorted case group. The LAM test was found positive in 6/12 (50%) sorted cases in contrast to unsorted 1/12 (8%) cases. Whereas, there was no difference found in sorted 1/10(10%) and unsorted 1/10(10%) control groups.

Conclusion: Urine TB LAM assay is an attractive diagnostic biomarker test to detect TB. The approach of concentrating LAM antigen using Ceres nano trap particles enhances the algorithm of TB diagnosis and to achieve high sensitivity enough to reach and assistance to all TB patients. **References:** WHO global tuberculosis report 2019.
<https://www.who.int/teams/global-tuberculosis-programme/global-report-2019>
<https://www.who.int/tb/publications/2019/LAMPolicyUpdate2019/en/>

Keywords: TB, LAM, Biomarker

5.83

ZIKA VIRUS: A GLOBAL HEALTH THREAT AND CURRENT SITUATION IN PAKISTAN

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Background Zika virus (ZIKV) is an emerging mosquito borne virus, which belongs to the family flaviviridae. It was first reported from a sentinel rhesus monkey in a Ugandan forest in 1947. The first human case of ZIKV was identified in Central Java, Indonesia in 1977, since then there has been several reports of

ZIKV spread in Asia, Africa and Latin America. This dissemination of ZIKV around the globe makes it a serious health concern and has been declared by WHO as a state of 'international emergency' in February 2016. Study Design A cross-sectional, observational study was performed to identify other flavivirus such as ZIKV at basic health units and or district hospitals of the Sindh region of Pakistan. Serum samples of patients tested negative for dengue virus infection were tested for ZIKV infection. *Methodology* Five district hospital sites at Karachi, Hyderabad, Mirpurkhas, Larkana and Sukkur were selected after taking formal permissions. Patients presented with dengue and dengue like illness, were prospectively enrolled in this study after taking formal consent. Nine hundred and ninety-five (n=995) patients were recruited over period of April 2015 to December 2016. The diagnostic algorithm included testing for dengue virus infection using NS1 Pan Bio Rapid Detection kit for all recruited patients. Sample tested NS1 negative were tested for ZIKV using InBios ELISA kit for IgM antibodies and probe based real time PCR.

Results The IgM ELISA showed that the Presumptive Zika IgM Positive 73.68% (n=42) and Presumptive other Flavivirus IgM Positive 26.31% (n=15). Large majority of these patients, 29.82% (n=17) were residents of Karachi, the mega city of Pakistan, while 24.56% (n=14) were residents of Hyderabad, followed by Mirpurkhas 17.54% (n=10), Sukkur 15.78 (n=9) and Shikarpur 1.75% (n=1) were positive by IgM ELISA. All serum samples tested for ZIKV by probe based real time PCR were negative.

Conclusion Our results IgM ELISA results suggests that ZIKV is actively cocirculating along with DENV in the southern region of Pakistan. Moreover, there is a great need for the standardization of diagnostic assays such as Plaque Reduction Neutralization Test (PRNT) for Pakistan, where ZIKV co-circulates with DENV.

Keywords: ZIKV, ELISA, PCR

5.84

UTILIZATION OF DIGITAL HEALTH MODALITIES IN THE PREVENTION AND MANAGEMENT OF DIABETES MELLITUS IN LOW- AND MIDDLE-INCOME COUNTRIES

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In low and middle-income countries (LMIC) there is a transition from communicable to non-communicable diseases predominantly Diabetes Mellitus. Countries like India, Pakistan, and Bangladesh are among the top ten countries in the world with the highest prevalence of Diabetes. Increasing rates of Diabetes in LMIC, along with its grave consequences, place a substantial burden on already exhausted and crippled health care infrastructure in resource-limited settings. To efficiently prevent and manage this chronic disease various approaches are adopted across the world including community-based approaches, educational workshops/sessions, peer/buddy-based approaches, utilization of print media, and education booklets along with the recently introduced digital health modalities. Integration of digital technologies into prevention and treatment regime of Diabetes including usage of cellular applications, weekly messages, electronic medical records, telemedicine, regular emails, and television/social media-based awareness campaigns are becoming exceedingly popular and the most opted modality these days due to the flexibility, convenience, cost efficiency, and increased accessibility that they offer. With the increasing penetration of mobile phone technology and subscription of cellular services in LMIC, digital health specially mhealth offers a great promise to prevent and control Diabetes. However, the infrastructural barriers, readiness to adopt this modality along with political interferences might hinder the digital-based approach to reach its full potential. Currently, there is an ongoing debate about

implementing the digital approach in preventing and controlling Diabetes, this paper discusses the utilization of various digital modalities in various LMICs and the barriers that restrict their complete implementation.

Keywords: Diabetes Mellitus, digital technology, low and middle income countries

5.85

FERRITIN AS AN ADJUNCT BIOMARKER FOR TB DIAGNOSIS IN PAKISTANI CHILDREN

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Introduction: The presentation of tuberculosis in children is often misleading. Because children are unable to produce sputum in sufficient quantities, the proportion of children with bacteriologically confirmed cases remains relatively low. GeneXpert can only be performed on sputum or fecal samples. IGRA cannot distinguish between active tuberculosis disease and latent tuberculosis infection. Hence, the search for surrogate diagnostic biomarkers for pediatric TB continues. Ferritin has been reported as a marker of inflammation in several TB cohorts. Here, we explored Ferritin as an adjunct biomarker for pediatric Tb. *Methods:* We enrolled 48 children with Gene Xpert confirmed, or high probability of Tuberculosis, along with 49 healthy age-matched controls. Venous phlebotomy was performed for a single sample. Ferritin ELISA was performed on plasma samples using pre-coated 96 well plates (Ferritin Via Calabria 15 20090 SEGRATE (MI) Italy).

Results: The ferritin levels were significantly higher in TB cases (Mean Ferritin level in Cases= 62.29 ng/ml; Mean Ferritin level in Controls=19.87 ng/ml; p0.05). We also compared mean Ferritin levels in TB cases above and below 5 years of age, with higher levels being found in those above the age of 5

years (65.52 ng/ml vs. 46.18 ng/ml) but the difference was found to not be statistically significant(p-value=0.376). No significant correlation was found between age and ferritin levels in Tb cases. *Conclusion:* We saw significantly higher mean Ferritin levels in Tb cases, compared to controls. Although serum ferritin is a non-specific marker of inflammation, it can be used as an adjunct to M. Tuberculosis specific antibody assays for diagnosis of Pediatric Tb and to monitor response to treatment.

Keywords: Pediatric Tuberculosis, Ferritin, Biomarkers

5.86

A FAMILY CLUSTER OF SARS COV2 INFECTION AND THE ROLE OF MASS GATHERING

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A Family Cluster of SARS CoV2 Infection and The Role of Mass Gathering Aisha Fareed Siddiqui, Nosheen Nasir, Department of Medicine, Aga Khan University, Karachi. *Introduction:* Coronaviruses are enveloped viruses with a helical nucleocapsid and a single-stranded, positive polarity RNA. We describe a case series who travelled together to a mass gathering in Iraq; touring Syria, Lebanon, Beirut and Doha. The data describes the demographic, clinical, radiological and laboratory findings of this family cluster. *Methods:* We prospectively reviewed six members of a family cluster who presented with respiratory tract infection symptoms. Oral and nasopharyngeal swabs were taken and run in the molecular lab for qualitative SARS-CoV-2 coronavirus RT-PCR test. The data were collected, and tables constructed for analysis.

Results: The incubation period estimated to be between 8-14 days. 67% were symptomatic and had chronic comorbidities: diabetes mellitus and hypertension; and presented with a history of

fever. 4 patients had bilateral airspace opacifications on Chest X-ray; the majority were males (n=3), age range between 50-70 years. 17% developed severe disease and died. Except for one patient, 5 had a normal total white blood cell, neutrophil and lymphocyte count. 2 of the 6 members were given oseltamivir and chloroquine concomitantly. 1 of 6 received antibiotics. 5 of 6 patients received symptomatic treatment; 1 required no treatment and was only kept in isolation.

Conclusion: The findings are consistent with family clustering of the novel coronavirus and its person-to-person transmission. **Keywords:** COVID 19, Family Cluster, Mass Gathering

Keywords: COVID 19, Family Cluster, Mass Gathering

5.87

DETECTION OF SALMONELLA TYPHI IN DRINKING WATER SOURCES TO ESTIMATE ENTERIC DISEASE BURDEN IN SURVEILLANCE OF ENTERIC FEVER IN ASIA PROJECT (SEAP) STUDY: POPULATION-BASED COHORT

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Introduction/Objective: Incidence of enteric fever remains common among populations that lack access to safe water, sanitation and hygiene infrastructure. Sero-Epidemiology and Environmental Surveillance (SEES) will leverage the ongoing SEAP study and determine low-cost approaches to estimate disease burden. **Methodology:** Population-based cohort included random list of households from SEAP Healthcare Utilization Survey (HCUS) conducted during 2017-2018. These households belonged to the catchment areas of the with disease burden. Through structured mapping of clusters, study staff approached households considering the given age strata within towns. At

baseline, drinking water sample was collected from households followed by dried blood spot (DBS) from the index person and household members less than 25 years. Follow ups after 3 months and 6 months of enrollment are ongoing for DBS collection from the study participants.

Result: More than 1500 households were approached out of which 500 participants were enrolled in the study since August 2019 - August 2020. Participants among the age strata of 0-5 years were 127, 131 for 5-10 years, 114 for 10-15 years and 122 for 15-25 years. 382 drinking water samples were collected from the households and 25 from other sources within the community including water tanker, RO plant, ice factory, public tap, shops and vendor cart. 71% consumed municipal supply. 18% treated drinking water at home. 93% used boiling as the method of treatment and 7% used chemicals like chlorine. Out of 382, 15 samples were positive for S. Typhi/S. Paratyphi during the reporting period; 9 from Lyari, 5 from Gulshan and 1 from Jamshed town, Karachi.

Recommendation/Conclusion: Lack of access to safe water and proper hygiene practice is followed by lack of awareness to treat water before consumption. Households where samples were reported positive for enteric bacteria were revisited and advised to boil water and take common safety measures to prevent typhoid.

Keywords: enteric, household, water source

5.88

ANTIMICROBIAL RESISTANCE IN TYPHOIDAL SALMONELLA: SURVEILLANCE FOR ENTERIC FEVER IN ASIA PROJECT, 2016–2019

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Background: Clinicians have limited therapeutic options for enteric fever, and therefore typhoid vaccination is recommended as a preventive measure. As a part of the Surveillance for Enteric Fever in Asia Project (SEAP), we investigated the extent of antimicrobial resistance (AMR) among confirmed enteric fever cases in Bangladesh, Nepal, and Pakistan.

Methods: From September 2016 - September 2019, SEAP recruited study participants of all age groups from its outpatient, inpatient, hospital laboratory, laboratory network, and surgical sites who had a diagnosis of febrile illness that was either suspected or blood culture confirmed for enteric fever. Antimicrobial resistance of isolates was determined by disc diffusion using Clinical and Laboratory Standard Institute cut-off points. We reported the frequency of multidrug resistance (MDR) (resistance to ampicillin, cotrimoxazole, and chloramphenicol), extensive drug resistance (MDR plus non-susceptible to fluoroquinolone and any 3rd generation cephalosporins), and fluoroquinolone (FQ) and azithromycin non-susceptibility.

Results: We enrolled 8,705 blood culture confirmed enteric fever cases. 4,873 (56%) from Bangladesh, 1,602 (18%) from Nepal, and 2,230 (26%) from Pakistan. Of these, 7,591 (87%) were *Salmonella* Typhi and 1,114 (13%) were *S. Paratyphi*. MDR *S. Typhi* was identified in 17% (701/4065) of isolates in Bangladesh, and 1% (19/1342) in Nepal. In Pakistan, 16% (331/2084) of *S. Typhi* isolates were MDR, and 64% (1319/2074) were XDR. FQ non-susceptibility among *S. Typhi* isolates was 98% in Bangladesh, 87% in Nepal, and 95% in Pakistan. Azithromycin non-susceptibility was detected in 77 (2%) in Bangladesh, 9 (.67%) in Nepal, and 9 (.59%) isolates in Pakistan. In Pakistan, three (2%) *S. Paratyphi* isolates were MDR; no MDR *S. Paratyphi* was reported from Bangladesh or Nepal.

Conclusions: Although AMR against *S. Paratyphi* was low across the three countries, there was widespread drug resistance among *S.*

Typhi, including FQ non-susceptibility and the emergence of XDR *S. Typhi* in Pakistan limiting treatment options. As typhoid conjugate vaccine (TCV) is rolled out, surveillance should continue to monitor changes in AMR to inform policies and to monitor drug resistance in *S. Paratyphi*, for which there is no vaccine.

Keywords: Enteric fever, antimicrobial resistance, multidrug resistance

5.89

BURDEN OF CULTURE CONFIRMED ENTERIC FEVER CASES IN KARACHI, PAKISTAN: SURVEILLANCE FOR ENTERIC FEVER IN ASIA PROJECT (SEAP), 2016-2019

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Background: The Surveillance for Enteric Fever in Asia project (SEAP) is a multicenter, multi-country study conducted in Pakistan, Nepal and Bangladesh. The objectives of the study were to characterize disease incidence among patients with enteric fever. Here we report the burden of enteric fever at selected sites of Karachi, Pakistan.

Methods: During September 2016 to September 2019, prospective surveillance was conducted at inpatient, outpatient, surgical departments and laboratory networks of Aga Khan University Hospital, Kharadar General Hospital and surgery units of National Institute of Child Health and Jinnah Postgraduate Medical Centre. Socio-demographic, clinical and laboratory data were obtained from all the suspected or confirmed enteric fever cases.

Results: Overall, 22% (2,230/10,094) of the patients were culture-positive for enteric fever. 94% (2093/2230) were *S. Typhi* and 6%

(137/2230) were *S. Paratyphi*. 75% of specimens were resistant to first-line antibiotics i-e multi-drug-resistant (MDR) and 60% were extensively drug-resistant (XDR).

Conclusion: Enteric fever cases have increased during the last three years with large proportion of *S. Typhi* drug resistant cases. However, the burden of paratyphoid is still relatively smaller. Therefore, strengthening the existing surveillance system at the national level for reduction of enteric fever cases and antimicrobial resistance is recommended in Pakistan. While TCV vaccination can significantly decrease the burden of typhoid and may also impact antimicrobial resistance, water, sanitation and hygiene improvement is highly recommended.

Keywords: Enteric fever, Burden, Salmonella Typhi

5.90

EVALUATION OF A PORTABLE HIGH-EFFICIENCY PARTICULATE AIR (HEPA) FILTER FOR IMPROVED AIR QUALITY IN A PATIENT'S ROOM

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Introduction: Contaminated surfaces/environment is a potential route for dissemination of multidrug-resistant pathogens. Increased rate of hospital acquired bacterial/*Aspergillus* spp. infections is associated in immune deficient or those who suffer from either structural lung diseases or pre-existing viral infections like influenza /COVID-19. This study planned to evaluate the efficacy of a new portable high-efficiency particulate air (HEPA) filter machine in patient room, to minimize the acquisition of hospital acquired infections.

Methods and results: Baseline environmental cultures were taken for three consecutive days with room vacant & air conditioning unit

functional. Active & passive air sampling was done. Surface swab cultures were taken followed by terminal cleaning, disinfection of all surfaces with sodium hypochlorite solution. Air sampling was done. Room air conditioning unit was serviced, followed by environmental cultures. Portable HEPA filter machine was placed in room. Room air sampling was carried out after 2 hours. The final room air cultures were taken.

Results: o Gradual reduction in mold & bacterial count was seen at various cleaning steps with greatest reduction after cleaning of room air cooling unit (90% reduction of mold count in air, 37% reduction of bacterial count in air). o Portable room HEPA filter was run on same day for 2 hours, air culture taken showed significant reduction in organism count (90% reduction of mold count in air, 53% reduction of bacterial count in air).

Conclusion: Portable HEPA filter provides significant reduction in mold & bacterial count. Traditionally used room air cooling units should be replaced by newer available options as per guideline recommendation. Portable HEPA filter can be utilized as a temporary solution to minimize mold and bacterial contamination in high risk patient care areas. However its placement should be based on its air filtration capacity and facility/room ventilation type.

Keywords: environmental cultures, HEPA filter, air sampling

5.91

AWAKE PRONING AND NEGATIVE FLUID BALANCE: SUCCESSFUL OUTCOME IN COVID -19 ARDS PATIENT WITHOUT TOCILIZUMAB AND REMDESIVIR ADMINISTRATION

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Early application of prolonged prone-positioning sessions and negative fluid balance dramatically decreased mortality in intubated mechanically ventilated patients with severe ARDS.(1)(2)

Benefit of prone positioning in non- intubated awake patients is lacking in literature until the novel COVID-19 surges ,which has choked the health care system and dearth of mechanical ventilation provokes the need for alternate solution to prevent the complication and mortality related to deadly virus COVID -19. Prone positioning in non-intubated patients along with negative fluid balance .is a good alternative and prone position can be perform easily outside intensive care unit and so far in few case report/series showed promising result (3).Here we present the two cases of successful outcome with systemic steroid and proning protocol been followed as per Intensive Care Society[ICS] guideline along with negative fluid balance with aid of furosemide, in COVID-19 ARDS patient, who respond very well and had improved oxygenation, the unique factor; worth to mention is that the patient was not treated with Remdesivir an antiviral or specific immunosuppression with Tocilizumab.

Keywords: Awake Prone positioning, negative fluid balance, Covid -19

6.1

SIGNIFICANCE OF PULMONARY REHABILITATION AMONG TRAUMATIC BRAIN INJURED (TBI) PATIENTS UNDERGOING CRANIECTOMIES

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Background/Rational: Neuroscience has one of its rapidly arising sub-specialty Neurological Intensive Care which requires a serious attention towards its patient's multidisciplinary approach. To prevent these complications, it requires coordinated efforts from medical, nursing and physiotherapy teams. Number of cardiopulmonary complications have been reported among the patient with traumatic brain injuries (TBI) undergoing craniectomies which include inability to maintain airway secondary to pneumonia, hypoventilation, and direct injuries to the chest. Therefore, adequate oxygenation and ventilation is significant to increase its delivery to the brain, enhance cerebral blood flow, raise cerebral perfusion pressure, and maintain intracranial pressure. Research Question: How do the pulmonary complications can be prevented or treated among the patient with traumatic brain injuries (TBI) undergoing craniectomies through pulmonary rehabilitation.

Method: 25 articles from last 10 years were systematically reviewed. **Finding:** Studies have shown that prolong intubations, mechanical ventilator support and inability to maintain airway can lead to pneumonia among 60% of patient with the severe head injuries. Hence, an effective pulmonary rehabilitation and conventional chest physiotherapy techniques if routinely practiced can result in X-rays resolution and improved Arterial Blood Gasses (ABGs). Moreover, Brain Trauma Foundation recommends maintaining PaO₂ >60 mmHg and arterial oxygen saturation >90% for oxygenation and ventilation of traumatic brain injury (TBI) patients **Conclusion:** In conclusion, following craniotomies, patients with traumatic brain

injuries (TBI) requires a strict pulmonary rehabilitation to prevent cardiopulmonary complication such as pneumonia. In addition, Neurological intensive care unit with specialized team is recommended to achieve multidisciplinary goal. **Actual or Potential implications:** This concept is significant in terms of getting patients prevented from secondary infections leading to mortality. Traumatic brain injured patients, due to their decrease responsiveness are highly prone to develop pneumonia. Pulmonary rehabilitation is of an utmost priority among the patients with the history road traffic accidents undergoing craniectomy.

Keywords: Craniectomies, Pulmonary Rehab, Head Injuries

6.2

EFFECTIVENESS OF HIGH FIDELITY SIMULATION TO TRAIN EMERGENCY MEDICINE PHYSICIANS IN POCUS (POINT OF CARE ULTRASONOGRAPHY) IN PAKISTAN: A QUASI-EXPERIMENTAL STUDY

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Background: Point-of-care ultrasound (PoCUS) is frequently utilized in emergency medicine, with an extended-focused assessment with sonography in trauma (e-FAST) being the most widely used PoCUS modality. High-fidelity simulation offers a uniquely safe and "mistake-forgiving" environment to teach and train medical professionals. The present study evaluated the effectiveness of a high-fidelity simulator to train EM physicians in e-FAST at tertiary care teaching hospital in a lower-middle-income country.

Methods: This was a quasi-experimental study. EM physicians who volunteered to participate and were available for the entire training and testing period were included in the

study. The educational intervention included lectures and hands-on practice on a high fidelity simulator (Sonosim, Santa Monica, CA). Knowledge and image interpretation of e-FAST were evaluated using a questionnaire before and after the training course. Each participant's ability to acquire and interpret satisfactory images was assessed by experienced EM physicians and recorded. Data were analyzed using IBM SPSS Statistics for Windows, Version 20.0 (Armonk, NY: IBM Corp.). All the tests were two-sided, and p-values ≤ 0.05 were considered significant. Baseline characteristics and outcome variables were recorded and compared by Wilcoxon signed-rank tests.

Results: A total of 31 EM physicians, 12 (38.7%) men and 19 (61.3%) women, were enrolled in the study, with 24 (77.3%) having one to three years of EM experience. Mean, and percentage group performance improved from 6 and 40% before the intervention to 14.5 and 96.6% after the intervention ($Z=4.867$, $p\leq 0.05$). Most improvements in image acquisition on high-fidelity simulation were observed in the upper right quadrant and suprapubic window (29/31; 93.5%), followed by the upper left quadrant (27/31; 87%) and the Subxiphoid window (21/31; 67%). All 31 participants reported improvements in comfort and confidence level with PoCUS after attending the workshop.

Conclusions: EM physicians who attended a brief workshop incorporating simulation demonstrated improvements in knowledge and image acquisition skills in all domains tested. High-fidelity Simulation training is an effective modality for training EM physicians in e-FAST.

Keywords: PoCUS, Emergency Physician, high fidelity simulation

6.3

ETIOLOGY AND OUTCOME OF ADULT PATIENTS PRESENTED WITH NEW ONSET SEIZURE TO THE EMERGENCY DEPARTMENT OF A TERTIARY CARE CENTER

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Background: Seizures are a common presentation in the emergency department (ED) and account for 1%-2% of all ED visits, with 24% representing new onset seizures. In approximately 45% of patients with a new onset seizure no cause is identified. The aim of this study is to fill this gap by identifying the etiology of new onset seizure in our ED as to improve knowledge among healthcare providers regarding diagnosis and management and hence improve the outcomes.

Methods: This is a retrospective study conducted at the Emergency Department of Aga Khan University hospital. All adult patients (18yrs and above), presented to the emergency department from January 01, 2019 to June 30, 2020, with new onset seizure were included. All patients presented with history of trauma were excluded. Etiologies of seizure were classified as structural, neurological, infectious, systemic, metabolic and toxicological cause. The immediate outcomes were reported as hospitalization or discharge from the ED.

Results: Out of 198 patients most of them (44.4%) belong to middle age group (35 to 64 years). The most common type of seizure was generalized tonic clonic seizure (74.2%), followed by generalized tonic (12.1%) and simple partial seizure (7.5%). Out of total patients no cause was identified in eight patients (4%). Of the total confirmed causes of new onset seizures, structural lesions of brain were found to be the most common cause

(37.8%), followed by neurologic (23.6%), infectious (4.2%), systemic (13%), metabolic (7%) and toxicologic (4%) cause.

Conclusion: The findings of this study emphasize the need for a local guideline regarding the investigation of new onset seizures in adults that would direct emergency physicians in respect of appropriate investigations, thus ensuring better quality patient care and, potentially, saving costs.

Keywords: Seizure, Epilepsy, Emergency department

6.4

VIOLENCE AND INJURY PREVENTION SEMINAR SERIES: A PROGRAM FROM LOW AND MIDDLE INCOME COUNTRY

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Context: Injury is a neglected area in academia of low middle income countries (LMICs) despite its disproportionate burden in LMICs. The Department of Emergency Medicine (DEM) at Aga Khan University (AKU) in collaboration with “Johns Hopkins – Afghanistan Pakistan International Collaborative Trauma and Injury Research Training Program” (ICTIRT) funded by Fogarty, National Institutes of Health supported Violence and Injury Prevention (VIP) seminar series in 2012 with the objective to develop interest group as well as capacity building of individuals in Violence and injury prevention (VIP).

Process: These seminars showcase ongoing research in the area and promoted discussions among researchers, clinicians, students and interested lay public. For each seminar, injury experts at local or international level were invited to present their work and session’s announcement were disseminated all over AKU.

Analysis: So far, 41 sessions have been successfully conducted and topic such as cross-

cultural perspectives, data sources, surveillance, study designs, outcomes and ethical issues in VIP were covered. Feedback form was filled by attendees and the rating scale for each parameter was based on 1=Unsatisfactory, 2=Fair, 3=Good, 4=Excellent and 5=Outstanding. Total forms received were 368 (59%) out of 628 participants. Overall rating for the sessions was 3.94 (79%) which falls between good to excellent.

Outcomes: This program has become an ongoing activity and resulted in the expansion and diversity of injury interest group with the addition of policy makers, data scientists and urban planners.

Keywords: Violence, Injury, LMIC

6.5

HEAD INJURY PEDIATRIC EMERGENCY CARE APPLIED RESEARCH NETWORK (PECARN) RULE CORRELATES WITH PATTERN/PRACTISES OF CT SCAN HEAD DONE IN PEDIATRIC PATIENTS COMING WITH HEAD TRAUMA IN ED- A RETROSPECTIVE ANALYSIS

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Abstract: Children with mild head trauma are frequent presentations to emergency departments (EDs). (1) Identifying those with traumatic brain injuries (TBIs) can be difficult (1) ED clinicians must decide who requires computed tomography (CT) scanning to evaluate for traumatic brain injury (TBI). (2, 3) The use of CT head in children has doubled over the last two decades, from 10.6 CTs per 1000 children in 1996 to 21.5 CTs per 1000 children in 2010. (4) The Pediatric Emergency Care Applied Research Network (PECARN) derived and validated two age-based prediction rules to identify children at very low risk of clinically-important traumatic brain injuries (ciTBIs) who do not typically require CT scans. It is estimated that pediatric CT use for head trauma would decrease by 20–25%

while rarely missing a child with ciTBI. (5)
OBJECTIVES To analyze whether CT head is being appropriately utilized by health care professionals while identifying traumatic brain injury. **METHODS** Study Design: Retrospective Cross-sectional Procedure: File review Setting: AgaKhan Hospital Emergency Department Inclusion: All pediatric head trauma patients **RESULTS** Total 190 CT scans were done, in 34 patients on whom PECARN rule was not justified, CT scan was performed on 20 patients of whom 18 were admitted for hemodynamic monitoring and all 20 CT scans were negative for any traumatic brain injury (TBI). 20 CT scans (10.52% more) were ordered more out of the total 190 CT scans done. **CONCLUSION** PECARN rule guide us to limit unnecessary CT scans without missing TBI's.

Keywords: Traumatic Brain Injury, Pediatric trauma, PECARN rule

6.6

COMPARISON OF THE BEDSIDE INDEX (BISAP) V/S RANSON SCORES IN PATIENTS WITH ACUTE PANCREATITIS COMING TO EMERGENCY DEPARTMENT, DETERMINING THEIR SEVERITY AND MORTALITY- A PROSPECTIVE ANALYSIS.

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Introduction: One of the most common pathologies diagnosed in patients presenting with abdominal pain coming to the emergency department is acute pancreatitis. The (BISAP) i.e. bedside index for severity in acute pancreatitis along with Ranson scores are utilized in patients of acute pancreatitis for their early and appropriate identification of mortality and severity.

Objective: To determine diagnostic accuracy of BISAP in comparison to Ranson scores in predicting mortalities and severities in patients with acute pancreatitis coming to the emergency department.

Materials and Methods: Study Design: Cross-sectional Settings: Department of Emergency Medicine, Aga Khan University Hospital, Stadium road Karachi, Pakistan. Duration of Study: Six months from 01-07-2017 to 01-01-2018. Subject and Methods: 136 patients were selected via non-probability consecutive sampling technique, those who fulfilled the criteria of inclusion. Detailed medical history of each patient along with vital signs at the time of triaging that includes blood pressure (BP), heart rate (HR), respiratory rate (RR), oral temperature and Oxygen saturation via Pulse Oximetry was documented. BISAP score was applied in the emergency department (ED) & the patients were followed in ward/intensive care unit where Ranson scores were calculated in the following 48 hours. Both the scores were calculated and compared for the prediction of severity and mortality for each patient. All the obtained data was recorded in Performa.

Results: In this study 136 patients, who fulfill the inclusion criteria were selected, out of which males were 88 (64.7%) and females were 48 (35.3%) having a mean age of 42.04 ± 16.42 (16-75) years. Mean and standard deviation of BISAP and Ranson score was 0.58 ± 1.05 and 1.50 ± 1.32 respectively. On the basis of BISAP and Ranson score; mild acute pancreatitis to moderate acute pancreatitis (MAP to ModAP) was diagnosed in 123 (90.4%) and 119 (87.5) patients and severe AP (SAP) in 13 (9.6%) and 17 (12.5%) patients respectively. Specificity (Sp) 94.62% vs 91.54%, Sensitivity (Sn) 100.0% vs 100.0%, negative predictive value (NPV) 100.0% vs 100.0%, positive predictive value (PPV) 46.15% vs 35.29% and diagnostic accuracy (DA) 94.85% vs 91.91% of BISAP vs Ranson scores respectively.

Conclusion: It was concluded from the study that BISAP and Ranson score are very reliable tool for identification of acute pancreatitis patients at higher risk of severity and mortality. BISAP and Ranson score has same sensitivity but BISAP score has higher specificity than

Ranson score in patients of acute pancreatitis for predicting their severities and mortalities. .

Keywords: Acute pancreatitis, BISAP Score, Ranson Score

6.7

COLLISION VERSUS LOSS-OF-CONTROL MOTORCYCLE ACCIDENTS: COMPARING INJURIES AND OUTCOMES

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Introduction: Motorcycles are a common mode of transport, especially in low-middle income countries like Pakistan. The pattern and severity of injuries in motorcycle trauma depends on the mechanism of accident, which may be classified into collision accidents (CA) or loss-of-control accidents (LOCA). In this study we aimed to investigate patterns of trauma due to motorcycle CAs and LOCAs, with a focus on injuries, management, complications and outcomes.

Methods: A retrospective cohort study was conducted at the Aga Khan University Hospital (AKUH), Pakistan (a Level 1 Trauma Facility) enrolling all patients presenting with motorcycle trauma between January 2018 and March 2019. *Results:* The commonest sites of major injury were the lower limb (40.9%), head and neck (38.1%) and upper limb (27.5%). A significantly higher percentage of CA victims had head and neck injuries (43.4% vs. 30.5%), abdominal injuries (5.5% vs. 1.1%), pelvic fracture (5.9% vs. 0%), as well as polytrauma (22.8% vs. 11.1%). Compared to LOCA victims, CA victims had a significantly higher incidence of Acute Kidney Injury (25.7% vs. 15.8%; $p < 0.011$), longer hospital length of stays (5.3 ± 6.5 days vs. 4.1 ± 5.0 days) and long-term disability ($p = 0.002$). When adjusted for age and gender on multivariable logistic regression with mechanism of accident as the dependent variable, CA was significantly associated with

the male gender (OR: 2.045 [95% CI: 1.038-4.026]), abdominal injury (5.748 [1.285-25.702]), head and neck injury (1.492 [1.007-2.211]), polytrauma (2.368 [1.383-4.055]), skin grafting (0.423 [0.192-0.931]), AKI (1.937 [1.183-3.171]), and LOS (1.041 [1.004-1.079]). *Conclusions:* While both motorcycle collision accidents (CAs) and loss-of-control accidents (LOCAs) stress trauma systems in developing countries, the dynamics of CAs cause them to result in worse injuries and outcomes. Specific measures to reduce CAs and LOCAs are urgently indicated in developing countries to reduce the burden of morbidity and mortality of motorcycle accidents.

Keywords: Motorcycle accidents, Mode of Collision, Trauma

6.8

GERIATRIC MOTORCYCLE TRAUMA: AN RETROSPECTIVE STUDY FROM A DEVELOPING COUNTRY

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Background: Though in developed countries motorcycling is increasingly becoming a leisure activity for younger age groups, in Pakistan, motorcycles represent an essential mode of day-to-day transport for all age groups. Our study compared differences in the patterns of injuries, complications, and outcomes of geriatric and non-geriatric victims of motorcycle-accident trauma presenting to a Level 1 Trauma Facility in Karachi, Pakistan.

Methods: Relevant trauma codes were used to extract data from online records for all victims presenting with motorcycle trauma between January 2018-March 2019. Patients ≥ 60 years were categorized as geriatric. Multivariable logistic regression was performed with age group as the dependent variable, with results reported as adjusted odds ratio [95% confidence

interval]. Results Out of a total 514 victims, 85 were classified as geriatric. On multivariable logistic regression adjusted for gender and patient arrival to the hospital (directly/referral), geriatric victims were more likely to suffer lower limb injuries (2.021 [1.253-3.260]), and require operative management (3.242 [1.630-6.450]) and procedures such as maxillofacial fracture fixation (5.131 [2.354-11.181]) and spine fixation (7.416 [1.567-35.090]). Geriatric victims were more likely to develop complications such as acute kidney injury (3.674 [2.207-6.114]). Mortality was also associated with the geriatric age group (5.319 [1.990-14.219]).

Conclusion: After motorcycle-accident trauma, geriatric victims are more likely to develop complications during their hospital and suffer mortality. It is important that public health measures be taken by the country's healthcare system to reduce the burden of morbidity and mortality due to motorcycle-accident trauma in a growing geriatric population.

Keywords: Geriatric Injuries, Motorcycle Accidents, Geriatric vs. Non-Geriatric

6.9

UTILIZATION OF POINT OF CARE ULTRASOUND IN THE EMERGENCY DEPARTMENT; A NEED ASSESSMENT SURVEY

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Background: Point-of-care ultrasound (PoCUS) is defined as ultrasonography at the patient's bedside performed in real-time by a care provider. Studies from the developed world have shown that PoCUS is a safe and rapidly evolving diagnostic modality that has seen emerging interest in its routine use to expedite and provide cost-efficient emergency care. Despite the undisputed advantages of utilizing POCUS, there are several barriers to consider due to

challenges related to equipment and technology, experience and skills of the operator.

Methods: This need assessment survey was part of a quasi-experimental study assessing the knowledge and skills of emergency medicine (EM) physicians after a brief training workshop, which was approved by ERC. EM physicians who volunteered to participate, and were available for the entire training and testing period were included in the study.

Results: The study enrolled 31 qualified medical practitioners, including 12 (38.7%) men and 19 (61.3%) women, with 24 (77.4%) having one to three years of work experience. Although 29 (93.6%) reported that an ultrasound machine was readily available in the emergency department, the majority were using it for central line guided insertion 20 (64.5%) and IVC assessment 34 (11%). When asked only three (9.86%) reported using it routinely for FAST examinations, and 10 (32.3%) for lung ultrasound. A total of 24 participants (77.4%) identified a lack of training and 18 (58.1%) lack of knowledge and 19 (61.3%) shortage of time as the most critical barriers to PoCUS utilization. Following training, all 31 (100%) self-reported improvement in levels of comfort and confidence with PoCUS, with 20 (64%) stating that ultrasound teaching sessions should take place every month.

Conclusion: Despite the availability of an ultrasound machine in the emergency department, it was mostly used for central venous line access and fluid assessment only. Our study not only highlighted underutilization of PoCUS in emergency departments of LMICs but also the urgent need for PoCUS integration into the EM residency curriculum in developing countries.

Keywords: PoCUS, Emergency Physician, need assessment

6.10

PERCEPTIONS, CHALLENGES AND EXPERIENCES OF HEALTHCARE PROVIDERS IN EMERGENCY DEPARTMENTS REGARDING WORKPLACE VIOLENCE DURING THE COVID-19 PANDEMIC: AN EXPLORATORY QUALITATIVE STUDY FROM AN LMIC

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Workplace violence (WPV) against healthcare workers (HCWs) has emerged out as a global issue. Emergency Department (ED) HCWs as front liners are more vulnerable to it due to their nature of work and their profound exposure to medical and social situations. COVID-19 emergence in Pakistan has not only brought up a health ordeal, alongside it serves as a challenge in social perspective to HCW's; ever since fighting the stigmas related to the current pandemic brought up a wave of antagonism from the sufferer and their attendants. Thus, an ED's outcry not yet spoken of. Behind closed doors, what had been an infuriating factor for the population were outraged, irrational religious and social perspectives being quoted and referred to, repeatedly on all prominent medium. Thus, the vulnerable and already exposed population to pandemic, was hovered by societal stigmas to bring down their outrage on HCW's and already battling ED. "Pakistan has lost 42 doctors among 58 healthcare providers to COVID-19", and "Attendants of deceased vandalize JPMC ward, claim coronavirus does not exist" had been the type of superscripts witnessed as a source to heartbreaking dilemmas. We aim to conduct a qualitative exploratory study at two major ED's of the city namely Aga Khan University Hospital (AKUH) & Jinnah Postgraduate Medical Center (JPMC) involving emergency doctors, nurses, paramedics, admin staff and pharmacists. In particular, the ED of JPMC receives the heaviest amount of patients and they have and

Emergency based COVID-19 ward with around 80 beds. The Aga Khan University Hospital is amongst the largest private tertiary care facility in the city. We will conduct In-Depth Interviews to determine the aforementioned perceptions and challenges regarding WPV faced by ED frontline workers during current COVID-19 pandemic. The interviews will be conducted by trained qualitative experts and data collectors and will be online. We anticipate that through this study we can establish basis of WPV amidst pandemic situation and an evidence for future interventions to combat such issues.

Keywords: Workplace Violence, COVID-19, LMIC

6.11

FREQUENCY AND OUTCOME OF ADVERSE EVENTS IN HOSPITALIZED CRITICALLY ILL PATIENTS

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Objective: Although ICUs are high-mortality units, there is limited data on the Frequency of adverse outcomes and associated mortality in an ICU setting, especially in a developing country. Hence, we conducted this study to identify Frequency and outcome of adverse events in hospitalized critically ill patients Design This is a retrospective case-control study of critically ill ICU patients. Place and duration of study This study was conducted from January-December 2019 at the Aga Khan University Hospital (AKUH) in Pakistan.

Methodology: Data was collected from patients' medical records using a pre-approved pro forma. Variables included demographics, patient and hospitalization characteristics and laboratory investigations. Any adverse event during the admission was also noted. Outcome measures included in-hospital mortality and length of stay.

Results: 773 patients met the inclusion criteria and were included in the study; 504 (65.2%)

were males and 269 (34.8%) females; mean age was 57.3 ± 16.6 years. Overall mortality rate was 33%. The most common adverse events during a patient's hospital stay were acute kidney injury (22%), shock (18%) and electrolyte imbalance (18%). Risk factors for mortality in these patients included mechanical ventilation, septic shock, acute kidney injury, thrombocytopenia, seizures, acute liver failure, ARDS and metabolic acidosis.

Conclusion: Our study reveals a high mortality rate for critically ill ICU patients. Adverse events during admission were frequent and also associated with increased mortality. We hope this study sets the stage for larger scale studies in developing countries to drive improvements in accurate risk stratification and optimal patient management.

Keywords: Critical Care, Shock, ICU

6.12

GASTRIC TRICHOBEZOAR: A RARE CAUSE OF ACUTE ABDOMEN PRESENTING IN EMERGENCY DEPARTMENT.

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Trichobezoar is a rare condition with an estimated incidence of less than 1% in the general population. It is predominantly seen in young women and is characterized by the accumulation of the patient's own hair in the gastrointestinal tract. This condition along with the history of anxiety, depression, and /or psychiatric illness is usually associated with trichotillomania and trichotillophagia. The Clinical presentation of these patients can vary from gastric outlet obstruction to acute abdominal pain secondary to gastric perforation. We report the case of a 16-year old girl who presented with clinical features of peritonitis and epigastric mass. Her Personal history was positive for depressive symptoms, trichotillomania, and trichophagia. The CXR showed pneumoperitoneum confirming hollow

viscus perforation. An urgent laparotomy was performed that confirmed the diagnosis of gastric perforation due to a large trichobezoar. It was dealt with anterior gastrotomy and removal of the mass. Her post-operative phase remained uneventful and was discharged on the 6th postoperative day. She was referred for psychiatric treatment in the later follow-up.

Keywords: Trichobezoar, trichotillomania, trichotillophagia

6.13

EVALUATION OF LAWS AND POLICY INTERVENTIONS AIMED AT REDUCING ROAD TRAFFIC INJURIES IN SINDH, PAKISTAN

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Road Traffic Injuries (RTI) are among the top 15 causes of death worldwide and will become the fifth major cause of deaths by 2030. According to World Health Organization (W.H.O) global report on road safety, road traffic injuries accounts for 11% of the total burden of disease in Pakistan with Karachi ranking fourth in road traffic incidents globally. To deal with such incidents many traffic laws and policies are present in the country such as, Provincial Motor Vehicles (Amendment) Ordinance, 1978. However, the presence of laws and strategies not succeeded in decreasing the burden cause by injuries. Research Aim: Evaluation Of Laws And Policy Interventions Aimed At Reducing Road Traffic Injuries In Sindh, Pakistan. Methodology: The study proposed for this research is exploratory qualitative research design in which information collection procedure will be literature review in which gap analysis will be done by comparing provincial road traffic laws with the standard guidelines of W.H.O. Furthermore, to identify the preventive interventions taken at different level (pre-crash, crash and post-crash) interviews were taken by policy makers, policy implementers and

emergency department doctors, using a conceptual framework of Haddon matrix.

Conclusion: To conclude, Provincial Motor Vehicles (Amendment) Ordinance, 1978 which applies on each province in country is an outdated law as not such amendments were done in the law since the time it formed. The provincial traffic laws covers the speed limit law, drink-driving law, motorcycle helmet law, seat belt law (only driver seat) and law on mobile phone use (hand-held) while driving but it lacks some major things which are proposed by W.H.O in order to decrease RTI burden in any country such as there is no law on child restraint, hands-free mobile phone use, seat belt to rear seat occupants, no law to ban children passengers on motorcycle, no law for helmet standard and fastening, drink-driving law not mentioned random breath testing and the limit of Blood Alcohol Concentration (BAC). Furthermore, there is no law for pedestrians and post-crash care. Thus, the major barriers in the non-implementation of RTI laws is that there is no proper policy on road safety in province which covers road design, vehicle standards, and proper enforcement by higher authorities.

Keywords: Road Traffic Injuries, World Health Organization (W.H.O), Laws

6.14

SIMULATION BASED LEARNING: DISASTER PREPAREDNESS AND MASS CASUALTY MANAGEMENT FOR STAFF WORKING IN AREAS OTHER THAN EMERGENCY DEPARTMENT

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Introduction: Trauma in terms of mass casualty is a rarely happening scenario in any hospital. Therefore, it is important that hospital staffs go through frequent mock drills and simulations to stay prepared to deal with the real scenarios. Disaster preparedness involves each and every department in the hospital thus, training and

preparedness of every health care provider is equally important. Purpose: This course was designed for unit based staff and was aimed to prepare them for mass casualty management as per hospital protocol.

Method: A need assessment was conducted using a survey questionnaire to identify staff knowledge about mass casualty preparedness, hospital policy to response mass casualty and to identify their experience of handling mass casualty or participation in Mock Drills. The survey findings reflected inadequate staff knowledge about mass casualty management and related hospital policy. Majority staff had never experienced an actual mass casualty influx or participated in any mock drill. Based on need assessment findings, a simulation based workshop was designed. The workshop included review of hospital policy for mass casualty management, review of hospital disaster preparedness plan, primary and secondary survey, management of trauma, role of ward staff in responding mass casualty and a full day simulation including evacuation of ward area, preparing area for casualty, casualty management and stabilization. The effectiveness of the workshop was measured by pre and posttest and a self-efficacy form.

Results: Almost all participants showed improvement in level of knowledge about the topic. Majority of participants felt confident in dealing mass casualty. Participants acknowledge that they got clarity about supporting departments' and their individual roles during mass casualty influx.

Conclusion: Mass casualty influx is a rarely happening scenario. Frequent trainings and practice is essential for staff preparedness to deal real scenarios. Simulation based learning for mass casualty preparedness enhances staff level of confidence and role clarity.

Keywords: Simulation, Mass Casualty, Trauma

6.15

NEED FOR A TRAUMA CURRICULUM FOR HEALTH CARE PROFESSIONALS: A LOWER MIDDLE INCOME COUNTRY EXPERIENCE

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Introduction: Trauma is associated with long term psychological and medical morbidity, resulting in increased health care costs and negative health outcomes. Current COVID pandemic is another trauma that can result in long term mental health issues. Therefore healthcare professionals must learn to support and effectively communicate with trauma patients for improved patient-centric care. Yearly one day CME workshops were initiated at AKU with the theme of trauma informed care. This paper highlighted the gap of trauma curriculum in current training of health care professionals, using the information gained during Trauma informed care workshops for healthcare personnel at Aga Khan University Hospital-Karachi.

Methodology: Currently four workshops have been held at AKU. The target populations were healthcare professionals, postgraduate medical trainees, medical students and psychologists. Total participants were limited to 30 for each workshop. Sessions were moderated by a team of psychologist, psychiatrist, pediatrician and nursing representative. Qualitative feedback was taken regarding the process and benefit of the intervention. Handouts were given at the end of the session regarding trauma related common psychiatric symptoms and basic supportive interventions. Helpline numbers for legal help was also provided.

Results: On qualitative questioning, participants highlighted their lack of knowledge regarding this topic and stated their extreme discomfort while assessing trauma survivors. They

mentioned that there was a need for embedded trauma training for medical students and postgraduate trainees. Most of the participants stated the need for more frequent workshops, a second level workshop focused on psychiatric first aid and basic supportive therapeutic skills. A few mentioned retriggering of their own past traumas during the workshop and need for more guidance and support during sessions.

Conclusion: There is a need for Trauma curriculum for health care professionals, during their training years. The current Covid-19 pandemic only underscores the relevance and urgent need of this training, as soon health professionals will attend patients with the background of this trauma.

Keywords: trauma, curriculum, health care professionals

6.16

A PROSPECTIVE ANALYSIS OF CLINICAL AND FUNCTIONAL OUTCOMES IN PROXIMAL HUMERUS FRACTURES IN ADULTS

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Objective: To evaluate clinical and functional outcomes of proximal humerus fractures managed with different treatment approaches and to evaluate patient factors that influence clinical outcomes. *Methods:* Current prospective cohort study data was obtained from trauma registry at Aga Khan University from June 2015 to October 2019. Sixty-nine adult patients with proximal humerus fracture were eligible. Patients were managed either surgically or conservatively. Outcomes were assessed at 6 weeks, 3, 6 and 12-month follow-ups. Functional and clinical outcomes were assessed using Quick Disability of the Arm, Shoulder and Hand score. Outcomes were compared between different treatment groups and between isolated versus proximal humerus associated with other upper limb fractures.

Results: Out of the 69 patients, highest affected age group was 56 years and above. Fifty-eight (84%) patients were managed surgically of which 43 underwent Proximal Humeral Internal Locking System procedure. Revision surgery was performed in 3% patients. There was non-significant difference in clinical and functional outcomes at follow-ups 6 weeks onwards between isolated versus proximal humerus fractures with additional upper limb fractures. At 6-week follow-up, there was trend toward significance in outcomes between PHILOS versus PHILOS with bone graft/BMP ($p=0.07$) while at 3-month follow-up, there was significantly better outcomes in all treatment groups compared to PHILOS with bone graft/BMP ($p=0.004-0.035$). Males having significantly better recovery at 3-month follow-up as compared to females ($p=0.04$). Post-surgical complications were noticed in patients who underwent PHILOS with or without bone graft/BMP.

Conclusion: Current data suggest that PHILOS with bone graft/BMP leads to delayed recovery in relation with other treatment procedures. Males recover earlier than females. Although PHILOS procedure showed better clinical and functional outcomes, associated post-surgical complications cannot be ruled out. Additionally, there is no significant difference between clinical and functional outcomes in proximal humerus fractures either isolated or associated with other upper limb fractures.

Keywords: Trauma fractures, Proximal humerus, Clinical and functional outcomes

6.17

PATIENT OUTCOMES ASSOCIATION WITH PATIENT FACTORS AND CARE PROVIDED: TRAUMA REGISTRY DERIVED COHORT STUDY

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Objective: To determine the association of delay in treatment with injury-specific patient outcomes.

Method: This was a single-center, longitudinal cohort study on orthopaedic trauma registry. Data on patients enrolled between June 2015 and June 2018 were analyzed. Data was collected from admitted consenting patients' medical records. Definitive surgical care provided after 24 hours was considered as 'delayed surgical treatment'. Outcomes of patients were serially assessed on follow-up visits up to 12 months using injury-specific scoring system.

Results: A total of 789 patients, were enrolled with 856 upper or lower extremity injuries altogether; in 67 cases both extremities were involved. Surgery was done in 90% while 10% were managed conservatively. A delay in the surgical procedure was experienced by 185(23%) patients. Mortality was 3.28% (6 of 185) in the delayed treatment group and 1% (6 of 603 patients) in the early treatment group ($p=0.046$). In proximal femur there was a non-significant trend towards better outcomes in the early treatment group at 3 and 12 months ($p=0.06$), while in Tibial shaft fractures, there was a non-significant trend towards better outcomes in the delayed treatment group at 3 and 6-months ($p=0.09$). There was no association between treatment delay for distal radius and proximal humerus fractures and their outcomes.

Conclusion: Our trauma registry model provides outcomes data enabling identification of patient subsets who did not achieve good outcome, and suggests possible role of delay in surgical treatment beyond 24 hours in the outcomes.

Keywords: Delay in care, Registry, Patient factors

6.18

COST OF HEAD INJURIES CAUSED BY MOTORCYCLE CRASH AMONG HELMET USERS AND NON-USERS IN A PUBLIC TERTIARY CARE HOSPITAL OF KARACHI, PAKISTAN.

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Objective: to estimate the difference in the healthcare cost of head injuries (TBIs and non-TBIs) among motorcycle riders who were wearing helmet and those who were not wearing helmet at the time of crash. *Methods:* Motorcycle crash victims that were brought to a public tertiary care emergency in Karachi were studied through descriptive cross-sectional design. A self-structured standard questionnaire form was used to collect data on demographics, injury pattern, helmeting practice, length of hospital stay, out-of-pocket payments (OOP), healthcare service utilization at the facility and all direct and indirect medical costs incurred during hospitalization period.

Results: 323 motorcyclists were involved in the accident, 112 patients had head injuries with mean age of 32 years old. The helmeted motorcyclists had a significantly lesser median total healthcare cost of PKR 10796 (\$69) [IQR 9851(\$63) -12581(\$80)] as compared to higher cost of PKR 12113 (\$77) [10431(\$66) - 50545(\$322)] by the non-helmeted. The helmet users have also consumed significantly less healthcare cost on diagnostic services of laboratory and radiology investigations as compared to non-users which are PKR 365 (\$2) [365(\$2) - 548(\$3)] vs 3650 (\$23) [365(\$2) - 5840(\$37)] p value =0.027 and PKR 4096 (\$26) [3166(\$20) - 5678(\$36)] vs 4750 (\$30) [3166(\$20) -11358(\$72)] p value =0.049 respectively. The helmet users and their family members have also spent significantly less

amount of money on stay, travel, food and out-of-pocket payments (OOPs) for medicines and radiological services compared to non-users. They were more likely to be discharged from the emergency department and were less likely to require intensive care admissions (p=0.020). *Conclusion:* The results of this study demonstrates that helmet use among motorcyclists can significantly reduce healthcare costs and healthcare resource utilizations during hospitalization in managing head injuries. Thus, it is important to implement strict helmeting practice to decrease cost burden on healthcare facility and patient's care givers.

Keywords: motorcycle, cost, head-injury

6.19

AVAILABILITY AND USE OF AUTOMATED EXTERNAL DEFIBRILLATORS IN PUBLIC PLACES IN KARACHI, PAKISTAN

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Aim: Out-of-hospital cardiac arrest (OHCA) is a leading cause of mortality across the globe, with less than 10% of patients surviving. Most developed countries have enacted laws concerning public placement of Automated External Defibrillators (AED). However, in a developing country like Pakistan, management of OHCA is starkly different with no national policies governing AED installation. This study aims to provide a baseline survey about the availability and use of public AED in a major city of Pakistan.

Methods: A telephone survey was conducted of 100 public and private-owned establishments in Karachi that were identified through purposive sampling based on the standard requirements for AED installation.

Results: A total of 53 Establishments (32 private-owned and 21 public) completed the survey. 9 (17%) of these were aware of AEDs and only 1 had an AED at their premises. 25 (47.2%) expressed having an AED at their premises would be useful, while 25 were undecided. 22 (41.5%) reported they would consider installing an AED at their premises, while 24 (45.3%) were undecided. 37 (69.8%) Establishments expressed a positive desire to get trained in giving Basic Life Support.

Conclusion: There is a need and general willingness for a city-wide AED placement project. While presenting several recommendations for AED placement and training, this research offers hope for a reduction in mortality due to OHCA in developing countries.

Keywords: Cardiac Arrests, Cardiac Emergencies, Emergency

6.20

THE NEED FOR VIRTUAL HEALTHCARE SOLUTION FOR POST-OPERATIVE PATIENTS TO REDUCE READMISSION IN EMERGENCY DEPARTMENT IN SINDH-PAKISTAN

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Introduction: Readmission rates and revisits of patients impose a huge burden on the health care system. It is observable that this issue is not addressed adequately because there is no regulatory system after discharge where patients are reassessed for postoperative complications. Therefore, Post-operative management is a challenge for the health care system, and it is indispensable to diminish complications among patients.

Objectives: To determine the need for post-operative discharge care and solution for patients with complex discharge summaries.

Methods: A cross-sectional study was conducted in different hospitals in Karachi and Hyderabad in which 40 participants were enrolled including nurses, medical officers, and ward coordinators who belong to the patient's admission unit. Data was collected through Google form, and descriptive analysis of data was performed.

Results: According to our data, 66% of re-admitted patients has re-admitted due sepsis, 17 % of the readmitted patient has readmitted with hemorrhage. 46% participants have reported that there is no system of monitoring sensitive post-operative patients in the respective hospitals. 64% of participants report that transitional care will be helpful to reduce the re-admission rate. 41% participants reported that minor complication such as discoloration, itching on the procedure, the area can be treated in primary health care set up these symptoms may not be neglected at any point and this will also reduce unnecessary hospital admission. 41% of participants felt that because of inadequate knowledge about PODC patients ignored the minor symptoms such discoloration of surgical side, foul smell, itching which may lead to sepsis and gangrene of affected area

Conclusion: Re-admission rate can be reduced by providing continued care, by designing online web portal services specially customized for PODC. One of the solutions for PODC is Maseha health. It is a health portal service which aims to diminish the re-admission rates by providing care to the patient through post-discharge forms. It will help in tracking down the issues and complications of patients and will aid them to access healthcare services timely for adequate care.

Keywords: Re-admission, Post-operative care, Emergency Room

6.21

ACUTE CHLORINE GAS INHALATIONAL INJURY IN AN INDUSTRIAL ACCIDENT: A STUDY ON SHORT TERM CLINICAL FEATURES AND OUTCOMES

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Background: Chlorine gas, a simple halogen irritant, is available worldwide as a household and industrial chemical. Exposure can result from industrial accidents, inappropriate household cleaning agents use, swimming pool chlorination accidents, burning of solid chlorine products and deliberate release as a chemical weapon such as in World War One and Syrian Conflict. On March 6th, 2020, Chlorine gas leak was reported at Engro Polymer & Chemicals Plant in Karachi City, over 100 workers were reported to be exposed and were taken to different health care facilities in Karachi, some were brought to Aga Khan University Hospital for further management.

Objective(s): To evaluate acute clinical presentation and outcomes of chlorine gas inhalational injury

Methodology Setting: Retrospective charts and file review was done of patients presenting to Emergency department Aga Khan University Hospital with history of Chlorine gas exposure at the Engro Plant from 6th March to 14th March. Outcomes were measured by length of hospital stay, complications and mechanical ventilation requirement. Data analysis was done in SPSS Version 23

Results: A total of 38 patients presented to emergency department with history of chlorine gas exposure. All 38 patients were male, mean age was 33.1 ± 8.1 years. 13.2 % percent had comorbid conditions. Most common presenting symptom was dyspnea 86.8 % (33) followed by cough in 71.1% (27). Mean pulse rate, respiratory rate, systolic and diastolic blood pressures on presentation was 98.24 ± 8.19

beats/min, 23.56 ± 5.9 breaths /min, 128 ± 16.9 mmHg and 75.4 ± 10.8 mmHg respectively. Mean TLC count on presentation was $13.4 \pm 4.64 \times 10^9/L$, 44.7% had neutrophilia. 13.2 % (5/38) patients had infiltrates on chest x-ray. 47.4% (18) were managed with high flow oxygen therapy, 23.7% (9) required non-invasive ventilation and one patient was intubated due to development of pneumomediastinum on repeat presentation in ER. 33(86%) required hospitalization and 15.8% patients (6) had repeat presentation requiring hospitalization or emergency department visit. Mean length of stay was 1.5 days and no patient died.

Conclusion: Acute chlorine gas industrial accidents can result in public health emergencies. Majority of patients presenting with acute chlorine gas exposure showed good clinical outcomes and rapid recovery, however, a high index of suspicion and vigilance should be maintained for complications such as pneumomediastinum and acute respiratory distress syndrome in these patients.

Keywords: Chlorine gas, accidental exposure, acute lung injury

7.1

EFFECT OF LIGHT EMITTING DIODE CURING MODES ON DEPTH OF CURE IN BULKFILL COMPOSITE RESIN

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Objective: BulkFill have been introduced to overcome disadvantages of conventional composites. However, these materials have conflicting reports on their success. Hence, the objective of this study is to evaluate the depth of cure in SDR BulkFill composite resins polymerized by constant, pulse and ramped LED curing modes.

Materials and methods: Thirty-three cylindrical composite specimens, with dimension of 8x4mm were polymerized in preformed Teflon mould using Light-emitting diode under one of the three modes: Group 1-constant mode; Group 2-pulse and Group 3-ramped mode. Once polymerized, each specimen was extruded from the mould and using the ISO 4049 scrapping method, uncured resin was removed. Specimen lengths were measured with a Vernier calliper. Each specimen was measured thrice and the mean was taken as the depth-of-cure. The data was subjected to ANOVA and Tukey's post hoc analysis.

Result: In this study, pulse, constant and ramped modes resulted in depth of cure of SDR BulkFill composite of 2.88 ± 0.27 mm, 2.92 ± 0.29 mm and 3.18 ± 0.26 mm, respectively. The difference in depth of cure between three modes on ANOVA was statistically significant (p-value=0.03). Tukey's post-hoc analysis revealed statistically significant difference among pulse and ramped curing mode (p-value=0.04).

Conclusion: Maximum depth of cure of SDR Bulkfill composite was achieved by ramped cure mode of LED unit followed by constant and pulse modes.

Clinical Significance: The results of this study can enable the clinician to reduce chair time and

effort in layering or adapting of composites when restoring deep cavities in order to maintain the quality of care with predictable outcome.

Keywords: Composite resin, curing light, in-vitro techniques

7.2

COMPARATIVE EVALUATION OF PROTAPER NEXT FILE AND PROTAPER UNIVERSAL RETREATMENT FILE IN REMOVAL OF GUTTA PERCHA: AN IN-VITRO STUDY

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Introduction: The removal of old filling material and sealer from canal is an important factor for adequate debridement in endodontic retreatment for which various types of nickel titanium (NiTi) rotary instruments have been introduced. This study will help us find an efficient file system for endodontic retreatment for clinical practice.

Objective: To compare means of remaining Gutta Percha (GP) (in mm²) using ProTaper Next (PTN) and ProTaper universal retreatment file (PTUR) system during root canal retreatment. Methods Sixty human single rooted straight canals were obturated using standardized method to an apical ISO size X2, with thermoplastic GP. Retreatment was performed with PTN and PTUR files. Time for each method was noted. Standardized radiographs were obtained and analyzed on Image J to evaluate remaining GP in apical, middle and coronal thirds in order to score presence or absence by trained observers on two separate occasions. Independent t-tests were applied to compare remaining GP and time required to remove it among both groups. Chi-Square was applied to determine the association of remaining GP w.r.t location in canal. Level of significance was kept at (P value < 0.01) Results Mean remaining GP in PTN and PTUR file was 1.71 ± 2.1 and 2.01 ± 2.6 respectively. The mean time required to remove maximum GP was 2.58 ± 0.75 and 3.16 ± 0.91 in PTN and PTUR

groups. The amount of GP and time required to remove maximum root filling material among both groups were not significantly different (p value > 0.01). However, PTN was found to be more efficient in removing coronal GP (P value < 0.01).

Conclusion: The results indicated that PTN and PTUR are equally efficient in removing GP from the canals. PTN is more efficient in removing GP from the coronal third of the root.

Keywords: endodontics, Gutta percha, Retreatment

7.3

MAKING A DIFFERENCE IN GERIATRIC CONDITION: INTRODUCING ADVANCED PRACTICE NURSE

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Background/rationale: The objective of this review is to enlighten the requirement for Advanced practice nurses (APN) to manage older adult's condition by unfolding the state of advancement of APN roles in geriatrics condition. Emerging Geriatrics APN role could progress accessibility in care aspect where there is inadequate availability of doctors and on other hand there is increasing demand in health care industry.

Research question: 1. What is APN role in geriatric condition? 2. What is the significance of APN in management of geriatric care?

Method: A systemic review of ten articles from last 10 years; was conducted using PubMed, science direct, CINAHL, Cochrane Library and Google scholar. It provided a synopsis of the current position of role and importance of APN in Geriatrics care, as well as connection of APN in the management of geriatric conditions.

Findings: The finding reveals an optimistic impression of APN on the quality of life of the geriatric population. Studies have shown that

due to cumulative demand for healthcare services in older adult population, it is commissioning a great pressure on healthcare industry around the globe. It is now known that early recognition and treatment of geriatric health conditions such as weakness, sarcopenia, falls, anorexia of aging, and cognitive deterioration APN's will play a significant role in early detection and disability prevention among older adults.

Conclusion: In summary, the older population is cumulative across the globe, Therefore, it is obvious that there is a noticeable shortage in the number of proficient health care providers in the field of geriatrics health. These necessities a planned, collective, systematic and evidence-based process which offers supportive role that can meet the need and goals for geriatric population conditions. Actual or potential implications: APNs have made vast developments over the period of last decade by caring for geriatrics population and combating ageism through providing older adults the determination in their own treatment choices. APN's can prove their significance by playing a vital role in deterrence, screening, and diagnosis of aging health conditions through evidence-based care, standardize comprehensive assessment for geriatrics, and emphasis on person-centered care, precisely throughout care transitions.

Keywords: Geriatric, Advanced Practice Nurse, Nurse

7.4

A DENTAL, SKELETAL AND SOFT TISSUE COMPARISON BETWEEN ORTHODONTIC PATIENTS TREATED BY PREMOLAR EXTRACTION AND NON-EXTRACTION – A CROSS-SECTIONAL STUDY

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Introduction: Various treatment modalities exist to improve and correct class I malocclusion. This study was conducted to evaluate the dental,

skeletal and soft tissue changes in patients treated by premolar extraction (PME) and non-extraction (NE).

Materials and Methods: A cross-sectional study was conducted including subjects ideally planed for PME. Pre-treatment and post-treatment lateral cephalograms were compared amongst the two groups. ABO-OGS was used to score the post-treatment casts and soft tissue profile silhouettes were judged by a panel of orthodontists to evaluate improvement amongst the two groups. Comparisons between the two groups were performed using the Mann Whitney U-test. Spearman correlation was used to study correlation between the assessment methodologies.

Results: Highly significant differences were observed between the two groups for ABO-OGS scores ($p \leq 0.001^{**}$) and profile silhouette assessment ($p \leq 0.001^{**}$). On comparison of post-treatment cephalometric readings, highly significant differences were seen for the dental variables UISN, IMPA and I-I ($p \leq 0.001^{**}$). Statistically significant differences were seen for all soft tissue cephalometric variables. Highly significant moderate negative correlation ($r = -0.410$) was seen between profile silhouettes and ABO-OGS scores. Highly significant strong negative correlation ($r = -0.642$) was seen between profile silhouettes and the lower lip.

Conclusions: Dental and soft tissue changes were highly significant are found to be in the ideal range when treated with PME. PME and NE treatment modalities do not significantly affect the skeletal parameters as seen on the lateral cephalogram.

Keywords: Soft tissue, Malocclusion, Premolar extraction

7.5

COMPARISON OF TREATMENT OUTCOMES USING IOTN, ICON AND PAR INDEX IN SUBJECTS WITH CLASS I MALOCCLUSION TREATED BY THREE DIFFERENT METHODS – A CROSS-SECTIONAL STUDY

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Introduction: Various treatment modalities exist to improve and correct class I malocclusion. This study was conducted to evaluate the outcomes of non-extraction (NE), premolar extraction (PME) and mandibular incisor extraction (MIE) treatment modalities in subjects presenting with class I malocclusion.

Materials and Methods: A cross-sectional study was conducted at a tertiary care hospital using pre and post-treatment dental casts along with intra-oral photographs of 90 orthodontic subjects. These subjects were divided equally into NE, PME and MIE groups and scored using the IOTN, ICON and PAR indices. Non-parametric tests were run to compare pre and post-treatment scores and to evaluate the percentage and categorical changes for the treatment modalities. Pairwise comparisons were performed using the Mann Whitney U-test. **RESULTS:** Statistically significant differences ($p \leq 0.001$) were seen between the pre and post-treatment scores for all modalities. Statistically significant percentage improvements were seen between the three treatment modalities for the PAR ($p = 0.010$) and ICON ($p = 0.003$) indices. Significant categorical improvements were found for the aesthetic component (AC) ($p = 0.012$) amongst the three groups. Pairwise comparison revealed significant differences between the NE and MIE groups (ICON: $p = 0.001$, AC: $p = 0.018$); and PME and MIE groups (PAR: $p = 0.002$, ICON: $p = 0.007$, AC: $p = 0.007$).

Conclusions: Post-treatment scores of all indices were reduced with significant differences found

among the treatment modalities for all except DHC index. Pairwise comparison revealed sub-optimal functional results with the MIE group. The best occlusal and aesthetic treatment outcomes were achieved with the PME group.

Keywords: Index of orthodontic treatment need, Tooth extraction, Malocclusion

7.6

FREQUENCY OF INHERITED PLATELET DISORDER IN A TERTIARY CARE ACADEMIC CENTRE.

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Introduction: Hereditary functional platelet disorders are a rare group of platelet defects which are characterized by a life-long bleeding diathesis with normal or low platelet counts. Most common defects are Glanzman's thrombasthenia and Bernard Soulier syndrome. Glanzman's thrombasthenia, an autosomal recessive disorder, is characterized by absence of surface membrane (GpIIb/IIIa). Aggregation is seen with ristocetin and there is no aggregation with ADP, adrenaline or collagen. In Bernard Soulier syndrome, an autosomal recessive disorder, there is lack of Ib glycoprotein and absent or markedly reduced platelet aggregation with ristocetin. Platelet aggregation test is used as a screening tool to diagnose inherited platelets disorder.

Objective: To determine the frequency of inherited platelet disorder by platelet aggregation study.

Material & Methods: This was a cross sectional descriptive study covering a period of 6 months from 1st August 2019 to 31st January 2020. This study was conducted at Section of hematology, The Aga Khan University (AKU) Hospital Karachi. Venous blood, was collected into 3.2%/0.109M citrate in a ratio of 1:9, samples were transported to the laboratory at room temperature. PRP is prepared by centrifugation

at 20°C for 10-15 minutes at 150-200g. Addition of a platelet agonist to the PRP leads to platelet activation, agonist used are ADP, epinephrine, ristocetin, and collagen.

Results: 108 samples received for platelet aggregation study, 34 cases were positive for platelet dysfunction which includes Glanzman's thrombasthenia (n=20), Bernard Soulier (n=6), ADP receptor defect (n=4), Epinephrine receptor defect (n=3) and defective response to all agonist (n=1). While 55 cases were normal, 09 cases were not diagnostic and 10 cases were not performed due to low platelet count and transfusion history.

Conclusion: Platelet aggregometry detected platelet dysfunction in 31% of the test performed in the laboratory. Glanzman's thrombasthenia and Bernard Soulier were the most frequent inherited platelet disorder.

Keywords: PRP: platelet rich plasma, ADP: Adenine di-Phosphate, GpIIb/IIIa); glycoprotein IIb/IIIa

7.7

COMPARISON OF ANCHORAGE LOSS BETWEEN CONVENTIONAL AND SELF-LIGATING BRACKETS – A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Anchorage is defined as the resistance to unwanted tooth movement. In orthodontics, loss of anchorage can be detrimental to treatment. The proponents of orthodontic self-ligating brackets advocate use of extremely light forces thereby reducing anchorage burden. Therefore, the aim of this study was to compare anchorage loss during canine retraction between conventional brackets (CB) and self-ligating brackets (SLB).

Materials and Methods: Electronic search was conducted on PubMed, EBSCO, CINAHL, Dental and Oral Science along with

handsearching the Cochrane database, Google Scholar and clinicaltrials.gov which yielded a total of 3722 hits. After screening for eligibility, five studies met the inclusion criteria; four studies were included in the meta-analysis, which was performed using the RevMan Software. Outcomes studied were anchorage loss, retraction velocity and total amount of canine retraction.

Results: A total of 100 subjects were included in this systematic review. All studies were clinical trials using a split-mouth design. Of the five studies included, only one reported significant differences between CB and SLB for anchorage loss, retraction velocity and total amount of canine retraction ($p\text{-value} \leq 0.001$). Results of the meta-analysis showed that overall effect size favored SLB for all outcome measures.

Conclusions: This systematic review found insufficient evidence to suggest a significant difference in anchorage loss between the CB and SLB groups. The meta-analysis favored the SLB group; however, further studies are needed to canonically establish their clinical superiority. Review registration PROSPERO 2019 CRD42019133217

Keywords: Anchorage, Conventional brackets, Self-ligating brackets

7.8

KNOWLEDGE AND AWARENESS OF GENERAL DENTISTS, DENTAL SPECIALISTS AND DENTAL ASSISTANTS REGARDING NOVEL CORONAVIRUS DISEASE

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Introduction: Aim of this study is to assess the knowledge and awareness among dental specialists, general dentists and dental assistants regarding standard patient care guidelines on restricting the spread of cross-infection.

Materials and Methods: A survey based cross-sectional study was conducted on a sample size of 84 patients. This sample was equally divided into three groups of dental specialists, general dental and dental assistants. A modified version of validated questionnaires of Khaader et al and Modi et al was used to evaluation of awareness of dental specialists, general dentists and dental assistants regarding COVID-19 as per Center of Disease Control (CDC) guidelines. One-way ANOVA was applied to assess the difference of scores of knowledge regarding COVID guidelines. Pair-wise comparisons were performed using post-hoc Tukey test among the three dental professional groups based on the scores of questionnaire. Hypothesis of influence of one variable on knowledge scores was tested with univariate linear regression.

Results: Among dental specialists 13 were orthodontists, 09 operative dentists, 08 maxillofacial surgeons, 04 prosthodontists, one periodontist and responded. Among three groups we found a significant difference ($p = 0.02$) of knowledge scores between dental specialist, general assistants and dental specialists. On descriptive analysis we found that mean scores of dental specialists were 8.53 ± 2.10 , general dentists were 9.95 ± 2.6 and dental assistants were 10.05 ± 2.1 . On pairwise comparison between three groups we found that there was a significant difference ($p = 0.02$) between knowledge and awareness scores of dental specialists as compared to dental assistants.

Conclusions: Hospitals should conduct mandatory workshops and seminars for awareness of nCoV pandemic and disinfection, not specialist but all the staff working underneath.

Keywords: Cross-infection, dental healthcare, treatment modalities

7.9

ANALYSIS OF FACIAL PROPORTIONS IN SKELETAL CLASS II SUBJECTS TREATED WITH CLARK'S TWIN BLOCK APPLIANCE THERAPY – A RETROSPECTIVE LONGITUDINAL STUDY

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Introduction: In dentistry, the golden proportion (1:1.618) has been used to assess facial balance, esthetics and the diagnosis of the dento-skeletal disharmony. The aim of this study was to determine the influence of Clark's twin block appliance therapy (CTB) on achieving golden proportion in post-treatment facial profiles of skeletal class II patients.

Materials and Methods: A retrospective longitudinal study was conducted on a sample of 44 skeletal class II subjects treated with CTB, using pre- and post-treatment lateral cephalometric radiographs. Thirteen Ricketts facial proportion ratios were measured on pre- and post-treatment lateral cephalograms. Paired t-test was used to compare the pre- and post-treatment values of the Ricketts ratios after CTB and to assess whether those ratios moved closer to or away from the golden proportion.

Results: A statistically significant difference in pre- and post-treatment values were found for ratios four ($p = 0.020$), nine ($p = 0.041$), ten ($p = 0.001$), and thirteen ($p = 0.013$). Ratios four, nine and thirteen moved closer to the golden proportion, whereas ratio ten moved away from the golden proportion after CTB therapy.

Conclusions: Prior to treatment with CTB, most of the facial proportion ratios did not approach the golden proportion in class II subjects. Treatment with CTB appliance can bring an individual's facial proportions closer to the golden proportion, thereby improving the facial esthetics.

Keywords: Cephalometry, Golden proportion, Clark Twin Block

7.10

NURSES' PERCEPTIONS ABOUT DIGNITY OF INTUBATED PATIENTS IN THE INTENSIVE AND CRITICAL CARE UNITS

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Background: The intensive and critical care units are high dependency areas, with acutely ill patients requiring complex care. The intubated status of the intensive and critical care patients makes them dependent on health care providers not only for acute care, but also for intimate care, imposing a threat to their dignity. Nurses, being the central care providers, become the stakeholders for dignity promotion. The incorporation of dignity in patient care improves the quality of care, and promotes the health and well-being of intubated patients.

Objective: The purpose of the study was to explore nurses' perceptions about the dignity of intubated patients in the intensive and critical care units.

Research Design: A qualitative descriptive exploratory study design was used to explore the nurses' perceptions about the dignity of intubated patients. Participants and research context: The intensive and critical care nurses of a tertiary care hospital were recruited using the purposive sampling technique. The data was collected through in-depth individual interviews, using a semi-structured interview guide. The findings were manually analyzed into themes and categories through content analysis. Ethical

Consideration: The study was conducted after the approval from the Ethical Review Committee of the tertiary care hospital. Findings: Four major themes emerged from the data analysis: (i) two sides of the contemporary nursing practice; (ii) benefits of dignified nursing care; (iii) challenges to the dignity of

intubated patients; (iv) strategies for promoting the dignity of intubated patients. Discussion: dignity incorporates both the science and the art of nursing. The provision of dignified care is the core component of the quality nursing care and patient well-being in the high dependency units. Conclusion: This is the first exploratory and descriptive study conducted in Pakistan that explored the nurses' perceptions about the dignity of intubated patients, and also generated contextual understanding about the phenomenon.

Keywords: dignity, intubated patients, intensive and critical care

7.11

INFLUENCE OF PRE-TREATMENT COMPLEXITY AND TREATMENT MODALITY ON DURATION OF ORTHODONTIC TREATMENT: A CROSS-SECTIONAL STUDY

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Introduction: Adult orthodontic patients are highly concerned about the duration of treatment. This study aimed to evaluate the influence of pre-treatment factors and treatment modalities on the duration of treatment.

Materials and Methods: A cross-sectional study was conducted on a sample size of 90 patients. The sample was distributed based on the duration of treatment as short (≤ 20 months), normal (21-29 months) and long (≥ 30 months) duration. Pre-treatment complexity was assessed by ICON, IOTN and PAR indices. The Kruskal-Wallis test was used to compare the mean difference for the duration of treatment between non-extraction (NEF), all first premolars extraction (all 4's), mandibular incisor extraction (MIE), TAD's supported upper arch intrusion (TUI) and molar mesialization (MM) cases. Linear regression model was used to predict and quantify the influence of pre-treatment factors and treatment modality on the

duration of orthodontic treatment. Results: A statistically significant longer duration of orthodontic treatment was found with TUI ($p < 0.001$) and MM ($p < 0.001$). However, NEF and MIE cases followed shorter duration of treatment. The mean duration of treatment in NEF was 24.83 ± 6.4 months, all 4's was 36.05 ± 6.9 months, MIE was 27.16 ± 6.8 months, TUI was 54.1 ± 12.1 months and MM was 48.2 ± 14.2 months. Multiple linear regression model explained 71% of the variance in treatment duration using pre-treatment complexity as assessed by ICON, IOTN AC, PAR and the followed treatment modality.

Conclusions: Severity of pre-treatment complexity was directly associated with the duration of treatment. Treatment modalities such as TUI and MM followed longer duration of treatment as compared to non-extraction and mandibular incisor extraction.

Keywords: Duration of treatment, pre-treatment complexity, treatment modalities

7.12

ASSESSMENT OF COOPERATION AND COMPLIANCE IN ADULT PATIENTS AT THREE STAGES OF ORTHODONTIC TREATMENT AT A TERTIARY CARE HOSPITAL: A CROSS-SECTIONAL STUDY

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Introduction: Study was conducted to assess cooperation and compliance in adult orthodontic patients during the leveling and alignment, space closure/molar correction and finishing stages of orthodontic treatment.

Materials and Methods: A cross-sectional study was conducted on adult patients undergoing fixed orthodontic mechanotherapy in a tertiary care hospital. Patient cooperation was assessed during orthodontic treatment stages using Orthodontic Patient Cooperation Scale (OPCS) and compliance by Clinical Compliance

Evaluation (CCE) form. A sample size of 38 subjects were included for each stage of treatment; therefore, a total 114 subjects were recruited for the study. Shapiro-Wilk test identified that the data were normally distributed. One way ANOVA was used to evaluate the percentage cooperation and compliance among three stages. Pair-wise comparisons among the three stages were performed using Post-hoc Tukey test.

Results: Statistically significant difference was seen for scores of patient cooperation and compliance using CCE ($p = 0.01$); however, the results of the OPCS were non-significant ($p = 0.16$) among the three stages of treatment. There was a significant difference ($p = 0.01$) in patient cooperation and compliance between space closure/molar correction and finishing stage. Highly significant ($p < 0.001$) decline in oral hygiene was found with the progression of orthodontic treatment, from space closure/molar correction to finishing stage of treatment.

Conclusions: Improvement in the cooperation and compliance levels for adult orthodontic patients was observed during space closure/molar correction stage, which then showed a decline as the treatment progressed. Maintenance of oral hygiene was gradually reduced with progression of orthodontic treatment.

Keywords: orthodontic treatment, pre-treatment complexity, treatment modalities

7.13

CLINICAL OUTCOME OF FIBRIN GLUE IN MANAGING INTRACTABLE GINGIVAL BLEEDING IN PATIENTS WITH INHERITED BLEEDING DISORDERS

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Introduction: Patients with inherited bleeding disorders (IBD) often suffer from poor oral health with subsequent gingival bleeding. This may be intractable to routine management requiring transfusion of blood or blood products. We report the outcome of fibrin glue in managing oral bleeding of patients having IBD.

Materials and methods: This was a case-control study conducted from 2018 to 2019 at Fatimid Foundation Karachi center (FFK). Forty patients with IBD having gingival bleeding of ≤ 7 days were enrolled in the study and divided into two groups: group A ($n=20$) received fibrin glue while group B ($n=20$) did not. Both groups had dental evaluation initially and periodically. Outcome metrics were compared for number of treatment days, units transfused and therapeutic compliance by Kruskal- Wallis test with threshold of significance set at p -value of < 0.05 .

Results: There were 24 males (60%) and 16 females (40%) with a median age of 22 years (IQR 3-1: 35-5) years. Majority of the patients had platelet dysfunction disorders like Glanzmann's thrombasthenia or GT (40%) and von Willebrand Disease (37.5%). Group A (receiving FG) required significantly reduced number of blood or blood products ($n=154$) compared to group B ($n=204$) (p

Keywords: Fibrin glue, blood coagulation disorders/complications, dental care

7.14

A COMPARISON BETWEEN ULTRASOUND GUIDED ILIOINGUIAL/ILIOHYPHOGASTIC NERVES BLOCK AND INFILTRATION OF WOUND WITH ROPIVACAINE ON POST-OPERATIVE PAIN AFTER OPEN REPAIR OF UNILATERAL INGUINAL HERNIA IN ADULTS: A RANDOMIZED CONTROLLED TRIAL

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Introduction: Pain is a concerning problem in patients with open inguinal hernia repair. Hence, multi modal analgesia is recommended to overcome this issue. Therefore this randomized controlled trial was conducted to compare the analgesic efficacy of ultrasound guided Ilioinguinal / Iliohypogastric nerve block vs. local anaesthetic infiltration of wound with Ropivacaine on postoperative pain after open repair of unilateral inguinal hernia.

Objective: Primary: To compare the postoperative pain scores in patients undergoing open inguinal hernia repair between two groups receiving analgesic interventions. Secondary: To compare the safety, opioid use over 24 hours postoperatively and patient satisfaction between the two groups. Materials and

Methods: 60 participants for elective unilateral open inguinal hernia repair were included. Patients were randomly allocated (30 each) to one of the two groups. Group I received ILI/IHG nerve block where 20mls 0.25% Ropivacaine was infiltrated around the nerves under U/S guidance. Group II received local anaesthetic infiltration (Ropivacaine 20mls 0.25%) at the end of surgery at the incision site to provide postoperative analgesia. Postoperative pain at rest (static) and on movement (dynamic) was assessed at 2hrs, 4hrs and 24 hrs using VAS pain scale. Result: The average age of the patients was 47.43 ± 16.41 years and there were 57 (95%) males and 3 (5%) females. Mean pain score at rest was not statistically significant between groups over time while at movement mean pain score was statistically significant at 4 hours but it was not statistically significant between groups at 2hrs and 24 hrs. Difference between opioid consumption and patient satisfaction were also not statistically significant

Conclusion: There was no significant difference in mean pain score between ilioinguinal / iliohypogastric nerves block with Ropivacaine or wound infiltration with Ropivacaine. Therefore both techniques can be used as

effective modalities to control postoperative pain and early hospital discharge in patients undergoing inguinal hernia repair under general anesthesia.

Keywords: hernia repair, ilioinguinal/iliohypogastric block, postoperative pain

7.15

CEPHALOMETRIC PREDICTORS OF OPTIMAL FACIAL SOFT TISSUE PROFILE IN CLASS II UPPER PREMOLAR EXTRACTION CASES: AN ANALYTICAL CROSS-SECTIONAL STUDY

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Introduction: Class II malocclusion is most commonly treated by means of upper premolar extractions (UPE). The objective of this study was to predict cephalometric parameters associated with favourable facial soft tissue profile in class II UPE cases.

Materials and Methods: A cross-sectional study was performed with 46 patients equally divided into favourable (FG) and unfavourable groups (UFG). Sample was divided based on subjective and objective criteria. Subjectively, pre- and post-treatment facial silhouette were shown to the panel of orthodontists to rate via Visual Analog Scale (VAS). Objectively, post-treatment soft tissue cephalometric variables (CV) were taken. Sample receiving 60% VAS and ideal post-treatment soft tissue measurements were included in FG. Paired t-test and independent t-test were applied to determine the significant changes within and between both groups. To predict the cephalometric and occlusal variables associated with FG outcome, the Cox regression analysis was applied.

Results: The mean age for the FG group was 19.8 ± 2.6 and for UFG was 21.5 ± 4.5 respectively. On evaluation of pre-treatment CV

the independent t-test showed statistically significant differences for UI-SN ($p = 0.02$), UI-NA ($p = 0.04$), and interincisal angle ($p = 0.02$). Evaluation of the pre-treatment occlusal variables the independent t-test and chi-square test showed overjet ($p = 0.04$) and molar relationship ($p = 0.009$) to be statistically significant. The Cox regression analysis showed no cephalometric or occlusal variables to be statistically significant to predict the soft tissue outcomes. *Conclusions:* Cephalometric analysis may be more valuable as a diagnostic rather than a predictive tool for favourable soft tissue outcomes.

Keywords: Tooth Extractions, Malocclusion,, Angle Class II,, Cephalogram

7.16

SVC SYNDROME SECONDARY TO THE LARGEST REPORTED PULMONARY HYDATID DISEASE

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Introduction: Pulmonary Hydatidosis makes up 25% of the hydatid disease cases in endemic areas. We present here, a case of massive pulmonary hydatid disease presenting as tension hydatidothorax* and Superior Vena Cava (SVC) syndrome. *hydatidothorax: We introduce this term for describing the presence of hydatid cysts in the thoracic cavity.

Case Presentation: A 25-year-old gentleman presented with progressive cough, dyspnea, dilation of facial, neck and arm veins and massive facial edema. Chest imaging showed multiple cystic lesions causing opacification of the right hemithorax with a massive mediastinal shift to the left while also compressing the SVC. The patient had refused treatment upon initial, less severe, presentation and only consented when the symptoms became unbearable. The combined size of the cysts was 183 X 209.5 X

333 mm– which we find to be the largest reported collection of hydatid cysts in the lungs. A surgical evacuation of the entire disease was performed, and our 3-year post-operative evaluation showed no recurrence.

Discussion: SVC syndrome is a rare complication of hydatid disease and while there is evidence of cardiac hydatidosis presenting as such, our extensive literature search did not yield a case where pulmonary hydatid disease resulted in the typical presentation of SVC syndrome. Hence, this case expands on our understanding of the mechanical complications arising from the mass effect of progressively increasing hydatidothorax.

Conclusions: Advanced stage of pulmonary hydatid disease can result in SVC syndrome and therefore should be considered in the differential diagnoses, especially in patients hailing from endemic regions.

Keywords: SVC SYNDROME, PULMONARY, HYDATID DISEASE

7.17

SPONTANEOUS RUPTURE OF ASPERGILLOMA LEADING TO LOCULATED PNEUMOTHORAX

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Aspergillus fumigatus causes a variety of diseases, depending on the host's immune status. The spontaneous rupture of an aspergilloma resulting in a pneumothorax has been rare and only reported two times in the recent literature. We are reporting the case of a 29 year old male, known case of treated ABPA and TB, presenting with acute shortness of breath and productive cough. Investigations revealed pneumothorax with a ruptured aspergilloma, followed by its timely surgical resection and management. Thus, this case highlights the importance of close

follow up with patients having Aspergillus infections to ensure the prevention of complications with their decreased immunity.

Keywords: Aspergilloma, Pneumothorax, Chronic Necrotizing Pulmonary Aspergillosis

7.18

ADULT PRESENTATION OF A CONGENITAL BRONCHESOPHAGEAL FISTULA COEXISTING WITH CONGENITAL TRACHEOESOPHAGEAL FISTULA WITHOUT ESOPHAGEAL ATRESIA: A CASE REPORT

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Adult presentation of congenital bronchoesophageal fistula coexisting with tracheoesophageal fistula in the absence of esophageal atresia is a rare condition and to our knowledge, this is the first reported case in literature. Our case is of a 50 year old male who presented with a three year history of nausea, cough on drinking fluids and regurgitation of food on bending forward. CT scan of the chest revealed two fistulous communications of the esophagus with the trachea and the right main bronchus, both of which were surgically repaired by bronchoscopy and right thoracotomy. Post-operative barium swallow showed a continuous flow of contrast between the esophagus and the gastro esophageal sphincter, resulting in successful recovery. Our study is a clear demonstration that it is worthwhile looking for further fistulas on the diagnosis of a single fistula.

Keywords: Tracheoesophageal fistula, Bronchoesophageal fistula, Congenital anomalies

7.19

FREQUENCY AND FACTORS ASSOCIATED WITH MULTI-DRUG RESISTANT ORGANISMS (MDRO)

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Background: The rise of Multidrug-resistant organisms (MDROs) poses a considerable burden on the healthcare systems, particularly in low-middle income countries like Pakistan. There is scarcity of data on carriage of MDRO particularly in pediatric population therefore we aimed to determine MDRO colonization in pediatric patients at the time of admission to a tertiary care hospital in Karachi, Pakistan and to identify the factors associated with this colonization.

Methods: A cross sectional study conducted at the pediatric department of Aga Khan University Hospital (AKUH) on 347 children aged 1-18 years. For identification of MDRO (i.e. Extended Spectrum Beta-Lactamase (ESBL) producers, Carbapenem Resistant Enterobacteriaceae (CRE), Vancomycin Resistant Enterococci (VRE), Methicillin Resistant Staphylococcus aureus (MRSA), Multidrug-resistant (MDR) Acinetobacter species and MDR Pseudomonas aeruginosa) nasal swabs and rectal swabs or stool samples were cultured on specific media within 72 hours of hospitalization.

Results: Out of 347 participants, 237 (68.3%) were found to be colonized with MDRO. 49 nasal swabs from 346 children (14.2 %) showed growth of MRSA. Majority of the stool/rectal swabs (n=222 of 322; 69%) collected were positive for MDRO. Most commonly isolated species were ESBL Escherichia coli 174/222 (78.3%) followed by ESBL Enterobacter species 37/222 (16.7%) and ESBL Klebsiella pneumoniae 35/222

(15.8%). On univariate analysis, none of the factors (prior antibiotic use for > 48hours in the last 6 months, history of vaccination in the last 6 months, prior health care facility exposure in the last 1 year, past ICU stay > 72 hours in the last 1 year and number of health care facility exposure) showed statistically significant association with MDRO carriage.

Conclusion: Overall, high prevalence of MDRO carriage was identified that highlights the need to implement continuous screening methods that can help to reduce transmission of MDRO infections in health care settings and community as well

Keywords : multidrug-resistant organisms, colonization, children

7.20

RESPONSE OF EXTENSIVELY DRUG RESISTANT SALMONELLA TYPHI TO TREATMENT WITH MEROPENEM AND AZITHROMYCIN, IN PAKISTAN

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Introduction: Salmonella Typhi is one of the leading health problems in Pakistan. With the emergence of extensively drug resistant Salmonella Typhi, treatment options are limited. Here, we report the clinical manifestations and the response to treatment of patients with XDR Typhoid fever. The patients were treated with either Meropenem or Azithromycin or a combination of both. *Methods:* We reviewed the records of culture confirmed XDR typhoid who visited Aga Khan University Hospital, Karachi and Aga Khan Secondary Care Hospital, Hyderabad from April 2017 to June 2018. Symptoms developed during disease, unplanned treatment extension and complications developed while on antimicrobials was recorded. Means±standard deviation were calculated for

duration of treatment, time to defervescence and cost of treatment.

Results: Records of 81 culture confirmed XDR typhoid patients admitted at the AKU hospitals were reviewed. Most, (n = 45; 56%) were male. Mean age of the cases was 8.03 years with range (1–40). About three quarter (n = 66) of the patients were treated as inpatient. Fever and vomiting were the most common symptoms at the time of presentation. Oral azithromycin alone (n = 22; 27%), intravenous meropenem alone (n = 20; 25%), or a combination of azithromycin and meropenem (n = 39; 48%) were the options used for treatment. Average (95% CI) time to defervescence was 7.1(5.5–8.6), 6.7(4.7–8.7), and 6.7(5.5–7.9) days for each treatment option respectively whereas there were 1, 0 and 3 treatment failures in each treatment option respectively. Average cost of treatment per day for azithromycin was US\$5.87 whereas it was US\$88.46 for meropenem.

Conclusion: Patients treated with either Azithromycin, Meropenem alone or in combination showed similar time to defervescence. Because of the lower cost of azithromycin, it is preferable in lower socio-economic areas. Background estimates for power calculation can be made for more robust clinical trials using this observational data.

Keywords: XDR, Typhoid fever, Treatment Response

7.21

NOVEL RECONSTRUCTION OF THE CHEST WALL WITH STAINLESS STEEL WIRES FOR RECURRENT DERMATOFIBROSARCOMA PROTUBERANS.

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Primary chest wall tumors are a diverse group of neoplasms arising from soft tissue, bone or cartilage of the chest wall. Dermatofibrosarcoma Protuberans (DFSP) is an uncommon soft tissue

tumor arising from the dermis with reported incidence of 0.8-5 cases per million population per year. Due to its delayed diagnosis and local aggressiveness, DFSP has a high local recurrence rate after incomplete surgery. However, en-bloc extirpation produces large chest wall defects that require extensive reconstruction to prevent respiratory morbidities. Although multiple biological and synthetic materials have been used in the past, very few case reports describe steel-wire based reconstructions for complex chest wall surgeries. We report the case of a 32 year old man from Afghanistan who presented with a recurrent right anteriolateral chest wall mass since 2015 which persisted despite 2 previous excisions and chemotherapy. This time, a firm, well-defined mass adherent to underlying pectoralis muscles was seen extending from right 3rd – 6th ribs on examination and radiological imaging. Intra-operatively, en-bloc resection of the chest wall mass (18cmx17cmx5cm) alongwith anterolateral segments of 3rd-6th ribs was performed. Skeletal reconstruction was done using polypropylene mesh sutured to the edges of the defect, followed by drilling stainless steel wires through ribs and costal cartilages to create a semi-rigid skeleton stabilizing the chest wall. Soft tissue reconstruction was based on a rotational right latissimus dorsi flap. Histopathology revealed Fibrosarcomatous dermatofibrosarcoma protuberans, FNLC grade III with negative margins. Excision of large chest wall tumors cause massive anterior chest wall defects that require reconstruction to reestablish chest wall rigidity and offer soft tissue coverage. With few reports using steel wires for reconstructing chest defects, our novel technique portrays steel wire-based reconstructions as a safe, inexpensive, reproducible and readily available prosthetic material for complex chest wall surgeries.

Keywords: Chest wall reconstruction, Dermatofibrosarcoma Protuberans, Surgery

7.22

COMPARISON OF THE EFFECTS OF THREE DIFFERENT TREATMENT MODALITIES ON DENTAL ARCH DIMENSIONS IN SKELETAL CLASS II MALOCCLUSION – A CROSS-SECTIONAL STUDY

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Introduction: In orthodontics, patients with class II malocclusion usually present with transverse discrepancies. The aim of this study was to compare the effects of Clark's Twin Block appliance therapy (CTB), upper first premolars extraction (U4) and non-extraction (NE) treatment modalities on dentoalveolar width and buccolingual inclinations in transverse arch dimensions.

Materials and Methods: A retrospective study was conducted on a sample of 45 skeletal class II subjects aged 10-35 years treated using CTB, U4 and NE. Transverse arch dimensions were manually measured on the pre- and post-treatment dental casts using digital vernier caliper and universal bevel protractor. Paired t-test was used to compare the pre- and post-treatment values of dental arch width changes. One-way ANOVA was applied to compare dental arch width changes between the treatment groups followed by pairwise comparison using the post-hoc Tukey.

Results: A statistically significant difference for upper arch width dimensions was found for CTB and U4 groups ($p \leq 0.001$). Highly significant differences were found for lower arch width dimensions for NE and U4 groups ($p \leq 0.001$). Statistically significant differences were also seen for buccolingual inclinations for among all three groups ($p \leq 0.001$).

Conclusions: Upper arch transverse dimensions were observed to be increased in patients treated with CTB while in the U4 group lower arch width showed a significant increase. NE group

showed least changes in the pre- and post-treatment transverse dimensions.

Keywords: Arch width, Buccolingual inclination, Twin Block

7.24

PREDICTABILITY OF SKELETAL CLASSIFICATION USING DENTAL AND FACIAL PARAMETERS: A CROSS SECTIONAL STUDY

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Introduction: Mandibular retrognathism (retrusive lower jaw) is diagnosed usually using the cephalometric radiograph of the lateral side of face. Considering the cost and potential harmful effects of cephalometric radiation exposure, this study was designed to explore non radiological methods to assess the skeletal retrusion of lower jaw on facial profile (skeletal class II relationship).

Objective: To determine the predictability of skeletal class II relationship (skeletal retrusion of lower jaw) using dental and facial parameters in children aged 9 to 14 years.

Methods: This cross sectional study was carried out on a random sample of 75 patients attending the dental clinics at the Aga Khan University Hospital, Karachi, Pakistan. The lateral skeletal profile of face was assessed on cephalometric radiographs and was compared with anteroposterior dental and facial measurements done on their dental cast (model of teeth) and facial profile photographs. Multiple logistic regression analysis was used to assess the predictability of skeletal class II relationship. The sensitivity and specificity of this model were checked by plotting the Receiver Operator Curve (ROC curve).

Results: The results of simple logistic regression analysis showed that the odds of skeletal class II were 6 times higher in patients presenting with

class II molar relationship (forward upper molar teeth). Multiple regression analysis showed a significant association of skeletal class II relationship with overjet (distance between upper and lower incisors), nasolabial angle (angle between upper lip and base of nose) and left molar class II relationship. The area under the ROC curve was found to be 0.92 (0.86, 0.98) which shows an outstanding predictability of the model. The mean predicted probability for the model is 0.67 (0.59, 0.74).

Conclusion: The probability of skeletal class II can be predicted with sufficient accuracy using the above equation

Keywords: Skeletal Class II, Dental Cast, Facial Profile Photographs

7.25

CHALLENGES PERCEIVED BY FIELDWORKERS IN SINDH'S EXPANDED PROGRAM ON IMMUNIZATION AND THEIR IMPACT AND INFLUENCES ON FIELDWORKER PERFORMANCE: A MIXED METHODS STUDY

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Background: Expanded Program on Immunization in Pakistan was introduced in 1978 with aim of providing routine immunization to every child less than 1 year of age. Overall national full child vaccination coverage is 53.8%. Many elements contributing to the problem, including vaccine unavailability, poor cold-chain maintenance, lack of micro planning, poor social mobilization and documentation.

Objective: Study aims to assess current level of performance motivation of vaccinators and lady health workers involved in delivery of immunization services in Sindh's EPI and to assess factors affecting level of motivation.

Methods: A cross-sectional study employing a mixed methodology. Previous studies, outlined complex interplay of influencers of motivation at individual, organizational and societal level. Structured and semi structured data collection tools were used to assess gaps and performance motivation.

Results: 87.91% are females providing vaccination and 12.09% are qualified male vaccinators for Routine Immunization. Vaccine providers showed highest motivation on Nature of responsibilities and Autonomy (4.76 Mean). Trainings increased the capacity of vaccine providers scored (4.69 Mean). Peer support scored third highest as (4.66 Mean) and Supportive Supervision scored (4.64 Mean) ranking 4th. Dissatisfaction in salaries and incentives demotivates vaccine providers and they feel lesser recognition at individual level.

Discussion: Insufficient human resource and inadequate supply of equipment has increased their burden. Resources and community attitudes demotivate vaccine providers to perform in field. They feel exhausted with these challenges. Feedback of community is important factor that makes workers more valued in community. Recent study suggested that if same feedback is given to the vaccine providers may encourage them to perform in field with more dedication. Rewarding and apprising the worker was seen very low in the immunization program.

Conclusion: Vaccine Providers` performance motivation is highly influenced by Supportive supervision, peer support and nature of responsibilities. Low salaries and low incentive lower motivation level. It is evident that salary and incentives needed to be most important factor to motivate vaccine providers.

Keywords: Motivation, EPI, Vaccination

7.26

IS CONTRACTING OUT A REMEDY TO IMPROVE THE UTILIZATION OF PRIMARY AND SECONDARY HEALTH SERVICES? EVIDENCE FROM RURAL DISTRICTS OF SINDH, PAKISTAN

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Background: Contracting-out of health services to non-state providers has been widely used in developing countries including Pakistan. Based on three years' experience of contracting out primary and secondary health services, this paper presents findings of the third-party evaluation of health services from two rural districts of Sindh Pakistan.

Methods: This mixed-method study used baseline vs end line comparison of key performance indicators (KPIs), a cross-sectional survey of health facilities, client exit interviews and in-depth interviews with healthcare providers to evaluate contracted-out health services.

Results: KPIs showed improved service utilization from baseline. All services including general outpatient department (OPD), specialist OPD and diagnostic services showed increased utilization. Facility-based deliveries and immunization showed modest improvement in the districts (overall) but a slight decline in some healthcare facilities. Slight improvement in the specialist workforce was noticed, however, challenges related to staff retention persisted. Delayed/partial release of funds by government affected staff retention and availability of drugs, equipment, supplies, water and electricity. Lack of control over government-appointed employees coupled with political interference created workforce shortage. Majority clients were satisfied with service delivery but unavailability of medicine was their main concern.

Conclusions: Contracting out has the potential to improve service utilization. Autonomy over budget allocation and utilization, the appointment of all cadre of staff, and improved coordination among all stakeholders are key to successful contracting out.

Keywords: Contracting out, health services, Pakistan

7.27

OVERCOMING THE CHALLENGES OF COMMUNITY ENGAGED EMERGENCY REFERRALS IN A RURAL DISTRICT OF SINDH PAKISTAN – IMPLEMENTATION RESEARCH

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Objectives: Using Rural Health Program (RHP) Thatta as platform, district health system stakeholders and community were brought together to strengthen the emergency referral system for maternal and child health emergencies through active community engagement in the rural area of Thatta district, Sindh.

Methodology: This implementation research with qualitative study design was conducted in 20 villages of taluka Mirpur Sakro district Thatta Sindh from October 2019 to May 2020. Health system stakeholders and communities of Mirpur Sakro were engaged and sensitized regarding the importance of referral system through stakeholder consultation meetings and a referral system plan for maternal and child health emergencies was developed. Community volunteers from each village took responsibility for arranging transportation, referring patients to health facilities and maintaining referral documentation. An ambulance service under contract with health department and private transporters were taken on-board to facilitate patients' transportation. Community's experiences of referral system were assessed through qualitative in-depth interviews.

Results: Patients' experiences of referral system improved but faced structural challenges including out of pocket transport expenses, direct self-referrals, lack of health system's responsiveness and coordination amongst stakeholders. Almost all patients were concerned about the lack of provision of medicines at health facilities. Only few of the respondents who sought care from secondary hospitals admitted being provided with filled referral forms. Healthcare providers attributed this to lack of coordination amongst stakeholders

Conclusion: Using academic institutions as platform, stakeholders have the opportunity to build technical capacity of community for building an effective referral system..

Keywords: referrals, community, rural

7.28

EARLY USE OF STEROIDS IMPROVES RENAL OUTCOMES IN ACUTE INTERSTITIAL NEPHRITIS: A SINGLE CENTER EXPERIENCE FROM A DEVELOPING COUNTRY

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Background: Acute interstitial nephritis (AIN) is a potentially reversible, but under-diagnosed cause of acute kidney injury. Data is scarce regarding the clinical presentation and management approach towards AIN in this region.

Methods: We performed a retrospective study of patients with biopsy proven AIN. The main outcomes were recovery of renal function (Early (≤ 3 weeks) or Late (> 3 weeks) and hemodialysis (HD) dependence at 12 weeks.

Results: A total of 48 (4.9%) AIN cases were found among 978 renal biopsies performed from 2007-2018. Mean age was 47.6 ± 12.1 years and 56.3% were males. The offending agent was identified in 45.8% cases with NSAIDs (45.4%)

being the most common, followed by antibiotics (22.7%), diuretics (9%), and PPI (4.5%). 75% presented with estimated glomerular filtration rate 11 days).

Conclusion: Our data showed the benefit of earlier use of steroids in achieving rapid and complete renal recovery. Late steroid use (≥ 3 weeks) was not associated with any further recovery of renal function at an additional risk of exposing patients to undue adverse effects. This is the first report from Pakistan on tendency of nephrologists towards use of steroids in AIN.

Keywords: Acute interstitial nephritis (AIN), kidney biopsy, steroids

7.29

OUTCOMES OF TUNNELED CUFFED HEMODIALYSIS CATHETERS: AN EXPERIENCE FROM A TERTIARY CARE CENTER IN KARACHI, PAKISTAN

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Introduction: Tunneled cuffed catheters (TCC) are generally used as a temporary means to provide hemodialysis (HD) until permanent arteriovenous access is established. However, certain complications are associated with use of TCCs such as infections, catheter malfunction/malposition or venous stenosis. Limited data is available on outcomes and long term complications associated with TCCs in our country. The aim of this study was to study the outcomes of TCCs and associated long term complications during the course of its usage.

Methods: We retrospectively studied case records of patients who had TCCs placed for HD at our institution, from January 2016 to June 2018.

Results: The mean age of the population was 57.09 years; 58.6% were males. The right internal jugular vein (52.6%) was the commonest site of TCC insertion followed by the left internal jugular vein (29.3%).

Functioning TCCs were successfully removed in almost two-thirds of cases (65.7%) once their permanent access was mature. Development of catheter related blood stream infection (CRBSI) was seen in 22 patients (19.8%) requiring catheter removal in 14 (12.6%) patients. Mechanical complications leading to catheter removal were seen in 7 patients (6.3%). The median catheter duration was 62.5 days ranging from 1 to 343 days.

Conclusion: TCCs are associated with good outcomes and can be safely used as vascular access for HD till the maturation of permanent arteriovenous access. In certain cases, they can be an alternative to arterio-venous Fistula or graft for long-term vascular access.

Keywords: tunneled catheter, vascular access, hemodialysis

7.30

CLINICAL PRESENTATION AND OUTCOMES OF COVID-19 IN MAINTENANCE HEMODIALYSIS PATIENTS IN PAKISTAN: A SINGLE-CENTER STUDY

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Background: The comorbidity burden, altered immunity and logistics of hemodialysis (HD) make dialysis patients vulnerable to severe COVID-19. Literature on spectrum of COVID-19 presentation, treatment response and outcome in this high-risk population is scarce. Our aim is to review clinical presentation and short-term outcomes of COVID-19 in patients on maintenance hemodialysis (MHD) in low income country.

Method: This retrospective observational study was conducted at three coordinated outpatient hemodialysis units at Aga Khan University Hospital. Data on baseline characteristics, clinical features, laboratory and radiographic findings, treatment and short come outcomes

were analyzed for 15 HD patients diagnosed with COVID-19 from 1st May to 31st July, 2020. All characteristics were also compared between surviving and deceased subjects.

Results: Out of 108 MHD patients, 17 were diagnosed with COVID-19 through polymerase chain reaction (PCR) and 15 of them were included in the study. Mean age of subjects was 62.8 years (SD \pm 8.6) and 53.3% were females. Most common comorbidities were hypertension (100%), diabetes mellitus (86.7%) and cardiovascular disease (33.3%). Median HD vintage was 15 months (IQR 8-14). Forty percent of the patients were asymptomatic. Frequent symptoms observed were shortness of breath (40%), cough (26.7%) and fever (20%). Lymphopenia was not seen in our study and 40% had no radiographic finding. Acute respiratory distress syndrome, myocardial injury, hepatic dysfunction and thrombotic event were observed complications. Compared to survivors, deceased patients were significantly older ($p=0.01$) and had higher inflammatory markers including C-reactive protein, ferritin, procalcitonin, lactate dehydrogenase. Forty percent were hospitalized and 83.3% required ventilation (invasive or noninvasive). By the end of follow up; 40% patients died.

Conclusion: Patients on MHD are susceptible to severe COVID-19 and higher mortality. Asymptomatic presentation demands high clinical suspicion for prompt diagnosis. Following trend of inflammatory markers may help clinician in identification of severe cases and appropriate management.

Keywords: Covid19, heodialysis, outcomes

7.31

CLINICAL PRESENTATION, HISTOLOGY AND OUTCOMES OF IGA NEPHROPATHY; A SINGLE CENTER EXPERIENCE FROM PAKISTAN

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Background: Clinical presentation, kidney biopsy findings and clinical outcomes of IgA nephropathy (IgAN) are highly variable. The objective of this study is to study the clinical presentation, histologic patterns and outcomes of IgAN in Pakistani population, as no significant data is available in international literature from this part of the world.

Material and Methods: A retrospective chart review was conducted of all patients with biopsy proven IgAN between January 2007 and December 2017.

Results: Of a total of 977 renal biopsies, 50 patients had biopsy proven IgAN (5.1%). Median Age at the time of biopsy 34 years (27-42); 92% of patients were between 18-40 years. 38 (76%) were males. 92% of patients had significant proteinuria of greater than 1gram/day with 32% having nephrotic range proteinuria. The mean estimated glomerular filtration rate (eGFR) at presentation was 46.58 mL/min/1.73m². 78% of patients were hypertensive at the time of presentation and most of them had uncontrolled hypertension. The most common lesion on light microscopy was focal necrotizing GN with (26%) followed by mesangial expansion with segmental/global glomerulosclerosis (22%). Crescents were seen in 38% cases. Out of 52, at least 6 months follow-up was available for 32 patients. Out of 50, a follow-up of at least 6 months was available for 32 patients. Most of the patients who had an eGFR of less than 30ml/min at presentation progressed to kidney failure at six months follow up period.

Conclusion: IgAN usually presents in young male adults in the age range of 18-40 years with most patients having severe clinical presentation characterized by nephrotic-range proteinuria, hypertension, renal insufficiency and severe histological stages.

Keywords: IgA nephroathy, kidney biopsy, glomerulonephritis

7.32

“PICC”ING PATIENTS WITH CHRONIC KIDNEY DISEASE

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Background: Patients with Chronic Kidney Disease (CKD) eventually progress to kidney failure and require dialysis. These patients often present with complicated medical conditions requiring intravenous medical therapies; however, at the same time it is of paramount importance to maintain integrity of veins to provide a future hemodialysis (HD) vascular access. Peripherally inserted central catheters (PICC) are used for patients requiring prolonged intravenous medications. PICC lines may cause local trauma and influence the future vascular access creation. The aim of this study was to determine the frequency and indications of PICC lines use in hospitalized patients at a tertiary care hospital. Patients and

Methods: All patients were retrospectively reviewed over 2 months for PICC line placement, indications and their estimated glomerular filtration rate.

Results: Total of 147 PICC lines were placed and 20% of such patients had an eGFR

Keywords: PICC, hemodialysis, vascular access

7.33

PREDICTORS OF OUTCOME IN SEPTIC SHOCK PATIENTS ON VASOPRESSOR SUPPORT: A RETROSPECTIVE OBSERVATIONAL STUDY FROM A LOWER MIDDLE-INCOME COUNTRY

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Introduction: Septic shock is a common presentation in ICUs and is contributing globally to mortality. While literature has found particular ranges of hemodynamic variables which can predict mortality, there is a dearth of literature assessing the clinical relevance of measuring hemodynamic variables at serial points in time to predict mortality in septic shock. **Objectives:** To assess whether serially measuring hemodynamic variables at certain time points can be used to predict mortality in septic shock patients on vasopressor support.

Methods: This retrospective study consisted of patients diagnosed with sepsis or septic shock between January 2019-June 2019 at the Aga Khan University Hospital. The mean arterial pressure (MAP), heart rate (HR), central venous pressure (CVP), and peripheral oxygen saturation (SpO₂) were measured upon admission (-1), upon initiation of vasopressors (-2), during third hour of vasopressor therapy (-3) and upon vasopressor withdrawal (-4).

Results: A total of 393 patients were included in this study. Out of these, 217 patients survived, and 176 patients died. On multivariable regression, lactate on admission (OR: 1.289 [95% CI: 1.151-1.444]), CVP-1 (0.805 [0.674-0.961]), SPO₂-3 (0.863 [0.746-0.998]) and SPO₂-4 (0.903 [0.832-0.981]) were found to be predictors of mortality.

Conclusion: Lactate on admission should be used as a mortality predictor in septic shock. Additionally, careful monitoring of CVP on admission, SpO₂ during vasopressor therapy and SpO₂ upon vasopressor withdrawal can be used for mortality prognostication. These hemodynamic variables are useful indicators of mortality in resource-limited settings of lower middle-income countries for the management of septic shock.

Keywords: Sepsis, Septic shock, Hemodynamic variables

7.34

AMERICAN THYROID ASSOCIATION (ATA) GUIDELINES FOR THE TREATMENT OF DIFFERENTIATED THYROID CANCER: COMPLIANCE AT AGA KHAN UNIVERSITY HOSPITAL.

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Over last 3 decades, significant increases in the incidence of thyroid cancer have been witnessed in many countries worldwide. It is the third fastest rising cancer been diagnosed in the United States since 1997. Given the advances in the diagnosis and therapy of thyroid nodules and thyroid cancer, the American Thyroid Association (ATA) have set guidelines for evaluation, diagnosis and management of these disorders. Various authors have measured the practice pattern of ATA guidelines to understand the differences between actual clinical practice and guidelines.

Objective: To determine compliance with ATA guidelines for the evaluation of thyroid nodule in patients presenting to Aga Khan University Hospital.

Methods: A cross-sectional study will be conducted, after ethical approval from our institution's ethical review board, at the Department of Otolaryngology Head & Neck Surgery, Aga Khan University Hospital. A sample size of 92 patients was calculated. Data collection was done by the help of online available patient records and file review. Variables including age, gender, pre-op TSH, serum Tg, ultrasound, thyroid scan, CT scan, PET Scans, FNAC were recorded. All the information will be analyzed using SPSS version 20. Results: A total number of 92 patients were included, 65% of them being females. 81% accordance was seen with the recommendation for pre-op FNAC. 64% accordance was seen with the recommendation of getting a pre-op ultrasound. Recommendations regarding preop TSH, thyroid scan, PET-Scan and serum

thyroglobulin were followed in 96%, 85%, 98% and 99% of the patients presenting in AKUH.

Conclusion: Compliance is required to pre-op ultrasound and FNAC for appropriate diagnosis.

Keywords: Thyroid, Differentiated thyroid cancer, American Thyroid Association

7.35

EFFECT OF BONE GRAFTING IN JUMP GAP ON THE OUTCOME OF IMMEDIATE IMPLANTS IN ANTERIOR MAXILLA: A SYSTEMATIC REVIEW & META-ANALYSIS

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Background: Immediate implant placement in the anterior maxilla requires stringent case selection and careful treatment planning to optimize functional and esthetic outcomes. Factors such as root position, labial cortical plate thickness and extent of jumping gap should be taken into account. The aim of this systematic review was to study the effect of bone grafting in the jumping gap distance on the outcome of immediately placed implants in anterior maxilla.

Methods: Literature search was done in four major health sciences databases i.e. MEDLINE, Dentistry & Oral Science, CINAHL Plus and Cochrane Library. Inclusion criteria were RCTs and cohort studies, that reported at least a follow-up of six months and having an intact buccal cortical plate before implant placement. Primary outcome was radiographic bone loss in horizontal and vertical dimensions whereas secondary outcomes were soft tissue parameters. The risk of bias in the included studies was evaluated by using Cochrane risk of bias tool.

Results: Out of 108 studies, seven randomized control trials (RCTs) met our inclusion criteria. Out of seven studies, only one study reported statistically significant bone loss in no grafting group ($p=0.001$). Four studies showed some bone loss in no grafting group but the difference

was statistically non-significant ($p \geq 0.05$). The forest plot depicted slightly less bone loss in bone grafting group but the difference was statistically non-significant ($p = 0.50$). Only three studies measured the jumping gap distance before implant placement.

Conclusions: Bone grafting in the jumping gap distance appears to yield less bone loss among immediately placed implants in anterior maxilla (irrespective of the jumping distance). However, in comparison to no bone grafting approach, the difference is not statistically significant. More randomized clinical trials with quantification of jumping gap distance and consideration of labial cortical plate thickness with longer follow-up periods are recommended.

Keywords: Immediate implants, jump gap, anterior maxilla

7.36

PEDIATRIC ANESTHESIA SEVERE ADVERSE EVENTS LEADING TO ANESTHETIC MORBIDITY AND MORTALITY IN A TERTIARY CARE CENTER IN A LOW- AND MIDDLE-INCOME COUNTRY: A 25-YEAR AUDIT

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Background: The analysis of adverse events, including morbidity and mortality (M&M), helps to identify subgroups of children at risk and to modify clinical practice. There are scant data available from low- and middle-income countries. Our aim was to estimate the proportion of pediatric patients with various severe adverse events in the perioperative period extending to 48 hours and to describe the clinical situations and causes of those events.

Methods: We reviewed the M&M database of the Department of Anesthesiology between 1992 and 2016. A data collection tool was developed, and the outcomes were standardized. Each case

was reviewed independently and subsequently discussed between 2 reviewers to identify a major primary causative factor. **RESULTS:** The total number of pediatric cases during this period was 48,828. Seventy-six significant adverse events were identified in 39 patients (8 patients [95% confidence interval {CI}, 5.7– 10.9] per 10,000). Thirteen patients had multisystem involvement, and hence the total number of events exceeded the number of patients. Respiratory events were the most common (33.5%). Thirteen patients had perioperative cardiac arrest within 48 hours of surgery (2.6 [95% CI, 1.3– 4.3] per 10,000), 7 of these were infants (54%), 5 of whom had congenital heart disease (CHD). Eleven of these 39 patients died within 48 hours (2.0 [95% CI, 1.1–4.0] per 10,000). In 13 cases, anesthesia was assessed to be the predominant cause of morbidity (2.6 per 10,000), whereas in 26 cases, it contributed partially (5.32 per 10,000). There was only 1 death solely related to anesthesia (0.2 per 10,000), and this death occurred before the start of surgery.

Conclusions: Adverse events were uncommon. Respiratory complications were the most frequent (33%). Infants, especially those with CHD, were identified as at a higher risk for perioperative cardiac arrest, but this association was not tested statistically. Twenty-eight percent of the patients who suffered events died within 48 hours. Increased access to anesthesia drugs and practice improvements resulted in a decline in perioperative cardiac arrests.

Keywords: Anesthesia, pediatrics, perioperative period

7.37

ANTICIPATED VS ACTUAL EXPERIENCED PAIN AT SITE OF SPINAL NEEDLE INSERTION IN PATIENTS UNDERGOING ELECTIVE LOWER SEGMENT CAESAREAN SECTION

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Introduction: Despite significant advantages some pregnant patients refuse spinal anesthesia when offered as a choice in cesarean section. Limited literature in Pakistani population showed that 20.1% of pregnant patients refused SA due to the fear of spinal needle prick at the insertion site. Studies have shown that the patient's expectation of pain is higher than what they experience in real, because of local anaesthesia of the needle track prior to spinal needle insertion.

Objectives: To evaluate the difference between anticipated and actually experienced pain at the spinal needle insertion site in Spinal Anesthesia for pregnant women undergoing Elective Lower Section CS at Aga Khan University Hospital, Karachi. Setting: Labour Room Operating room, Aga Khan University Hospital Karachi. Duration: 6 months from 1st March 2018 till 31st August 2018 Design: Cross-Sectional Study Subjects and Methods: A total of 40 patients scheduled for elective LSCS were included. Preoperatively patients were interviewed through a questionnaire and asked regarding anticipated pain at the spinal needle insertion site as per NRS. After completion of anesthesia procedure patients were placed supine on the operating table and asked about the intensity of pain experienced by the primary investigator.

Results: Experience of mean pain at the site of spinal needle insertion was significantly low as compared to expected pain [6.80±2.07 vs. 3.18±2.22; p=0.0005]. Considering the number of attempts, mean difference of anticipated vs actually experienced pain was more in 1st

attempt group (3.81±2.88) in comparison to 2nd attempt group (1.33±4.04). In regard to duration, spinal anaesthesia in the 10-minute group had decreased mean experienced pain (3.00±2.11 vs 5.33±2.88).

Conclusion: In conclusion, there is a remarkable difference in the obstetric population between anticipated and actually experienced pain at the site of spinal needle insertion in LSCS.

Keywords: Anesthesia, cesarean section, pain

7.38

ANESTHETIC CHALLENGES IN A PEDIATRIC PATIENT WITH ESCOBAR SYNDROME – DIFFICULT AIRWAY AND POSTOPERATIVE PNEUMOTHORAX.

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Escobar syndrome (ES) is an autosomal recessive disorder characterized by presence of pterygia in cervical, antecubital and popliteal region. Anesthesiologist encounter notable challenges in this syndrome especially airway management due to associated malformations like cleft lip / palate, micrognathia, syngnathia, ankyloglossia, neck contracture, cervical spine fusion, limited neck extension and craniofacial dysmorphism. In addition to difficult airway, anesthesiologist may encounter other perioperative challenges. Here we report a pediatric patient with ES who required general anesthesia for laparoscopic inguinal hernia repair and orchidopexy. Initial attempt with video laryngoscope failed due to inability to visualize epiglottis. Subsequent attempt with fiberoptic bronchoscope also failed due to rapid decrease in oxygen saturation. He was finally intubated with fiberoptic bronchoscope along with Conclusion:

Managing patients with ES require multiple management plan for securing the airway, ideally in a health care center where resources

are available in terms of expertise and equipment. These patients require vigilant perioperative monitoring for early diagnosis and management of any arising complication.

Implications:

- Multiple management plan is needed to secure the airway in these patients.
- Availability of expertise and difficult intubation equipment including fiberoptic bronchoscope is required for anesthesia provision.
- To avoid pneumothorax, it is important to ensure lung protective ventilation maintaining peak airway pressure below 25cm H₂O. oxygen insufflation with 3 millimeter internal diameter polyvinylchloride endotracheal tube inserted nasally and connected to oxygen supply. Further perioperative challenges faced were intraoperative hyperthermia and postoperative pneumothorax with mediastinal shift. To the best of our knowledge, this is the first case reporting pneumothorax with mediastinal shift as a postoperative complication and use of oxygen insufflation through nasal tube during fiberoptic intubation in pediatric patient with ES.

Keywords: Multiple pterygium syndrome, Escobar syndrome, Airway management

7.39

FACTORS ASSOCIATED WITH INTRA-OPERATIVE BLOOD TRANSFUSION DURING SURGERY FOR ADULT CONGENITAL HEART DISEASE: A RETROSPECTIVE STUDY FROM A DEVELOPING COUNTRY

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Purpose The preoperative factors and immediate postoperative outcomes associated with intra-operative blood-transfusion (IOBT) are relatively unexplored in patients undergoing

surgery for adult congenital heart disease (CHD). This study aims to identify factors associated with IOBT during surgery for ACHD in Pakistan, a lower-middle-income country. **Methods** This retrospective study, conducted at a tertiary care hospital in Pakistan, included all adult patients (≥ 18 years) who underwent cardiac surgery with cardiopulmonary bypass (CPB) for CHD from January 2011 to December 2016. Data collected included preoperative, intra-operative, and postoperative variables. Multivariable logistic regression, adjusted for age and gender, was performed with IOBT as the dependent variable. **Results** A total of 166 patients were included in study with mean age of 32.04 ± 12.11 years. Majority of patients were male (53.6%). 51.8% of patients were categorized as RACH-1 Category 1. The most common CHD defect was atrial septal defect, ASD (42.2%) followed by tetralogy of Fallot, ToF (13.9%). Comorbidities were present in 59% of patients, with the most common being obesity (36.7%) and hypertension (14.5%). Overall, 40.9% of participants needed IOBT during surgery. On multivariable analysis, factors associated with IOBT were preoperative cyanosis (OR: 7.382 [95% CI: 2.799-19.465]), being underweight (3.461 [1.622-7.386]), and having undergone ToF Repair (11.149 [3.410-36.453]). Moreover, IOBT was positively associated with cardio-pulmonary bypass time (1.012 [1.006-1.018]), aortic cross-clamp time (1.016 [1.009-1.024]), intra-operative inotrope score (1.087 [1.026-1.151]), postoperative acute kidney injury (2.698 [1.330-5.473]), length of ICU stay (1.167 [1.052-1.294]), and length of hospital stay (1.107 [1.102-1.211]).

Conclusions Our study identifies underweight status as a modifiable risk factor for IOBT. Given the worse postoperative outcomes associated with IOBT, surgeons operating on ACHD in lower-middle-income countries must strive for improved preoperative nutritional optimization and prompt management of postoperative complications to decrease adverse outcomes associated with the need for IOBT.

Keywords: Adult Congenital Heart Disease, Cardiac Surgery, Blood Products

7.40

SIMULATION-BASED CLINICAL SKILLS TRAINING FOR MEDICAL STUDENTS: A PILOT STUDY IN PAKISTAN

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Introduction In this pilot study, we assessed the effectiveness of high-fidelity SBME in teaching/learning respiratory clinical examination in medical students in Karachi. **Methods** A quasi-experimental study was conducted amongst the third year medical student of the Aga Khan University, Karachi, during their Family Medicine clerkship. Students were assigned to intervention or control groups. The intervention group (IG) underwent training for the respiratory system clinical examination on a high-fidelity simulator mannequin, while the control group (CG) received the conventional practice session on standardized patients. At the end of clerkship formative examination, students were assessed on their respiratory system clinical examination skills. Skills in 5 domains were assessed, and each domain was scored between 1-3 points (Poor=1, Fair=2, Good=3) for a maximum composite score /15.

Results There were no statistically significant differences in demographics for the CG (n=41) and IG (n=40). On the formative exam, composite score for control and intervention groups was not significantly different (CG: 12.9 ± 1.89 vs. IG: 11.9 ± 2.35; p = 0.067). However, a greater percentage of CG students were rated Good in all 5 domains, with the difference being statistically significant for ability to correlate findings with clinical history (CG: 87.8% vs IG: 67.5%; p = 0.028).

Conclusion High-fidelity simulation at the level of the medical student may not necessarily bring about significant increases in learning. Thus, keeping in mind the costs and other barriers such as lack of facilities and skilled operators, the utility of high-fidelity simulation in a developing country like Pakistan is questionable and warrants further research.

Keywords: Simulation, Medical Education, Clinical Skills

7.41

COMPARISON OF MEASURING ACCURACY IN WORKING LENGTH DETERMINATION OF DENTAPORT ZX AND APEX ID: AN IN-VITRO STUDY

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Introduction: Successful root canal treatment depends on accurate working length determination. Inadequate instrumentation and debridement lead to failure. Among methods for working length determination, electronic apex locators are the most accurate. The aim of this study was to compare the accuracy of working length obtained from electronic apex locators, Dentaport ZX and Apex ID.

Material and Methods: Thirty roots with a single canal were selected. The roots were embedded in alginate (impression), the root canals were filled with saline. The electronic working length was obtained with 15K file, advanced into the canal until the device indicated that the apex has reached. For direct length measurement, 15K file was inserted in the canal till the apical constriction as observed under the microscope, and the length of the file was measured with Vernier caliper. Shapiro-Wilk test, paired sample t test and Bland-Altman tests were applied. Level of significance p< 0.05.

Results: The mean difference in the working length between apex locator and direct length was 0.93±0.79 mm for Apex ID and 0.86±0.64 mm

for Dentaport ZX. The accuracy for Apex ID $\pm 0.5\text{mm}$ and $\pm 1.0\text{mm}$ was 46.6% and 70% respectively. For Dentaport ZX, the accuracy $\pm 0.5\text{mm}$ and $\pm 1.0\text{mm}$ was 50% and 83.3% respectively. Paired sample-t test did not report significant difference between the measuring accuracy of these apex locators ($p > 0.05$). The Bland-Altman test also revealed that both apex locators were clinically consistent and there was absence of proportional bias.

Conclusions: Dentaport ZX and Apex ID are comparable in the accuracy. Tooth type does not affect the accuracy of apex locators

Keywords: Endodontics, Working length, apex locators

7.42

FEASIBILITY OF TELEPHONE-CPR (T-CPR) PRACTICE IN KARACHI PAKISTAN.

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Background: T-CPR has been shown to dramatically increase bystander CPR rates and is associated with improved survival in patient with out of hospital cardiac arrest.

Objective: To assess the feasibility of T-CPR practice in Karachi, Pakistan,

Methodology: We collaborated with a private EMS working in Karachi, and analyzed audio taped for those patients in which dispatcher recognized the need for CPR. Total of 481 calls were included from January – December 2018 to gather the required information such as age, gender, status of patient, time for CPR instruction given and barriers in performing CPR.

Results: Majority of the patients were males ($n=278$; 57.8%) and most had witnessed cardiac arrest ($n=470$; 97.7%) at home ($n=430$; 89.3%).

The mean time to recognize need for CPR by a telecommunicator was $4:59 \pm 1:59$ (minutes), while mean time to start CPR instruction by bystander was $5:28 \pm 2:24$ (min). Mean time to start chest compression was $6:04 \pm 1:52$ (min.) In comparison with the AHA recommendations of timeline which they have divide into high performance system and minimal acceptable. In only 3 (0.6%) of cases time to recognize need for was less than a minute and in 28(5.8%) of cases it was less than 2min while 440(93.5%) cases was out of this time line. In only 1(0.2%) of case CPR instruction was started within a minute and in 14(3%) of cases it was within 2min but in 453(96.8%) of cases it was beyond that time line. For time to first compression none met high performance system and in 40(8.7%) of cases it was started within 3min meeting minimal acceptable limit while rest was out of range.

Conclusion: Our results shows high acceptability of T-CPR by bystanders. We also found considerable delays in recognition of cardiac arrest and initiation of CPR by dispatchers. Further training of dispatchers could reduce these delays

Keywords: Telephone CPR, bystander, survival

7.43

COMPARISON OF BETA-D-GLUCAN LEVELS BETWEEN CANDIDA AURIS AND OTHER CANDIDA SPECIES AT THE TIME OF CANDIDEMIA

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Introduction: Serum Beta-D-Glucan (BDG) is an important test for candidemia diagnosis. BDG content may vary in the cell wall of different Candida species. Therefore, we analyzed the difference in serum BDG levels between different Candida species, especially C.auris.

Methodology: Aga Khan University clinical laboratories data was retrospectively reviewed from June 2015 - December 2019. Blood culture positive cases with any *Candida* species and concomitant BDG level were included.

Results: Among the 213 cases included in our study, 54 were *C.albicans*, 59 *C.auris*, 8 *C.glabrata*, 37 *C.parapsilosis*, 47 *C.tropicalis*, and 8 other *Candida* species. The level of BDG was significantly lower in *C.auris* (mean = 156.64 pg/ml, 95% CI = 106.44 - 206.83 pg/ml) compared to *C.albicans* (mean = 276.41 pg/ml, 95% CI = 220.71 - 332.11 pg/ml) and *C.tropicalis* (mean = 292.56 pg/ml, 95% CI = 233.34 - 351.77 pg/ml). The sensitivity of the serum BDG was lower for *C.auris* (48.15%) and *C.parapsilosis* (48.65%) than other *Candida* species (range: 72.9-87.5%), but not significantly. There was no effect of concomitant bacterial infections or antimicrobials on BDG level. There was a significant increase in BDG levels with concomitant fungal infections ($p < 0.001$).

Discussion: *C.auris* could have a lower serum BDG level because of a low fungal load, resistance to antifungal medication, or inherently low BDG content in *C.auris*.

Conclusion: Serum BDG is not a sensitive test for patients with suspected *C.auris* candidemia. Considering that *C.auris* has higher morbidity and mortality compared to other species, a more sensitive test may be required

Keywords: *Candida*, BDG, *C.Auris*

7.44

EVALUATION OF A REAL TIME POLYMERASE CHAIN REACTION (PCR) ASSAY FOR DETECTION OF PNEUMOCYSTIS JIROVECI IN BRONCHOALVEOLAR LAVAGE (BAL) SPECIMENS

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Pneumocystis jirovecii opportunistically infects immunocompromised patients resulting in serious infections such as pneumonia. Microscopy of specimens using Giemsa stain, Silver stain and immunofluorescent stain (IFA) had been the mainstay of diagnosis. These staining methods had low sensitivity and therefore *Pneumocystis Pneumonia* (PJP) is now being increasingly diagnosed using PCR. Since June 2018, PCR has replaced IFA at the Aga Khan University clinical laboratories. We wanted to evaluate the difference in the rate of case detection between the two techniques, and reviewed clinical characteristics of patients referred for PCR testing. Aga Khan University Hospital clinical laboratories data was retrospectively reviewed from 2016 to June 2018 for IFA and prospectively from June 2018 to March 2020 for PCR. 877 samples were tested for PJP using either IFA or PCR and all of these were included in this study. 563 BAL, tracheal aspirate, and induced sputum samples were tested using IFA, of which 2.93% were positive. 314 BAL samples were tested using PCR, of which 18.94% were positive. This represents an increase of 6.46 times in the rate of detection of positive cases. Clinical data was available for 128 patients (44 PCR positive), of which 14 (10.9%) had Diabetes Mellitus, 12 (9.4%) had HIV, 10 (7.8%) had autoimmune conditions, 27 (21.1%) had a malignancy, 3 (2.3%) had a positive AFB culture, and 9 (7.0%) had a positive GeneXpert. This difference is due to the change in the diagnostic method, as the criteria for referral for diagnostic testing of PJP remained the same over both study periods. Our results are in concordance with other similar studies. Clinical laboratories in Pakistan should consider upgrading PJP testing methodology to PCR.

Keywords: *Pneumocystis*, PCR, IFA

7.45

ABO BLOOD GROUP DISCREPANCIES AT TERTIARY CARE HOSPITAL

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Introduction: ABO system is the first recognized blood group system in humans. In 1901, Karl Landsteiner showed that an individual's serum contained ABO antibodies corresponding to the antigen(s) which are lacking on his red blood cells (RBCs).

Objective: The goal of this study was to assess the frequency and cause of ABO discrepancies which occurred during the 1-year study period.

Materials & Methods: This was a retrospective, cross-sectional study. ABO typing record kept at the blood bank laboratory of Aga Khan hospital from January 2019 till December 2019 were reviewed. Those samples were included in the study where discrepancy persisted after the technical errors were ruled out.

Results: During the retrospective study period, a total of 31,918 patient samples were tested. We detected 53 (0.16 %) of ABO discrepancies, and their further distribution according to standard classification into group I, group II and group IV discrepancies. Of the 53 discrepant cases, 22 (41.5 %) were males, and 31 (58.5 %) were females. The overall median age for patients with ABO typing discrepancy was 24. The most common type of ABO discrepancies was weak /missing antigen (88.7 %), followed by weak/missing antibody (9 %). The most common cause of ABO discrepancies was subgroups of A (39.6 %), followed by subgroups of B (15.1 %), A subgroup B (15.1 %) and one case (1.9 %) of A subgroup B with anti-A1.

Conclusion: The overall prevalence of ABO discrepancies was 0.16% in our tertiary care hospital. The most common type of ABO discrepancies was type II discrepancy which includes subgroups of A and B (88.7 %).

However, the weak subgroups of A and B identified in our study require further confirmation by molecular studies

Keywords: red blood cells (RBCs), AG: antigen, AB: antibody

7.46

SYNERGISM BETWEEN ANTIBIOTICS AND NATURAL COMPOUNDS EXHIBITS POTENT ACTIVITY AGAINST STAPHYLOCOCCUS AUREUS BIOFILMS

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Introduction: Staphylococcus aureus (S. aureus), a gram positive pathogen, is one of the most frequent causes of biofilm-associated infections on indwelling medical devices. Biofilm is formed when bacteria lives in communities and forms a matrix as a survival mechanism in a generalized manner. With the emergence of methicillin-resistant S. aureus (MRSA), and its biofilm forming ability, there is an urgent need to discover novel active agents against a range of Gram-positive pathogens. We screened the clinical isolate of S. aureus for susceptibility/resistance and biofilm forming ability against commonly prescribed antibiotics. Furthermore, we tested four natural compounds alone and in combination with antibiotic drugs to find possible synergistic antimicrobial and antibiofilm activity.

Materials and Methods: S. aureus clinical isolate was screened for susceptibility/resistance against ciprofloxacin, chloramphenicol, ampicillin, amikacin, cephalothin, clindamycin, streptomycin and gentamicin using the Kirby-Bauer disk diffusion method. The antimicrobial potential of a Eugenol, and 3 derivatives of cinnamic acid were tested alone and in combination with antibiotics. Several qualitative and quantitative assays were used to detect Biofilm formation ability of S. aureus isolate. Subsequently, we applied a Biofilm reduction

assay to evaluate anti-biofilm activity of natural compounds alone and in combination of antibiotics.

Results: The individual Minimum Inhibitory Concentration (MIC) of natural compound ranged from 2-70mg/mL. However, the MICs reduced to a range of 0.5-40 mg/mL when compounds were combined with antibiotic. In reduction assay, we found a significant biofilm inhibition percentages (100-60%) when antibiotics and compounds were used in combination. **Conclusions:** The natural compound used in the study exhibited additive and synergistic antimicrobial and antibiofilm activity against *S. aureus*, hence providing an effective alternative/adjuvant therapy to deal with the problem of emerging antimicrobial resistance.

Keywords: staph aureus, Natural Compounds, Biofilms

7.47

EXPLORING WILLINGNESS TO PAY FOR HEALTH INSURANCE AND PREFERENCES FOR A BENEFITS PACKAGE AMONG LOW-INCOME HOUSEHOLDS OF KARACHI, PAKISTAN

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Introduction: Achieving universal health coverage (UHC), including financial protection and reduction in out of pocket (OOP) expenditures on health, is a critical target of the Sustainable Development Goals (SDG). In low-middle income countries, micro-health insurance (MHI) schemes have emerged as a useful financing tool for laying grounds for UHC. The aim of this study is to provide evidence for designing a feasible health insurance scheme by exploring out of pocket expenditure and preferences of low-income households to pay for a prospective health insurance program targeted at the poor. **Methods:** The study was conducted using a descriptive cross-sectional study design,

using household surveys. The study participants were recruited from low-income households in Karachi through a mix of convenience and snowball sampling, using data from Benazir Income Support program (BISP). Data was analyzed using Stata (version 13). **Results:** Respondents reporting expenditure on OPD and hospitalization in the last 2 weeks were 93.4% and 11.9% respectively. The highest median expenditure was incurred on medicines. Out of the proposed benefits package, 53% of the respondents opted for the package that included emergency care, hospitalization, OPD consultation, diagnostic tests and transportation. For the co-payment plan, a majority (38.9%) participants preferred 100% insurance coverage of medicines. Nearly half of the respondents (49.4%) chose outpatient consultation for 50% co-payment. **Conclusion:** Our study findings concluded that low-income urban households are willing to enroll in a health insurance plan that provides them with comprehensive coverage against health shocks, against small monthly payments. The evidence on beneficiary preferences presented in this paper can inform the design and scale-up of National Health insurance scheme in Pakistan to maximize its acceptability, uptake and utilization for the target populations, whilst also ensuring longer-term financial sustainability.

Keywords: Universal health coverage, healthcare financing, micro health insurance

7.48

RESEARCH WORKSHOPS FOR PRE-MEDICAL HIGH SCHOOL STUDENTS: A NOVEL SOLUTION FOR IMPROVING HEALTH SCIENCE RESEARCH IN A LOWER-MIDDLE-INCOME COUNTRY

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Introduction: Research output in lower-middle-income countries (LMICs) is significantly lower than many developed nations. Research exposure early in an individual's education increases the likelihood of pursuing an academic career. This study aims to assess the impact and relevance of conducting research workshops tailored towards high-school students pursuing pre-medical education.

Methods: 5 research workshops (RW), covering the basics of research methodology and conducting a research study, were conducted online, for high-school students in Pakistan. Knowledge acquisition was monitored through pre- and post-test quizzes, and self-reported self-efficacy scores. Opinions and feedback were sought through a feedback form. A follow-up questionnaire was disseminated among participants 2 months following the completion of the RWs.

Results: A total of 126 high school students were enrolled in the RWs. Pre- and post-test analysis revealed a statistically significant improvement ($p < 0.001$) in test scores for all 5 RWs. Furthermore, analysis revealed a statistically significant improvement ($p < 0.001$) in all 17 self-efficacy scores, grouped into four categories ("Initiating Research, Manuscript Writing", "Ethics", "Data Mining & Statistical Analysis" & "Networking Skills"). 8 out of the 10 organizational aspects of the course were rated at least satisfactory and above by all participants. Feedback revealed 100% of participants found the content relevant to the current level of education and audience at a level of satisfactory or above, with 81.0% rating the "appropriateness of level of difficulty" as Excellent/Good. 70/126 attendees responded to the 2 months post-RW series follow-up survey (response rate: 55.5%). Amongst these, 35/70 (50%) reported involvement in medical research projects with faculty in academic medical institutions.

Conclusion: The RWs were overwhelmingly well-received by participants and led to a rise in research activity. This study highlights that

strengthening research capacity at a grassroots level, through RWs, may prove to be an effective long term, sustainable strategy in boosting research output in LMICs

Keywords: Research Workshops, Medical Education, Research Output

7.49

POST-INFECTIOUS BRONCHIOLITIS OBLITERANS IN A 13-YEAR-OLD BOY: A CASE REPORT FROM PAKISTAN

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Introduction: Bronchiolitis Obliterans (BO) is a rare parenchymal lung disease, with many etiologies. However, since BO presents with non-specific signs and symptoms, histopathological analysis is often required to reach a definitive diagnosis. Case Presentation A 13-year-old boy presented to emergency department of AKUH, with dyspnea and a productive cough. He was febrile, tachypneic, tachycardic and in respiratory distress. Spirometry and chest X-ray showed abnormal findings and subsequently, CT scan with contrast was performed, which showed scattered patchy ground-glass haziness with mosaicism. A provisional diagnosis of post-infectious BO was made and the patient was managed with non-invasive ventilation, methylprednisolone and bronchodilators, and subsequently discharged on prednisolone and azithromycin. However, he was readmitted within 10 days with respiratory distress and face and neck swelling. Arterial blood gas revealed acute type II respiratory failure and CT scan showed extensive pneumomediastinum and subcutaneous emphysema. An open lung biopsy was then performed which showed features consistent with the diagnosis of BO. The child was extubated and discharged on oxygen, antibiotics, high-dose corticosteroids and bronchodilators.

Discussion: Our case demonstrates a rapid progression of disease, despite receiving treatment, as our patient progressed to respiratory failure within 2 months. He also discontinued corticosteroids, which are known to help prevent further fibrosis in the lung parenchyma, in earlier stages of treatment due to which his condition worsened, demonstrating compliance as an important prognostic factor. We also noted presence of atopy and recurrent LRTI as poor prognostic factors. Furthermore, our case represents the first reported paediatric case of BO in Pakistan.

Conclusion: A multitude of factors can affect the prognosis of a patient with BO. Modifiable factors include early initiation and adherence to therapy. Non-modifiable factors include therapy-resistant cases, concurrent adenovirus infection and comorbid conditions. Indicators of poor prognosis include old age, low FVC and air-trapping seen on chest CT.

Keywords: post-infectious, bronchiolitis obliterans, paediatric

7.50

A COMPARATIVE ANALYSIS OF DOCTORS' PRACTICES AND PATIENTS' PERCEPTIONS REGARDING DISCLOSURE OF BAD NEWS ACROSS PAKISTAN: CHALLENGES AND LIMITATIONS

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Background: 'Bad news' is defined as 'any news that negatively and drastically alters the future'. Medical interactions in which bad news is discussed, are widely known to be distressing for physicians, patients, and family members. Examples of 'bad news' impending death, progressive blindness, amputation of a limb/s, stroke, cancer, fetal demise and the diagnosis of Diabetes Mellitus. There's a dearth of data on this sensitive topic of breaking bad news in our country so our aim was to assess patients'

perceptions and doctors' knowledge, practices and barriers faced by them in breaking bad news. **Methodology:** Cross-sectional, multi-centered study was conducted under Pakistan Health Research Council Grant in 15 Government and Private Hospitals across the country from April 2016 till June 2017. 1673 patients and 1185 doctors were recruited. Data collection was done by trained data collectors through a pre-coded semi-structured questionnaire consisting of dichotomous and qualitative questions covering demographic details, knowledge, perceptions, practices as well as barriers regarding bad news of doctors, patients and patients' families. **Results:** All life threatening conditions were perceived as bad news by 80% of patients and doctors. Diagnoses of common and curable diseases were not considered as bad news by about 50% of patients and doctors. More than 80% patients wanted to know the diagnosis. Both patients and doctors agreed upon the recommended behaviors while breaking bad news. The reasons for wanting to know the diagnosis included treatment, prevention and more information. The reasons for not wanting to know included fear of the emotional reaction and God's will. Reasons for difficulty in BBN included the emotional reaction of patients, failing the patient and lack of appropriate setting and training. **Conclusion:** As majority of patients wanted to know the diagnosis, doctors should break the news to the relative or patient according to the patient's wishes with special cultural considerations. Contextual guidelines should be developed.

Keywords: Bad news, patients, doctors

7.51

PREDICTORS OF FAVORABLE AND UNFAVORABLE SOFT TISSUE PROFILE OUTCOMES AFTER CLARK'S TWIN-BLOCK APPLIANCE THERAPY IN CLASS II SUBJECTS: AN ANALYTICAL CROSS-SECTIONAL STUDY

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Introduction: Clark's Twin-Block (CTB) functional appliance is commonly used to treat mandibular deficiency in skeletal class II growing patients. This study was conducted to identify cephalometric predictors for favorable and unfavorable soft tissue profile outcomes with CTB appliance. **Materials and Methods:** Using 100 lateral cephalograms (pre and post-functional) of 50 subjects treated with CTB, profile silhouettes were evaluated by a panel of orthodontists to assess improvement using the Visual Analogue Scale (VAS). Subjects were divided into favorable and unfavorable groups on the basis of VAS scores. Independent sample t-test was used to compare cephalometric skeletal and soft tissue measurements between the groups. Predictors of favorable and unfavorable outcomes were identified using the logistic regression analysis. **Results:** Statistically significant differences in pre-treatment values between favorable and unfavorable groups were observed for SN to mandibular plane angle, anterior facial height, ANB angle, pogonion to nasion perpendicular distance, lower incisor to pogonion distance, upper lip to S and E line distances ($p \leq 0.05$) and lower lip to S and E line distances ($p \leq 0.001$). Multivariable logistic regression analysis found increased lower lip to E line, and decreased pogonion to nasion perpendicular distance ($p \leq 0.05$) to be significantly associated with favorable soft tissue profile outcomes. **Conclusions:** Pre-treatment hypodivergent skeletal pattern, reduced ANB angle, reduced lower incisor to pogonion distance and soft tissue recumbency

were identified as predictors of favorable soft tissue outcomes for CTB treatment in growing patients with mandibular retrognathism. Conversely, increase in all aforementioned parameters and pre-treatment soft tissue procumbency were associated with unfavorable outcomes.

Keywords: Orthodontic Appliances, Cephalometry, Angle class II

7.52

THE ASSOCIATION OF CHEST RADIOGRAPHIC FINDINGS AND SEVERITY SCORING WITH CLINICAL OUTCOMES IN PATIENTS WITH COVID-19 PRESENTING TO THE EMERGENCY DEPARTMENT OF A TERTIARY CARE HOSPITAL IN PAKISTAN

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Introduction: While chest x-rays (CXRs) represent a cost-effective imaging modality for developing countries like Pakistan, their utility for the prognostication of COVID-19 has been minimally explored. Thus, we describe the frequency and distribution of CXR findings, and their association with clinical outcomes of patients with COVID-19.

Methods: All adult (≥ 18 years) patients presenting between 28th February-31st May to the emergency department of a tertiary care hospital in Pakistan, who were COVID-19 positive on RT-PCR with CXR done on presentation, were included. A CXR Severity Score (CXR-SS) of 0-8 was used to quantify extent of pulmonary infection on CXR, with a score of 0 being negative and 1-8 being positive. The patients' initial CXR-SS and their highest CXR-SS over the hospital course were used for

analysis, with cut-offs of 0-4 and 5-8 being used to assess association with clinical outcomes.

Results: A total of 150 patients, with 76.7% males and mean age 56.1 years, were included in this study. Initial CXR was positive in 80% of patients, and 30.7% of patients had an initial CXR-SS between 5-8. The mortality rate was 16.7% and 30.6% patients underwent ICU admission with intubation (ICU-Int). On multivariable analysis, initial CXR-SS (1.355 [1.136-1.616]) and highest CXR-SS (1.390 [1.143-1.690]) were predictors of ICU-Int, and ICU-Int was independently associated with both initial CXR-SS 5-8 (2.532 [1.109-5.782]) and highest CXR-SS 5-8 (3.386 [1.405-8.159]). Lastly, age (1.060 [1.009-1.113]), initial CXR-SS (1.278 [1.010-1.617]) and ICU-Int (5.047 [1.731-14.710]) were found to be independent predictors of mortality in our patients.

Conclusion: In a resource-constrained country like Pakistan, CXRs may have valuable prognostic utility in predicting ICU admission and mortality. Additional research with larger patient samples is needed to identify to further explore the association of CXR findings with clinical outcomes.

Keywords: Covid-19, ICU Intubation, Chest Xray Severity score - CXR-SS

7.53

HOW ARE YOUNG ADULTS IN PAKISTAN DEALING WITH COVID-19: AN ONLINE SURVEY ASSESSING THE IMPACT OF DEMOGRAPHIC CHARACTERISTICS AND SOURCES OF INFORMATION ON AWARENESS AND BEHAVIORS

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Introduction: The ongoing COVID-19 pandemic has impacted a large majority of Pakistan's population, with one particular demographic of stakeholders being the country's young adult

population. Our study looks to understand the COVID-19-related awareness and perceptions amongst Pakistan's young adult population.

Methods: We conducted a cross sectional survey from July-October 2020, via and disseminated as a Google Form on multiple social media platforms. The survey covered the following sections: 1) demographics; (2) perceptions of young adults regarding COVID-19; (3) behavior changes of young adults due to COVID-19; (4) perception of young adults regarding the government's efforts to tackle COVID-19; (5) other perceptions and behavior. All respondents aged between 18-35 years inclusive, currently residing in Pakistan, were included.

Results: The questionnaire received a total of 406 responses with the respondents having a mean age of 25.15 ± 5.80 years. 52.5% of the respondents were currently students. The vast majority relied on social media (83.7%), internet blogs/websites (83.3%) and newspapers/television (70.7%) as major sources of information regarding COVID-19. The highest percentage of individuals believed spread was possible through contaminated surfaces (95.3%), while 86.4% believed spread was possible via inhalation of droplets, and 52.0% via close contact with asymptomatic individuals. Alarming, 21.9% believed that transmission was possible through contact with packages shipped from China, and 16% believed COVID-19 could be contracted by eating food in Chinese restaurants. Moreover, 24.1% believed COVID-19 to be a biological weapon designed in a laboratory, while 23.9% were unsure.

Conclusion: Our survey revealed some deficiencies in the understanding of transmission of SARS-CoV-2, along with racial biases and belief in false narratives. Since young adults play an important role in the global response to the pandemic, our study suggests interventions that target the young adults in Pakistan in an attempt to increase their awareness about the pandemic and help them cope with its effects.

Keywords: COVID-19, Public Health, Young Adults

7.54

BARRIERS TO EXERCISE AMONG NON-EXERCISING TYPE 2 DIABETES MELLITUS (T2DM) PATIENTS VISITING A TERTIARY CARE HOSPITAL IN KARACHI

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Background and purpose Exercise is important component for the treatment of Type 2 mellitus (T2DM). It is extremely necessary to recognize obstacles to exercise amongst Non-Exercising T2DM patients. We therefore conducted this study to determine barriers to exercise among Non-Exercising T2DM patients. **Methods:** A descriptive cross-sectional study was conducted at Family Medicine outpatient clinics, Aga Khan University Hospital from October 2019 to Feb 2020. All patients age 18-65 years having T2DM for at least 6 months and performed less than 150 minutes per week or 30 minutes per day exercise were consecutively enrolled. Barriers to exercise like physical (pain/discomfort, too overweight to exercise, co-existing illness), psychological (no will power, exercise not interesting, fear of low blood sugar, feeling depressed), social (no spare time, lack of transportation, cannot afford local facilities, no support from family, taking care of children/family, hectic Job schedule), environmental (too hot or cold weather, unavailability of parks/gym, no convenient place to exercise, traffic) and lack of knowledge were observed.

Results: Of 275 patients, mean age of the patients was 46.58 ± 10.96 years. There were 146 (53.1%) males and 129 (46.9%) females. The mean duration of diabetes was 6.15 ± 4.35 years. Pain/physical discomfort 110 (40%) as a most common physical barrier, exercise not interested 147 (53.5%) and no will power 115 (41.8%) as most common psychological barrier, and no spare time 141 (51.3%) as most common social

barrier was observed. Moreover, 72 (26.2%) patients didn't know the importance of exercise in diabetes whereas 61 (22.2%) didn't know what type of exercise to do.

Conclusion: In this study, a number of physical, psychological, social and environmental obstacles have been identified with lack of adequate knowledge as well. Implication by designing specific interventions and counseling strategies to address these barriers will allow patients to perform physical exercises that will also lead to control of their diabetes.

Keywords: Diabetes, Barriers, Exercise

7.55

Association between perioperative hypothermia and risk of surgical site infection in patients undergoing elective abdominal surgery in Karachi, Pakistan: A prospective cohort study

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Surgical site infection (SSI) is one of the major complications after abdominal surgeries. Perioperative hypothermia defined as temperature less than 36°C has been found to increase the risk of SSI. Though several past studies have shown that strict maintenance of perioperative normothermia results in decreased rates of SSI, recent studies have questioned the effectiveness of normothermia in reducing SSI. The purpose of this study is to determine if there is an increased risk of SSI in patients who become hypothermic in perioperative period. **MATERIALS AND METHODS:** In this one-year prospective cohort study, all patients who underwent elective abdominal surgery and met our selection criteria were included. The exposed cohort group included patients who had perioperative hypothermia while the non-exposed cohort group included patients who did not have perioperative hypothermia

(normothermic). Sample size was calculated using World Health Organization (WHO) software which resulted in a total sample size of 176 patients with 88 patients in each group. All data was collected from patient charts and added to the proforma. Data was entered and analyzed using SPSS version 21.0 and p-value of less than or equal to 0.05 was considered significant. RESULTS: A total of 309 laparotomies were performed from October to December 2017. 183 patients met the selection criteria and were included in the study. 90 patients (49%) were in hypothermia group and 93 patients (51%) were in non-hypothermia group. The overall incidence of SSI was 10.4% (19 patients). SSI in hypothermia group was 10% and in non-hypothermia group was 10.8% and this was found to be insignificant ($p= 0.867$). The two groups differed in terms of age, gender, body mass index (BMI), duration of surgery and type of surgery. Multiple logistic regression analysis was performed to determine the independent association of SSI with hypothermia adjusting for other exposure variables. The adjusted analyses revealed no association between intraoperative hypothermia and SSI. The only significant predictor for SSI was BMI ($p= 0.026$). CONCLUSION: There is no statistically significant association between hypothermia and SSI. However, a low BMI is an independent risk factor for SSI.

Keywords: Hypothermia, Surgical site infection (SSI), Body mass index (BMI)

7.56

PEER-TAUGHT VIRTUAL RESEARCH WORKSHOPS FOR MEDICAL STUDENTS IN PAKISTAN: A SUSTAINABLE SOLUTION FOR STUDENT RESEARCH

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Background: South Asia has not been a major contributor in the medical research pool, mainly because of the lack of encouragement and opportunities to students early on in their career. With the increase in online learning systems during COVID-19, we aim to assess the effectiveness of a comprehensive virtual research course among medical students of Pakistan.

Methods: This quasi-experimental study assessed the effectiveness of five, virtual research workshops (RWs) in improving the basic research skills in following areas; Initiating Research, Manuscript Writing, Ethics, Data Collection and Analysis. Medical students were enrolled from all over Pakistan and RWs were conducted over Zoom. Improvement in each RW was assessed via pre- and post-tests after each RW, self-efficacy scores and feedback forms.

Results: A total of 307 medical students, with mean age of 21.37 ± 1.91 years were enrolled in the RWs. Most students (60.9%) did not have any research experience and the majority (59%) had not attended any RWs previously. The cohort demonstrated significant improvement in pre- and post-test scores for all 5 RWs ($p < 0.001$) with greatest improvement in Data Collection and Analysis) with mean difference of 34.65 ± 24.49 . In addition, all 16 self-efficacy scores also showed highly significant improvement ($p < 0.001$). Participant satisfaction was high with 90% of the participants rating overall organization, quality of presentation and discussion, and relevance to current level of discussion as either "Excellent or Good".

Conclusion: This study demonstrates the utility of virtual RWs in improving the research related knowledge and skills among medical students. The virtual nature of RWs allow for a much wider outreach than conventional in-person research seminars. Thus, virtual RWs are a creative use of web-based technologies to facilitate medical students to contribute to the local and global healthcare research community

Keywords: medical students, research course, online workshops

7.57

COMPARISON OF ANAESTHESIA WORKLOAD FOR CESAREAN SECTIONS BEFORE & DURING COVID-19 PANDEMIC

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Introduction: Cesarean Section (CS) is a surgical procedure widely performed to save maternal and fetal lives¹. The World Health Organization (WHO) declared that cesarean section rate should not be higher than 10%–15% of all births.² Many countries are failing to meet this recommendation and current data from 150 countries revealed that 18.6% of all births occur by CS, ranging from 6% to 27%.³ During the period of 1997 to 2017, the rate of CS has increased from 208 to 320 /1000 live births⁴. In Pakistan the most recent CS rate is 25.6% in urban and 11.5% rural areas⁵. We aimed to compare the Anaesthesia workload of CS before & during the current COVID 19 pandemic at AKUH.

Methodology: This is a comparative cross-sectional study conducted after exemption from the Ethical Review Committee (ERC). Data collected using a pre-designed form. Group I included all CS performed in the last three months before the first reported COVID patient at our institute while in Group II data of CS performed during the pandemic period for the next three months. All elective & emergency CS performed during the study period were included. Results: Total patients presented in the labor room during the study period were 2469. 1413 in the pre COVID period while 1056 patients presented in labor room during the pandemic. CS done during Pre COVID and Post COVID were 705 and 573 respectively.

Conclusion: The workload of anesthesia for CS decreased during the COVID 19 pandemic in comparison to pre COVID at AKUH.

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Keywords: Cesarean section, COVID 19, workload

7.58

MEDICATION ERROR IN PERI-OPERATIVE SETTING IN A TERTIARY CARE HOSPITAL; OVER A PERIOD OF 15 YEARS

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Introduction: The third global patient safety challenge announced by World Health Organization (WHO) aimed to reduce the global burden of iatrogenic medication-related harm by 50% within five years. They focused on three priority areas of medication safety i.e. high-risk situations, poly-pharmacy and transitions of care. Our objective was to analyze the type of reported critical incidents related to medication errors in our critical incident reporting system (CIRS) database over the last 15 years (2004-2018) and to review measures taken for improvement based on the reported errors.

Methodology: All Critical incidents (C.I.) reported during January 2004 till December

2018 was extracted. All incidents marked as medication errors were reviewed on separate data extraction form which includes reporting year, age, surgical specialty, ASA status, time of incident, phase and type of anaesthesia, phase of drug handling, type of error, class of medicine, outcome in terms of level of harm and severity of adverse drug event (ADE) and step for improvement taken.

Results: 311 medication errors reported over a period of 15 years (2004 to 2018). The errors are mostly occurred in ASA II and III patient 163 and 90 respectively and reported mostly during working hours i.e. 0800 am to 0500 pm especially during induction 133(42.8%) and maintenance phases 122 (39.2%). The incident most commonly occurred during administration phase (188) and 65 % due to human error. 116 adverse drug effects occur out of which 87 with error and 30 without an error.

Conclusion: Medication errors are very frequent during different phases of anaesthesia especially administration. We recommend dose calculation during planning for next case to decrease chance of error

Keywords: Medication, Error, Anaesthesia

7.59

PREVALENCE AND CHARACTERISTICS RELATED TO MULTI-VITAMIN AND MULTI-MINERALS USE. FINDINGS FROM PURE PAKISTAN STUDY

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Objectives: Despite the stable trend in the usage of multivitamins/multiminerals (MVM) in developed countries, use in the Pakistani community is thought to be rising. In this secondary analysis, we aim to assess the utilization of MVM in urban and rural communities of Karachi.

Methods: We used PURE's baseline data n=1681 participants. Participants were queried on use of any supplements in the preceding 30 days to estimate the prevalence of use. Proportions along with 95% confidence intervals (CI) overall and by population subgroup (age, sex, community type, educational status and chronic disease status) were reported. Binary logistic regression was performed to analyze the data.

Results: A total of 1681 adults were included in the study with an overall MVM usage of 52% (95% CI: 49.6 – 54.4). Utilization was higher among females than males (56% versus 44%, $p < 0.01$) and rural versus urban residents (53.1% versus 46.9%, $p < 0.01$). Use of MVM decreased as the level of education improved ($p < 0.01$). After adjusting for potential confounders, the female gender and living in a rural community were independently associated with a higher likelihood of MVM use than males and those living in urban community respectively (OR_{adj} = 1.2, 95% CI: 1.1 – 1.5 and OR_{adj} = 2.2, 95% CI: 1.7 – 2.8). Relative to individuals who had greater than secondary level of education, the odds of being exposed to MVM were significantly higher in individuals with primary education (OR_{adj} = 1.5, 95% CI: 1.1 – 2.1) and no formal schooling (OR_{adj} = 1.9, 95% CI: 1.4 – 2.5).

Conclusion: In this sample of community dwelling, about half of the population used MVM. Identified characteristics including female gender, rural residents, and individuals with less education are useful for designing interventions through greater tailoring to and targeting of subgroups of individuals who are using MVM unnecessarily.

Keywords: Multivitamin, Multimineral, Prevalence

7.60

FIELD-TESTING AND VALIDATION OF THE GLOBAL SCALE FOR EARLY DEVELOPMENT (GSED) FOR 0-3 YEARS OLD CHILDREN IN PAKISTAN

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Background: While the importance of early-development has been well recognized globally, universal measures to quantify early child development (ECD) are lacking. Measurement tools are needed for tracking progress toward meeting global policy goals, also for informing resource allocation and programming to plan tailored interventions. Measures used currently ranges from proxy to detailed assessment of individual performance that are expensive, culturally inappropriate, or time-intensive to administer. The World Health Organization (WHO) has developed a new tool called Global Scale for Early Development (GSED) for children aged 0-3 years. It includes a short form which will allow global monitoring and long form for programmatic evaluations.

Methods: It is a prospective validation study, using an age and sex stratified sample of 1248 child-mother dyads. Pilot phase has been completed and is now ready for main validation in Pakistan, Bangladesh, Tanzania, Coast of Ivory, Brazil and the Netherlands. GSED tools will also be measured for inter and intra-rater reliability, predictive and concurrent validity against BSID-III. Data collection will be done on tablets.

Both short and long form measures cognitive, language, motor development; and socio-emotional behavior aspects. Short form is a mother-reported questionnaire with audio-visual clips whereas long form is child's direct assessment which requires an (easy to make) toolkit.

Results: Ethical approval is received from WHO and AKU. Data collection will begin from Dec 2020 and will last a year.

D scores (a numeric unit for development just as we use centimeters for height) will be calculated for each child to have quantitative comparison across ages and within/between countries. It will be converted to DAZ which is age-standardized D-Score (just as HAZ for height) to construct cut-off points to identify children reaching their development potential vs. with delay.

Conclusion: This new universal validated tool will prove to be of great value for application at the population level for children under 3 years of age

Keywords: early childhood development, cognition, WHO

7.61

IMPLEMENTATION OF HEALTH AND HEALTH-RELATED SDGS ACROSS FIVE REGIONS: ASSESSMENT OF CURRENT STRATEGIES AND RECOMMENDATIONS FOR ACCELERATED IMPLEMENTATION

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Integrated implementation across health and 'health-related' Sustainable Development Goals (SDGs) is imperative for achievement of Agenda 2030. Normative recommendations about potentially useful approaches to SDG implementation are abundant but evidence of implementation strategies being adopted is limited. We conducted a systematic review with qualitative synthesis using peer-reviewed and grey literature. We included national- and subnational-level publications examining implementation of health and health-related SDGs (HHSDGs) published between June 2013 and July 2019. Consultative meetings were conducted involving 15 countries across five

regions to assess implementation strategies. Thirty-two publications were included and consultative meetings were conducted with 120 people. Our findings indicate that that high-level political commitment is evident in most countries and HHSDGs are being aligned with existing national development strategies and plans. While the momentum towards universal health coverage is notable, explicit linkages with non-health SDGs and integrated multisectoral implementation strategies are lacking. Funding constraints are a major challenge for many countries. HHSDGs are generally being financed from within existing funded plans and, in some instances, through SDG-specific budgeting and tracking; additional funding is being mobilized by increasing domestic taxation and subsidization, and by collaborating with development partners and private sector. On the other hand, there has been limited involvement of civic society representatives and academia, relatively few capacity development initiatives were in place, a well-crafted communication strategy was missing, and there is limited evidence of additional domestic financing for implementing HHSDGs. Lack of coordination among various levels of governments is a key challenge. Government leadership and multi-stakeholder planning are necessary for implementing HHSDGs without marginalizing core health issues. Appropriate mechanisms are needed for consultation and integration across key stakeholders grounded in notions of social responsibility and sustainability. Countries will need to increase resource allocation to health and cross-sectoral initiatives to achieve universal health coverage and addressing determinants of health.

Keywords: SDGs, health policy, determinants of health

7.62

THE IMPACT OF A VIRTUAL COVID-19 EDUCATIONAL COURSE FOR PRE-COLLEGE STUDENTS

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Introduction: In a matter of months, the COVID-19 pandemic has altered the normal way of life globally, and has ushered in another pandemic: a pandemic of misinformation. In a plight to combat this misinformation, we conducted a study aimed to assess the impact of a two week-long COVID-19 educational course on high-school and college students across Pakistan, in which they were taught about the various facets of the pandemic.

Methods: The study was a quasi-experimental, pre-post design. Five tutorials were conducted over two weeks via Zoom: History of COVID-19; Virology & Transmission; Epidemiology; Pathogenesis, Clinical Findings, Labs & Imaging, and; Diagnosis, Treatment & Prevention. Assessments were conducted before and after each lecture, each consisting of 10-15 questions. Feedback was collected via a feedback form and three Focus Group Discussions. Data was analyzed on SPSS.

Results: Out of the 250 students enrolled, 179 completed the study. The mean age of the participants was 17.9 (± 0.84), and more females (65.4%) participated than males (34.6%). The majority of the students were from Karachi (92.7%) as opposed to other cities in Pakistan (7.3%). 106 students (92.7%) were in A-level/F.SC 2, 62 (34.6%) were in AS-level/F.SC 1, and 11 (6.2%) were in O-level/Matric. In all five tutorials conducted, there was a significant increase in knowledge observed, with the percentage change as follows: History of COVID-19 (19.9 ± 15.9 , p

Keywords: Public Health, Education, COVID-19

7.63

STIMULATION OF ACUPOINT P6 BEFORE INDUCTION OF ANESTHESIA FOR PREVENTING POST-OPERATIVE NAUSEA AND VOMITING; A RANDOMIZED CONTROL TRIAL

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Objective: To determine the role of stimulation of Acupoint P6 for preventing Post Operative Nausea and Vomiting.

Design: Randomized Clinical Trial. The research setting took place in the Post Anesthesia Care Unit of the AKUH . A total of 84 participants undergoing Laparoscopic Cholecystectomy, ASA Status I or II, were enrolled and randomly allocated into 2 groups: 41 in control and 43 in intervention group. **Interventions:** In the intervention group, the band was applied at the wrist with the beads placed exactly at P6 point. In control group, the band was applied at the wrist with the beads placed on the dorsal surface. In both groups, acupressure band was applied before the induction of anesthesia in the waiting area of the operating room and continued during intraoperative period and six hours postoperatively. **Measurements:** Postoperatively, patients were monitored for postoperative nausea and vomiting at the time of arrival in post anesthesia care unit [PACU], after half hour, three hours and six hours postoperatively using visual analog scale [VAS] from 1-10 [1=none, 2-5=mild, 6-7=moderate, 8-10=severe]. for PONV separately. **Main Results:** The results of PONV in PACU, at 30 minutes, three hours and six hours postoperatively showed an insignificant difference in intervention and control group. The frequencies of mild to moderate PONV were gradually reduced in both groups but the reduction was more pronounced

in control group than in the intervention group. There were no reported events of severe PONV at three hours and six hours postoperatively in both groups. The use of rescue antiemetics was statistically insignificant between the two groups [P = 0.744].

Conclusions: Our study reports that acupressure at Nei Guan P6 point starting before the induction of anesthesia till 6 hours post-operative has no significant role in preventing PONV as rescue anti-emetics were required with similar frequency in both groups.

Keywords: Acupressure, Postoperative Nausea and Vomiting, Laparoscopic Cholecystectomy

7.64

EXPLORING THE POTENTIAL OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING TO COMBAT COVID-19 AND EXISTING OPPORTUNITIES FOR LMIC: A SCOPING REVIEW

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Background: In the face of the current time-sensitive COVID-19 pandemic, the limited capacity of healthcare systems resulted in an emerging need to develop newer methods to control the spread of the pandemic. Artificial Intelligence (AI), and Machine Learning (ML) have a vast potential to exponentially optimize health care research. The use of AI-driven tools in LMIC can help in eradicating health inequalities and decrease the burden on health systems.

Methods: The literature search for this Scoping review was conducted through the PubMed database using keywords: COVID-19, Artificial Intelligence (AI), Machine Learning (ML), and Low Middle-Income Countries (LMIC). Forty-three articles were identified and screened for eligibility and 13 were included in the final

review. All the items of this Scoping review are reported using guidelines for PRISMA extension for scoping reviews (PRISMA-ScR).

Results: Results were synthesized and reported under 4 themes. (a) The need of AI during this pandemic: AI can assist to increase the speed and accuracy of identification of cases and through data mining to deal with the health crisis efficiently, (b) Utility of AI in COVID-19 screening, contact tracing, and diagnosis: Efficacy for virus detection can be increased by deploying the smart city data network using terminal tracking system along-with prediction of future outbreaks, (c) Use of AI in COVID-19 patient monitoring and drug development: A Deep learning system provides valuable information regarding protein structures associated with COVID-19 which could be utilized for vaccine formulation, and (d) AI beyond COVID-19 and opportunities for Low-Middle Income Countries (LMIC): There is a lack of financial, material, and human resources in LMIC, AI can minimize the workload on human labor and help in analyzing vast medical data, potentiating predictive and preventive healthcare. Conclusion: AI-based tools can be a game-changer for diagnosis, treatment, and management of COVID-19 patients with the potential to reshape the future of healthcare in LMIC.

Keywords: artificial intelligence,, machine learning,, COVID-19

7.65

FOOD SUPPLEMENTS TO REDUCE STUNTING IN PAKISTAN: A PROCESS EVALUATION OF COMMUNITY DYNAMICS SHAPING UPTAKE

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Introduction: There is an increasing interest in use of food supplements to prevent childhood

stunting, however the evidence on the process indicators is scarce. We in this study explore the barriers to the effective implementation of food supplementation programs and the possible mitigation strategies which can guide the design of future programs.

Methods: We undertook a process evaluation of a stunting prevention food supplementation pilot program in rural Pakistan that distributed Wheat Soy Blend (WSB) to pregnant & lactating women, and Lipid-based Nutrient Supplement (LNS) and micronutrient powder (MNP) to < 5 years children. We used a mixed methods approach through a quantitative survey of 800 households and conducted focused group discussion (FGDs) with caregivers and Community Health Workers (CHWs)) and key informant interviews with district stakeholders to evaluate the community side factors affecting uptake through five parameters: value, acceptability, receipt of supplement, usage and correct dosage.

Results: The findings show that proportionately few beneficiaries consumed the full dose of supplements, despite reasonable knowledge amongst caregivers. Sharing of supplements with other household member was common, and the full monthly stock was usually not received. Qualitative findings suggest that caregivers did not associate food supplements with stunting prevention. WSB was well accepted as an extra ration, LNS was popular due its chocolaty taste and texture, whereas MNP sprinkles were perceived to be of little value. Qualitative findings also indicate CHWs related programmatic constraints of low motivation, multi-tasking, inadequate counselling skills and weak supervision.

Conclusion: We conclude that the community acceptability of food supplements does not translate into optimal consumption. Hence a greater emphasis is needed on context specific demand creation and focusing on the supply side constraints with improved logistical planning, enhanced motivation and supervision of

community workers with involvement of multiple stakeholders.

Keywords: Stunting, Food supplements, Utilization

7.66

AVAILABILITY DOES NOT MEAN UTILIZATION: ANALYSIS OF A LARGE MICRO HEALTH INSURANCE PROGRAMME IN PAKISTAN

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Introduction: In recent years, several Micro Health Insurance (MHI) schemes have been initiated in low- and middle-income countries (LMIC) to meet the universal health coverage (UHC) targets. Evidence on the utilization of these MHI schemes is scarce. Field experiences and lesson learning is crucial to effectively increase access to health care and offer protection against catastrophic health expenditure to the poorest population through the MHI schemes. This paper analyzes community utilization and factors affecting utilization of an MHI provided to the poorest rural households in eight districts of Sindh province of Pakistan. This initiative is part of a larger pro-poor European Union (EU) funded Sindh Union Council and Community Economic Strengthening Support (SUCCESS) Programme implemented by the Rural Support Programs (RSPs).

Method: The analysis draws on insurance utilization records and an internal assessment report by the RSPs Network (RSPN). The analysis provides qualitative experiences of the community, empanelled health care providers, the insurance agency and frontline management staff.

Results: Analysis revealed that overall utilization was low (0.42%) and the highest

number of cases treated at the hospital were women utilizing obstetrics and gynecology care. The scheme was noted to prevent catastrophic health expenditure in households that were able to successfully utilize the scheme. Key factors affecting utilization were identified to be around i) awareness creation, ii) distance to empanelled hospitals, and iii) access issues at the health facility level. We aim to add to the knowledge base around MHI for policy makers to design and implement more informed initiatives in the future.

Conclusion: Our analysis highlights that utilization of the MHI is determined by the need, understanding and willingness to seek care and the access to care. The experience of MHI from Pakistan will contribute to informing ongoing efforts in other countries facing similar challenges in moving towards UHC coverage.

Keywords: health financing, micro health insurance,,sustainable development

7.67

PREDICTING CLINICAL AND MORTALITY OUTCOMES IN PATIENTS WITH COVID-19 USING MACHINE LEARNING ALGORITHM

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In the face of current time-sensitive COVID-19 pandemic, limited capacity of healthcare systems resulted in an emerging need to develop newer methods to control the spread of pandemic. Artificial Intelligence (AI), and Machine Learning (ML) has a vast potential to exponentially optimize health care research. COVID-19 can progress to severe complications like ARDS, AKI, myocardial injury etc. Some severely ill patients also require critical care and mechanical ventilation inclusive of ICU care. However the severity of clinical illness can result in mortality and long-term morbidity as well. We aim to predict clinical outcomes in terms of mortality for COVID-19 patients

admitted at Aga Khan University Hospital using machine learning algorithms based on clinical, laboratory, and sociodemographic related factors. The data for this study will be extracted retrospectively from medical records of COVID-19 patients admitted at the hospital (from feb-sept 2020). We will adopt a two phase machine learning framework, phase I being the statistical phase and phase II being the machine learning phase. We will also check for the effectiveness of the developed ML tool for its accuracy.

Keywords:Clinical outcomes, COVID-19, Machine Learning

7.68

CT FINDINGS WITH HISTOPATHOLOGICAL CORRELATION IN NON-NEOPLASTIC, BENIGN & MALIGNANT APPENDICEAL MUCOCELES

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Introduction:Differentiation of histologic subtypes of appendiceal mucoceles may prove to be difficult on CT examinations. The main objective of this study will be to try to identify the CT features of mucocele of the appendix and correlate the imaging findings with histopathological diagnosis in non-neoplastic, benign and malignant neoplastic lesions and whether these entities can be accurately differentiated on CT imaging.

Methods:CT scans of 31 patients with histopathological diagnosis of mucocele were retrospectively reviewed. The appendix was evaluated for maximal luminal diameter, cystic dilatation, luminal attenuation, appendicolith, mural calcification and enhancement, periappendiceal fat stranding and fluid. CT findings were compared by use of Mann-Whitney U and Fisher's exact tests. Receiver operating characteristics analysis was performed

to assess the diagnostic utility of appendiceal luminal diameter in differentiating non-neoplastic from malignant neoplastic mucocele.

Results:Patients were classified into three groups: those with non-neoplastic mucoceles (n=10), benign mucocele (simple mucocele and mucosal hyperplasia and low-grade mucinous cystadenoma (n =17), and those with malignant mucinous cystadenocarcinoma (n =4). The mean diameter was found to be significantly different in the three groups (1.5 ± 0.5 cm versus 3.4 ± 1.4 cm versus 1.9 ± 0.7 cm, $p < 0.01$). The best cut-off diameter for diagnosis of non-neoplastic mucoceles was ≤ 2.3 cm with a sensitivity of 71% and specificity of 90%; positive predictive value of 94 % and negative predictive value of 60%. Soft tissue thickening (p-value 0.01), mural calcification (p-value < 0.01), internal septation (p-value 0.02) and fat stranding (p-value 0.05) were found to be of statistical significance.

Conclusion:Data from our study suggests that CT findings such as diameter greater than 2.3 cm, soft tissue thickening, mural calcification, internal septation and fat stranding may be useful in preoperative diagnosis of neoplastic appendiceal mucocele. However, further validation is required by larger prospective studies.

Keywords:mucocele, appendix, computed tomography

7.69

A WEB-BASED DATABASE-FOR VALIDATING DRIED BLOOD SPOT REFERENCE INTERVALS OF AMINO ACIDS ON NEONATES ENROLLED IN AMANHI STUDY

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Background: Accurate identification of newborns with inherited metabolic disease can significantly improve patient outcomes. There are gaps in available neonatal reference intervals (RI) for use in Pakistan, where dried blood spot (DBS) testing is still not standard of care.

Objective: To determine RI for DBS amino acids from a cohort of neonates enrolled in the AMANHI (Alliance for Maternal and Newborn Health Improvement) Biorepository at the Aga Khan University, Pakistan. **Methods:** Sampling was done from Nov 2017- Feb 2019. in peri-urban communities of Ibrahim Hyderi & Ali Akbar Shah, Karachi located along the Arabian Sea coast covering an area of 6 sq. km with a population of 187 357. After written informed consent from parents (4359-Ped-ERC) DBS samples from neonates were obtained from the middle part of the heel within 24-72 hours of birth on Whatman filter paper. Samples were kept at -80° C and transported to University of Iowa for analysis in dry ice. Amino acids were analyzed on LC-MS/MS. Reference data was uploaded on to the CLIR Web portal as '.csv' excel file to calculate and compare the RI with other laboratories across the globe(n=33,948). The CLIR Outlier Data cleaning was done. If errors were shown, each error was catered until it showed zero errors.

Results: CLIR Outlier Data cleaning was done for ten amino acids of each patient (n=610). Out of the total of the reference data 285 were males and 325 were females. Glutamine was excluded from the study because of >50% outliers. RI for citrulline (n=433) was 9.35-16.19 mmol/L as compared to CLIR-RI of 13.97-35 mmol/L; for ornithine (n=501) was 25.09-45.27 nmol/mL as compared to CLIR-RI of 33.83-93.0 nmol/mL; for valine (n=473) was 99.67-164.05 nmol/mL as compared to CLIR-RI of 133.0-280.0 nmol/mL; for leucine (n=377) was 106.85-177.99 nmol/mL as compared to CLIR-RI of 67.0-146.0 nmol/ml; for alanine (n=532) was 171.20-331.19 nmol/ml as compared to CLIR-RI of 212.0-474.92 nmol/mL; for methionine (n=593) was 14.14-27.46 nmol/ml as compared

to CLIR-RI of 15.00-27.46 nmol/ml; for phenylalanine (n=421) was 50.68-82.91 nmol/ml as compared to CLIR-RI of 37.00-68.49 nmol/ml and for tyrosine (n=461) was 56.13-106.7 nmol/ml as compared to CLIR-RI of 38-86.08 nmol/ml.

Conclusion: The web-based database-Collaborative Laboratory Integrated Reports developed by Mayo Clinic Rochester Minnesota USA assisted us to establish our own reference range for DBS amino acids and compare it to other labs worldwide.

Keywords: CLIR, Dried Blood Spot, Reference Intervals

7.70

DEVELOPMENT OF FLAP MONITORING FORM THROUGH AN APPROACH OF MULTISPECIALTY EXPERT TEAM

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Background: Microsurgical reconstruction using free flaps is the workhorse of Orthopaedic soft tissue coverage for open wounds as well as in Plastic Surgery. The success rate of microsurgical reconstruction is approximately 95%. Previous studies have shown that complications can develop up to 7 days post-operatively following microsurgical reconstruction, but the crucial window period for complications is 24-48 hrs postop (Zoccali, Molina, & Farhadi, 2017). Thereafter the complication rate declines over time. Rapid re-exploration of the flap in first 48 h post-surgery has shown successful flap salvage. The role of appropriately skilled personnel is crucial with respect to the assessment and monitoring of patients with flap. The objective of this study was to develop a multidisciplinary flap monitoring form to objectively perform regular postoperative monitoring in order to detect early signs of flap failure.

Methodology: The model of change management process was used as a methodological framework. To change the existing process of FLAP documentation, several components for the assessment and monitoring of FLAP extracted from the international literatures. After the development of new tool, the expert review was obtained to check for the content validity from the consultants of Orthopedics, plastics and general surgery. Result: After expert review, and several iterations a Flap Monitoring Form was created to incorporate all the essential and critical aspects of FLAP assessment and monitoring. This change in the existing documentation is a tool which would be filled by the residents and the nursing staff for all patients who undergo microsurgical reconstruction using flaps.

Conclusion: The assessment and monitoring of FLAP is a crucial aspect to prevent FLAP failures though early identification of its complication. This tool will help the resident and the nurses to assess the FLAP on a single format and to document accordingly. The comprehensive Flap Monitoring Form will help in the early identification of flap congestion and venous insufficiency. This form will be implemented in all the three specialties for the assessment and monitoring of FLAP. With the implementation of this form, the failure rate would be decreased through the early identification of potential complication. Moreover, in future the plan of enhancing nursing staffs and resident hands on practice and knowledge regarding FLAP monitoring and assessment will be ensured through a simulation based approach. Future work will analyze the impact of this assessment tool on the FLAP failure rate.

Keywords: Flap, Monitoring Form,

7.71

THE IMPACT OF THE COVID-19 PANDEMIC ON THE CAREER CHOICE OF MEDICINE: A CROSS-SECTIONAL STUDY AMONGST HIGH-SCHOOL STUDENTS

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Introduction: The COVID-19 Pandemic has posed an unprecedented health crisis globally, demonstrating the essential nature of the medical profession. It has highlighted the difficulties of working as a doctor, with risks to one's personal health, a heavy workload, and emotional and psychological stresses of practicing medicine. However, the pandemic has also showcased the perseverance and diligence of doctors in challenging circumstances. Considering these conflicting potential effects on the perceptions of medicine, this study aims to assess the impact of the COVID-19 pandemic on the choices of high school students to pursue medicine as a career.

Methods: A questionnaire was distributed to high school students across Pakistan through online student forums. Participants were included if they were between the ages of 14 and 20, enrolled in a high school for the academic year 2019-2020 and were studying in a General Sciences or Premedical academic stream.

Results: A total of 1504 students participated in this study. 39% of the participants said that the pandemic had increased their motivation to pursue medicine as a career, whereas 15% felt that their motivation had decreased. There was increased interest in certain subspecialties, such as Public Health, with 7% of students interested in this specialty post-pandemic as opposed to 5% pre-pandemic. After the start of the pandemic, more students (64% vs 52%) felt that doctors experience physical and emotional turmoil due to their work and fewer students (8% vs 13%) felt that a doctor's job is easy. Overall, most students (75%) felt that their respect for the medical profession had increased.

Conclusion: Despite the increase in awareness of difficulties encountered by medical professionals amongst students as a result of the Covid-19 Pandemic, the overall perceptions of the medical field have improved, with more students experiencing an increased motivation to pursue medicine as a career.

Keywords: Education, COVID-19, Medicine

7.72

RELATIONSHIP OF SPOT URINE OXALATE TO CREATININE RATIO AND 24 HOURS URINARY OXALATE EXCRETION IN PATIENTS WITH UROLITHIASIS

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Background: The evaluation of 24 h urinary oxalate excretion is the gold standard for diagnosing hyperoxaluria in patients with recurrent urolithiasis. However, 24 h urine sample collection is cumbersome. Therefore we aim to see if oxalate to creatinine ratio in random urine sample can be used as an alternative.

Materials and Methods: A cross-sectional study was conducted at Section of Chemical Pathology, Department of Pathology and Laboratory Medicine Aga Khan University Karachi from 1st February to December 31, 2019. A total of 62 adult patients, 18–60 years of age with history of kidney stones presenting to the clinical laboratory for 24 h urine oxalate estimation were invited to participate in the study after informed consent. Clinical details were recorded on a structured questionnaire and patients were guided to submit 24 h urine and a random spot urine sample. Urinary oxalate was measured on Micro lab 300 using a kit based on oxalate oxidase principle by Trinity Biotech plc, Wicklow, Ireland following standard operating procedures. Urinary creatinine was measured on ADVIA 1800 by Siemens, US using kinetic

Jaffe reaction according to the manufacturer's instructions. The data was analyzed on SPSS. Results: In a period of ten months, a total of 62 subjects were recruited; mean age was 32.4 ± 2.6 years. Males were 49 (79.0%) and females were 13 (20.9%). Correlation was found to be ($r = 0.289$) by Spearman correlation (p value < 0.005). Taking 24 h urinary oxalate as gold standard the sensitivity, specificity, positive predictive value and negative predictive value of spot oxalate to creatinine ratio was 83.3%, 17.8%, 9.8% and 90.9% respectively.

Conclusion: The random spot urine test cannot replace the 24 h urinary oxalate estimation in patients with urolithiasis.

Keywords: hyperoxaluria, urolithiasis, spot oxalate to creatinine ratio

7.73

PUBLIC ENGAGEMENT FOR POLICY RESEARCH: HEALTH & LIVING EXPERIENCES OF PAKISTANI MIGRANT WORKERS

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Introduction: The total number of international migrants increased by 49% between the years 2000 to 2017. Migration may pose opportunities for better lives and prosperity, but also risk of illness and death. Poverty, migratory status, working status and gender influence migrants' everyday lives and opportunities, and therefore also their health. This study aims to understand the lived experiences of migrants along with choices and decisions they make during the process of migration. **METHODS:** This public engagement project will rely on photographs taken by potential and returning migrant labor workers to reflect their experiences. Participants preparing to emigrate will be asked to take pictures of the things that seem most important to them that reflect their hopes, worries pertaining to migration and COVID-19,

expectations and memorable experiences (whether positive or less so) while preparing to leave. This study encompasses two tools to gather information from the participants, the first tool is the guidelines for taking photographs which will be shared with the respondents in the first meeting. The second tool comprises of debrief questions to be asked in the second meeting.

Results: This study will develop a series of photo-essays. These will be composed of pictures which, for example can show migrants' preparation for departure which could include luggage, medical visits screening their general health, counselling sessions by employment promoters and/or organizations working on migrants' rights, precious belongings, precautionary measures being adopted to prevent COVID-19 or anything pertaining to their journey.

Conclusion: This is a novel social science research in which researchers will engage with migrants (study subjects) to illicit their life experiences in home and host country and disseminate results through publications, exhibition/s and social media. The study will thus be able to contribute towards improving policies on migrant health.

Keywords: Migrants, Lived Experience, Photo Essays

7.74

“I AM NOT THE PERSON I USED TO BE”: PSYCHOSOCIAL EXPERIENCES OF MENOPAUSE WOMEN VISITING TERTIARY CARE HOSPITAL IN KARACHI PAKISTAN

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Introduction: Menopause is a cessation of menstrual cycle for longer than 12 months and there is a drop in estrogen and progesterone levels. Life expectancy has increased all over the world; therefore, women are now expected to spend almost 1/3rd of their life in menopausal phase. Women experience a variety of menopausal symptoms during this phase which affects their quality of life. This study aims to explore the perceptions and experiences of menopause women living in Karachi, Pakistan.

Methods: Using qualitative exploratory design, in-depth interviews were conducted with women aged 35-55 years. The study participants were recruited from the Obstetrics and Gynecology clinic and the Family Medicine clinic of a tertiary care hospital and affiliated secondary hospitals in Karachi, Pakistan. The data was collected through face to face interviews using semi structured interview guide. Verbatim transcripts of the interviews were analyzed using content analysis.

Results: Women described positive and negative experiences of menopause, though predominantly negative owing to the bio-psycho-social changes in relation to menopause. It was found that women's negative experience about menopause intensified by mental distress, lack of support from intimate partner, and misperceptions about menopause. On the other hand, some women perceived menopause as positive and hence they were better at managing their challenges related to menopause. In clinical practices, health care professionals should screen the women for menopause challenges when they visit health care facilities and offer education regarding self-care and management to achieve better quality of life and positive coping.

Conclusion: We conducted a preliminary study on women perceptions and experiences of menopause from Pakistan. Our study offers insightful findings from an Asian cultural perspective, in which norms are predominantly patriarchal and male dominated. The study

provides useful guidelines for health care providers to better address health care needs of menopause women.

Keywords: menopause, experiences, Pakistan

7.75

IMPACT OF AN EDUCATIONAL PROGRAM ON THE PREVENTION, IDENTIFICATION AND MANAGEMENT OF PRESSURE INJURIES

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Background: Pressure injuries (PI) have a significant impact on the patient's quality of life and are a major financial burden on health care system. From patient care point of view, prevention of pressure injury is always an ideal situation. Early identification can lead to expeditious treatment, quicker healing time and the prevention of further morbidity including infection. Knowledge deficiency and non-compliances with standard practices are major obstacles in achieving these goals. The bedsore log of 2019 revealed 8 hospital acquired pressure ulcer in musculoskeletal and sports medicine service line. In order to improve staff knowledge and practices our Service Line initiated a quality improvement project. The aim of this project was to use educational sessions as an intervention to improve staff knowledge and practices regarding pressure injuries and to reduce incidence of hospital acquired pressure injuries in musculoskeletal and sports medicine service line patients.

Methodology: A quality improvement project was initiated in which PDSA model was used as a methodological framework. All registered nurses working in musculoskeletal and sports medicine service line of a tertiary care hospital Karachi Pakistan were recruited for the study. Cause and effect analysis was done via fish bone diagram. The pre assessment of knowledge regarding pressure injuries was carried out

through a validated tool name knowledge Pressure Ulcer Knowledge Assessment Tool (PUKAT), in an English version. This tool has acceptable reliability and validity, developed and validated by Beeckman et al in 2010. The CVI of the tool in previous literature was 0.78–1.00. The overall internal consistency reliability was 0.77 (Beeckman et al, 2010). A score of 16 and higher (out of 26) indicates acceptable level of knowledge in the literature (Dalvand et al., 2018). The pre assessment of practices in regards to pressure injuries were assessed through a structured observational checklist. A total of 30 bedridden patients were assessed to see the practices of staff. Thereafter, PowerPoint base educational sessions were conducted for all registered nurses working in orthopedic service line. Total five sessions were conducted altogether to cater all registered nurses working in orthopedic and musculoskeletal sports medicine service line. After the session, the post knowledge was reassessed using the same validated tool. The post practices were also assessed after the session. A total of 30 bedridden patients were assessed after the completion of all session to evaluate staff practices. The pre and post session rate of hospital acquired pressure injuries was also analyzed.

Results: A total of 21 registered nurses participated in the project. The mean score of knowledge of nurses regarding pressure injury increased from 9.7 ± 2.7 to 16.5 ± 2.31 . The mean scores of knowledge assessment is different between both the groups (Pre and Post). The practices of staff also improved in regards to skin assessment, positioning, proper use of braden scale, use of air mattress, and documentation. Furthermore, according to the point prevalence quality and patient safety data of 2020 quarter III the rate of hospital acquired pressure injuries decreased from 1 in quarter I to 0 in musculoskeletal and sports medicine service line. The bedsore log also revealed decrease in hospital acquired pressure ulcer from 6 in quarter I 2020 to 0 in quarter III 2020 .

Conclusion: Our educational intervention revealed a statistically significant improvement in staff knowledge and practices which ultimately translated in reducing the hospital acquired pressure injuries in musculoskeletal sports medicine service line patients. Educational session and continuous reinforcement are the essential steps in improving the knowledge and practices of nurses regarding pressure injury prevention.

Keywords: pressure injury, prevention, knowledge

7.76

MULTIMODAL APPROACH TO ACHIEVE ZERO FALL RATE IN MUSCULOSKELETAL AND SPORTS MEDICINE SERVICE LINE

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Background: Globally average fall rate is 3-5 falls per 1000 patients. 23-42% of inpatient falls lead to injury, of which 2% result in fracture. As most elderly patients are admitted to Musculoskeletal Service Line due to traumatic hip fracture, they are even at higher risk for another fall that can lead to poor prognosis and even mortality. From the year 2014 till 2018, 34 incidences of fall has been reported. In the year of 2019, 995 patients were admitted among these 5 cases of fall were reported in musculoskeletal and sports medicine service line. The aim of this quality project was to reduce the fall rate among orthopedic surgery patients.

Methods: The project was conducted utilizing PDSA framework. Fall etiology was identified to delineate modifiable factors. To reduce the risk of fall, detailed patient initial assessment, proper scoring of Morse scale and environmental safety plays a vital role. For proper screening of patients, in-service sessions were conducted to

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reinforce the proper and correct filling of Morse score. In order to improve the environmental safety we collaborated with the maintenance department of the hospital. We worked on environmental safety aspects that included proper lightening, cautious boards for slippery floors, bed maintenance in terms of proper locking systems, proper fixed side rails, use of safety belt for patient ambulation, use of emergency and nursing call bell, and availability of foot stools in washrooms. Commode chairs were also altered including changing of wheels, modification in locking systems, increasing cushion thickness and hand rest for patient comfort. To monitor sustainability, electronic and manual complain log has been maintained to monitor bed maintenance work. Furthermore we have an ongoing teaching session as part of staff educational activity in which fall measures has been taught to staff and guidance has been provided to follow fall precautions religiously in order to maintain compliances towards IPSPG 6 which helps in reducing fall rates.

Results: After continuous efforts and by using multifactorial approach for fall prevention that includes proper risk score screening and modifying the factors that cause fall, the rate of fall has been reduced. In 2019, 5 cases of fall has been reported among 995 admissions of patient in orthopedic specialty. However in 2020, there was 0 cases were reported in QTR 1, 2 & 3 in musculoskeletal and sports medicine service line. **Conclusion:** Fall prevention requires active ongoing engagement in addition to interdisciplinary approach. Environmental modification and accurate use of screening tool helped to reduce the rate of fall in patients admitted to musculoskeletal and sports medicine service line.

Keywords: Fall, prevention, ongoing assessment

ASSURING GOOD LABORATORY PRACTICES – VIRTUAL TRAINING AND

EVALUATION OF MEDICAL TECHNOLOGISTS AMIDST THE PEAK COVID-19 PANDEMIC

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Introduction: Quality control (QC) is one of the most pivotal pillar of laboratory testing. In Clinical Chemistry section, Unity Real Time QC software is used to monitor quality control system. However, substantial differences and deficiencies were encountered repeatedly on review by the sectional QC coordinator. The aim of this study is to assess the knowledge and practice of medical technologists by online QC monitoring using Bio-Rad Unity Real Time Software (URT).

Methods: The study was performed at the Section of Clinical Chemistry, Aga Khan University Hospital from June to September, 2020. 20 technologists comprising 2 charge technologists, 9 senior technologists and 9 technologists were evaluated. An online questionnaire-based pre-test consisting of questions related to knowledge & practice of daily QC was administered via google docs. Subjects were graded based on the scores they received out of 100 (0-60=poor; 61-79=good; 80-100=excellent). Training materials i.e. set of 5 videos every week via e-mail were circulated. A voice over power point presentation was also shared for easy comprehension. This activity was repeated after one month. A post-test was administered to assess the improvement. Pre and post test scores were compared to assess the effectiveness. **Results:** The test pre-test score was 42.5 [SD=14.82]. The grades received in pre-test were Excellent (n=0), Good (n=1), Poor (n=19). The mean post-test score was 81.5 [SD=15.31]. The grades received in the post-test were Excellent (n=15), Good (n=1), Poor (n=4). Significant difference was noted between the pre and post-test results (p=0.03).

Conclusion: The transition to synchronized online teaching and learning during the COVID-19 pandemic paved the path with a promising potential for the future of medical education for the overly occupied clinical laboratory scientists. This learning method is user friendly, time saving and effective as yielded by the results of this study.

Keywords: training, quality control, technologist

7.78

RELATIONSHIP BETWEEN INDICATORS OF PREMATURITY (GESTATIONAL AGE AND LOW BIRTH WEIGHT) AND CHILDREN'S COGNITIVE AND BEHAVIORAL SCHOOL READINESS

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Objective: The Alliance for Maternal and Newborn Health Improvement (AMANHI) is a population based prospective cohort study conducted in peri urban areas of Karachi. This study aims to examine the relationship between indicators of prematurity gestational age and children's cognitive and behavioral school readiness and to investigate whether preschool enrollment moderates this relationship, particularly for children from Pre urban areas of Ibrahim Hyderi.

Methods: The AMANHI study aims to achieve a better understanding of the epidemiology of maternal morbidity and mortality, stillbirths and neonatal deaths, including the associations of maternal morbidity and related care seeking with maternal, fetal and neonatal outcomes. The study also aims to define the long term physical growth and neurodevelopmental outcomes related to these perinatal exposures (preterm birth, fetal growth restriction) and their risk factors. This could form the basis of solutions and help to identify the point in the human life cycle at which interventions should be delivered.

As we know Preterm birth confers risks of mortality, medical morbidities, and adverse neuro-development in early childhood. We had enrolled 2500 enrollments for the period of May 2014 to June 2018 of AMANHI ACT study where 2353 Live birth outcome status reported out of those children aged 4-5 years who are assessed and eligible children are 550 total who had complete data on birth weight, gestational age, social factors, and cognitive and behavioral outcomes of school readiness. Multivariate regressions were used to relate three indicators of prematurity (low birth weight, preterm birth, and small for gestational age) to cognitive and behavioral school readiness.

Results: Children born preterm, small for gestational age, or with low birth weight have significantly lower cognitive school readiness after controlling for social factors and prenatal risks. None of the premature indicators were associated with behavioral school readiness. All children benefited from attending preschool. Yet, preschool enrollment did not moderate the relationship between prematurity and school readiness. The only exception is for small for gestational age survivors with low educated mothers. Preschool enrollment was associated with an increase in cognitive school readiness skills.

Conclusions: Prematurity was associated with lower cognitive school readiness skills. Typical occurring preschool did not eliminate this association.

Keywords: Prematurity and School readiness, relationship of prematurity and school readiness, cognitive readiness

7.79

RAPID SCALING OF CRITICAL CARE CAPACITY IN PAKISTAN DURING COVID-19: A METHODOLOGICAL FRAMEWORK

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Background: As health-care systems around the world hasten to respond to the COVID-19 pandemic, a temporary transition in health priorities have exposed gaps in the global critical care capacity. These gaps may be particularly prominent in a low-middle income country like Pakistan. In response to the urgency of the situation, Aga Khan University collaborated with the Government of Pakistan to strengthen Pakistan's critical care capacity through the "COVID-19 Tele-ICU Project.

Objectives: Our project aims to strengthen the critical care capacity of Pakistan through a multi-faceted approach by using a novel Tele-ICU initiative.

Methods: The COVID-19 Tele-ICU Project is a multi-pronged approach to assessing and strengthening the critical care capacity in Pakistan. The approach involves: 1) Baseline assessment of critical care facilities in public-sector hospitals across the country, using a framework adapted from the 4S model (Staff, Staff, Space, Systems) to assess the ICU infrastructure 2) Rapid training of a cadre of health-care workers in the critical care setting through a series of online webinars and on-site training workshops, like the COVINAR series and Critical Care Course 3) Free peer to peer Tele-ICU consultation services as well as remote rounding offered to physicians working in critical care areas across Pakistan using an iterative user-feedback based digital technology approach.

Conclusion: This COVID-19 rapid response project is ongoing and has been rapidly and

successfully deployed. It has the potential for being scalable to similar settings in other low-middle income countries. The results from this study can be instrumental in guiding policy makers in devising strategies for improving the quality of critical care units across Pakistan during the COVID-19 pandemic and beyond.

Keywords: COVID-19, critical care, capacity-building

7.80

IDENTIFICATION AND MANAGEMENT OF HIGH RISK PATIENTS THROUGH EFFECTIVE RECOGNITION OF EARLY WARNING SIGNS IN MUSCULOSKELETAL AND SPORTS MEDICINE SERVICE LINE

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Background: Identification of early warning signs plays an essential role in patient safety and preventing further deterioration. Rapid response teams have been an integral part of our hospital since 2018 with a mandate to identify and respond to emergency/ rush calls on patients to avoid cardiac and respiratory arrests, in a timely manner. However, to activate RRT, identification of early warning signs at bedside is a preliminary step. According to National Patient Safety Agency (2007) there are several rate limiting steps where the process can fail and these include: not taking observations at all, inability to recognize early signs of deterioration, lack of communicating observations that causing concern and inappropriate response to flagged concerns. In 2019 a total of 995 patients admitted in musculoskeletal and sports medicine service line. 49 out of 995 (5%) patients were identified as high risk patients in musculoskeletal and sports medicine service line. Out of 49 patients, 23 patient were identified and managed on same bed; whereas, 23 patients were moved to special

care unit for further observation and 3 patients were moved intensive care unit. Furthermore, there was a full code expiry as well in the year 2019. The root cause analysis of full code expiry identified that the cause was failure to identify early warning signs.

Objective: The objective of this project was to assess the effect of awareness sessions to nurses for risk assessment linked with daily priority rounds of senior nursing staff on outcome of rush calls, generated in musculoskeletal service line.

Method: The project was conducted at the Aga Khan University Hospital from July 2019-September 2020. It was a multidisciplinary approach where a team of health care providers were involved to ensure identification of high risk patients in musculoskeletal and sports medicine service line. The strategies employed for quality improvement were to give awareness sessions to nurses regarding the importance of risk assessment in every patient, reinforcement to do focused assessment to act on early warning signs. In addition to that in the daily rounds the priority of head nurses, nurse instructor, clinical nurse coordinator and team leader is to visit the high risk patients first. During the weekend, the nurse team leader is responsible to evaluate high risk patients. Multiple sessions were conducted on modified early warning signs and its action plan. Multiple mock drills and rhythm analysis sessions were conducted to ensure proper code management and resuscitation. A simulation based course was developed name "Simulation based approach for the identification and Management of high risk patient management in orthopedic in 2018; however, the courses were conducted mostly in the year 2019. Teachings were given regarding proper interpretation of clinical findings at all levels. Furthermore, maximum staff were trained for advanced cardiovascular life support in the year 2020. In 2020, high risk patient management log was also improvised. Furthermore, service line started to maintain indicator related to high risk patient log in which two components were evaluated and

analyze on quarterly basis. First is time frame from the identification and management of high risk patients and second is full code expiry.

Result: There were 37 cases in 2020 which were identified as high risk patients. The average mews scores were 5, that was identified and reported by nurses in all the cases. The major reasons of increase score of modified early warning sign were hypotension, electrolyte imbalances, sepsis, desaturation, and tachycardia. 8 out of 37 (21.6%) patients were managed on same bed; whereas, 27 out of 37 cases were shifted to Special care unit for further observation, and 2 out of 37 patients moved to Intensive care unit after elective intubation. There was no blue code in 2020 and no full code expiry in 2020 in musculoskeletal and sports medicine service line. The average time frame from the identification to management was 20-30 minutes.

Conclusion: Multipronged strategies using awareness sessions and senior nurses' rounding helps to identify high risk patients early on. Timely intervention prevents shifting of patients to high dependency units resulting in early discharge and prevention of patient morbidity. Moreover, this team approach facilitates appropriate use of scarce human resources in a tertiary care hospital while simultaneously preventing the wastage of financial resources in LMIC where fee for service rather than health insurance is more common. References National Patient Safety Agency (Great Britain). (2007). Recognizing and responding appropriately to early signs of deterioration in hospitalized patients. National Patient Safety Agency.

Keywords: High Risk, early warning signs, early identification

USING A PDSA CYCLE OF IMPROVEMENT TO IMPROVE STUDENT LEARNING EXPERIENCE IN THE YEAR 4 PEDIATRICS CLERKSHIP AT AGA KHAN UNIVERSITY

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Introduction: Clinical clerkship in field of medicine signifies a period of many short rotations throughout the clinical years, requiring maximized efficiency to ensure the best student learning experience. Quality enhancement to improve student learning and experience in a clerkship is a planned process of change requiring continuous improvement including needs identification, strategizing, implementation and long-term improvement. The Hospital Pediatrics clerkship during fourth year of medical school at Aga Khan University provided an opportunity to bring about change for an improvement in student learning.

Objective: To use a PDSA cycle (Plan-do-study-act) to improve student learning in the Year 4 Hospital Pediatrics Clerkship at AKU.

Methods: A mixed methods study was conducted between 2017-2019 to evaluate the students' pain points in the areas of learning and assessment through a structured end of rotation feedback form. Faculty assessment of students as well as student assessment of faculty was extracted through One45, the online assessment platform. 4-8 weekly roundups by the UGME team were done to review end of clerkship evaluations and strategize for improvement and study implementation of new strategies. Descriptive statistics were used to report student satisfaction level, student performance and faculty teaching performance before and throughout the period of implementation. 98 medical students and 34 teaching faculty data was analyzed for each academic year 2017, 2018 and 2019. *Results:* Recurring themes emerged such as lack of coordinated & focused learning, decreased mutual respect and value and unfair

marking and poor quality of assessments. Interventions included provision of pre-lecture reading, restructuring teaching with more simulation based and integrated learning, initiation of a counselling and communications skill session, ensuring timely feedback to evaluating faculty and provision of more efficient schedules to maximize self-learning. Overall student satisfaction improved from 72% to 86% from the class of 2018 to 2020. Student performance indicated improvement in average scores in end of term OSCE examination and continuous assessment from 75% to 87%. Overall satisfaction of students for faculty teaching improved from 76% to 82%.

Conclusion: Continuous assessment of clinical clerkships can ensure systematic changes for improvement and result in increased student satisfaction and maximize learning. Long term impact such as the proportion of students pursuing Pediatrics as a career need to be studied.

Keywords: Feedback, students experience, Undergraduate medical students

7.82

REPROCESSING OF EXTERNAL FIXATOR COMPONENTS: A MULTIPURPOSE UTILIZATION OF HOSPITAL WASTE AT MUSCULOSKELETAL & SPORTS MEDICINE SERVICE LINE.

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Background: Universally, medical waste is one of the most significant types of waste produced by the hospitals. In developing countries, hospitals can effectively reduce their waste by implementing waste management strategies with a wide range of recycling efforts. Health care waste includes infectious, pathological, sharp, chemical, radioactive, cytotoxic, pharmaceutical and non-infectious/general waste. The non-infectious waste can be easily recycled and

reused to reduce the financial burden of the hospital and the patients. In orthopedic surgery, large number of external fixators has been disposed off without any proper recycling process. This huge amount of waste has evoked us to initiate a quality project to effectively use and manage hospital waste. Therefore, we decided to develop a process to safely recycle and dispose off external fixator components. Firstly, these parts were effectively reused on patients who had undergone external fixator surgeries. Secondly, this process provided economic benefit to the institution and the patients as, it reduces the hospital waste and surgical expenses of patient. Thirdly, these parts have been used to create teaching model for patients, doctors and nurses. Lastly, we have designed stand for the assistance in major orthopedic dressings.

Method: Formerly, there was no defined process for reuse of external fixators parts and the components were disposed off once removed from the patient. Thereafter, musculoskeletal team including doctor and nurses decided to partially reuse the external fixator components on patients. The PDSA methodology was used to achieve the aim to reuse of external fixator parts. In planning phase, we collaborated with infection control and hospital epidemiology (DIPHE) and with consensus of all stakeholders, the hospital policy and protocol has been developed for the disposal and partial reuse external fixator parts. The consumable parts that were in optimum condition without rusting and mechanically fit were kept in ilizarov trolley at clinic and sent to operation theater to be used on non-affording patients. After sterilization, these parts were utilized in external fixator surgeries. The left-over parts were used to design dressing stands and teaching models. Total 05 patients have been successfully treated with partial reuse of external fixator components August 2019 to March 2020 which eventually saved the cost of device worth eight to twelve thousand rupee per metal ring without any complications.

Results: The quality project was beneficial as it reduces the financial burden on patient that is approximately 22,000 to 40,000 per surgery and simultaneously, lowers the hospital waste and enhanced the safe disposal of unused components. Furthermore, teaching models were designed for the education of health care professionals who were directly involved in external fixator management. The models have been utilized in external fixator handoff workshop to educate trainee doctors for the application, handling and removal of external fixator on patients. The nurses and technicians were trained for pin tract cleaning even though patients were also trained for self-management of external fixator at home via these models. The procedure stand has enabled us to perform sterile dressings of upper and lower extremities independently. Subsequently, it has also contributed to perform major dressing alone without assistance thus, reducing staff fatigue and save time.

Conclusion: In conclusion, all health care organizations do not have the process of recycling and reprocessing of medical waste. Many orthopedic specialties have also lacked the attention towards reprocessing of external fixator components. Likewise, single waste can be utilized for several purposes, which had a great impact on cost saving of institution and patients. Thus, this quality project not only benefits the organization but, it will also advantage patients, health care professionals and families. Similarly, in future such initiatives would be taken to recycle noninfectious hospital waste and utilize it efficiently.

Keywords: medical waste, reused, recycled

7.83

CONTINUOUS RENAL REPLACEMENT THERAPY TRAINING USING SIMULATION AT THE INTENSIVE CARE UNIT

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Introduction: Continuous Renal Replacement Therapy (CRRT) is used for critically ill patients with impaired kidney functions. The CRRT aims to mimic the function of hemodialysis for nitrogenous waste removal during hemodynamic instabilities requiring high inotropic support and it is commonly used as acute management for ICU patients with life-threatening conditions (Przybyl, Androwich, & Evans, 2015). Qualified nurses are essential to conduct CRRT independently, therefore, ongoing nurses training for certification is fundamental (Baldwin, 1997). In the past at the study setting, CRRT training was performed through lecture-based theoretical classes, followed by the instructor's demonstration of the CRRT machine, and participants skills sign-offs on five real patients at the intensive Care Unit (ICU) to acquire certification. However, this method remained ineffective in providing equal opportunities for learning to all the experienced nurses, sustaining follow-up and record-keeping of certified nurses, maintaining time-effectiveness, and reducing the chances of error. Thus, a simulation-based workshop was devised for advanced experiential evidence-based learning to improve the knowledge and clinical practice of critical care nurses.

Objective: The purpose of this training was to evaluate the effectiveness of a simulation-based workshop designed to certify nurses for CRRT.

Methodology: A total of 65 nurses were recruited from March 2019 to October 2020. A total of three workshops were conducted during this time period for all the types of ICU. The nurses were recruited based on more than one year of ICU experience who were involved in direct patient care or management tasks. The course was devised using the Plan, Do, Study, and Act (PDSA) framework. In the "P" phase, the need for CRRT training was identified due to the loss of certified and expert nurses retention in the institution. In the "D" phase, the nurses were offered to attend a day simulation workshop for CRRT certification at the Aga Khan University, Center of Innovation in

Medical Education. The workshop consisted of a theory class followed by an instructor demonstration on the CRRT machine, participant independent CRRT machine sign off, and two simulation signoff on a mannequin. The CRRT course covered various objectives regarding anatomy and physiology of renal system, acute renal failure, essential concept of CRRT and its treatment modalities, anticoagulation in CRRT, and review of hemofiltration record chart and anticoagulation monitoring sheet. After the workshop, nurses were required to perform three real patient sign-offs to receive CRRT certification.

Results: In continuation of the PDSA framework, the “S” phase reported significant results in enhancing nurses’ knowledge and clinical competency due to simulation-based training. Nurses received the opportunity to learn from errors, received individualized attention, performed self- evaluation during the debriefing process, and refrained from committing an error during real-life patient sign-offs.

Recommendation and conclusion: Simulation-based CRRT training is one of the best educational methods for improving evidence-based practice. The process of practice implementation in a hypothetical situation enhances the knowledge, attitude, confidence, and clinical competence of nurses while performing CRRT on ICU patients. References: Baldwin, I. C. (1997). Training, management, and credentialing for CRRT in the ICU. American journal of kidney diseases, 30(5), S112-S116. Przybyl, H., Androwich, I., & Evans, J. (2015). Using high-fidelity simulation to assess knowledge, skills, and attitudes in nurses performing CRRT. Nephrology Nursing Journal, 42(2), 135.

Keywords: CRRT, Simulation, Training

7.84

ADDRESSING STRUCTURAL DETERMINANTS OF MIGRANTS’ HEALTH: IDENTIFYING ACCEPTABLE AND FEASIBLE POLICY OPTIONS IN PAKISTAN AND QATAR-THE SELMA PROJECT

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Objective: This study aims to examine the current policy environment related to male migrant health workers for Pakistan (sending country) and Qatar (receiving country).
Methods: Using the Shiffman and Smith framework a policy mapping was done to assess whether any policies exist in health and non-health sectors in Pakistan which could protect migrant workers’ sexual health and related rights. Stakeholder mapping and interviews are being conducted with policy makers and departments of health, labour, emigration and overseas employment; national HIV program; emigrant workers; recruitment agency representatives; sexual health experts; legal and policy migration experts; representatives of multilateral organizations e.g. International Labour Organization, IOM, World Health Organization, etc.

Results: Desk review for mapping policies in Pakistan and Qatar has been undertaken in collaboration with partner institutions in UK and Qatar. First round of interviews with key stakeholders in Pakistan and Qatar has been conducted to understand the policy development process as well as political prioritization and feasibility of policy options. Transcriptions of interviews are being analyzed to identify the information gaps before the next round of interviews. The policy attention that migrants get is mainly driven by economic reasons based on them being a major source of remittances. Interviews show that the barriers to the creation of such policies include lack of power and bargaining ability of sending country

governments and lack of implementation power by multilateral agencies.

Conclusion: Once all the interviews are conducted and data is analyzed, a dissemination seminar will be conducted in 2021 inviting all stakeholders. Findings will be relevant for further research and to identify strategies for moving forward to ensure that policy responses to improve the sexual health of migrants are not only evidence-informed but implemented; in order to address inequalities and promote human rights and social justice for all.

Keywords: Migrants, Sexual Health, Stakeholder mapping

7.85

THE STATE OF DIET-RELATED NCD POLICIES IN AFGHANISTAN, BANGLADESH, NEPAL, PAKISTAN, TUNISIA AND VIETNAM: A COMPARATIVE ASSESSMENT THAT INTRODUCES A ‘POLICY CUBE’ APPROACH

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Introduction: We assessed the technical content of sugar, salt and trans-fats policies in six countries in relation to the World Health Organization ‘Best Buys’ guidelines for the prevention and control of non-communicable diseases (NCDs). Research teams identified policies and strategies related to promoting healthy diets and restricting unhealthy consumption, including national legislation, development plans and strategies and health sector-related policies and plans.

Methods: We identified relevant text in relation to the issuing agency, overarching aims, goals, targets and timeframes, specific policy measures and actions, accountability systems, budgets,

responsiveness to inequitable vulnerabilities across population groups (including gender) and human rights. We captured findings in a ‘policy cube’ incorporating three dimensions: policy comprehensiveness, political salience and effectiveness of means of implementation, and equity/rights. We compared diet-related NCD policies to human immunodeficiency virus policies in relation to rights, gender and health equity. Results: All six countries have made high-level commitments to address NCDs, but dietary NCDs policies vary and tend to be underdeveloped in the specificity of targets and means of achieving them. There is patchwork reference to internationally recognized, evidence-informed technical interventions, and a focus on interventions that will encounter least resistance, e.g. behaviour change communication compared to addressing food reformulation, taxation, subsidies and promotion/marketing.

Conclusion: Policies are frequently at the lower end of the authoritativeness spectrum and have few identified budgetary commitments or clear accountability mechanisms. Of concern is the limited recognition of equity and rights-based approaches. Healthy diet policies in these countries do not match the severity of the NCDs burden nor are they designed in such a way that government action will focus on critical dietary drivers and population groups at risk. We propose a series of recommendations to expand policy cubes in each of the countries by reorienting diet-related policies so as to ensure healthy diets for all.

Keywords: NCFs, Policy Analysis, WHO Best Buys

7.86

BETA LACTAM ANTIBIOTIC AS A CAUSE OF SEVERE HEMOLYTIC ANEMIA IN A CHILD

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Introduction: Beta lactam antibiotics such as ceftriaxone are frequently prescribed in inpatient settings and can have side effects. Case: A 2 year old boy, with no history of immunodeficiency or hematological disease developed acute onset of pallor, fits and hematuria. He had a recent history of admission for acute bacterial meningitis and was discharged on IV ceftriaxone, which he had been receiving for thirteen days. Laboratory studies indicated severe anemia (Hb=4mg/dL), leukocytosis (WCC=39.6/mm³) with normal platelets and peripheral film showing poikilocytosis. He had mildly deranged liver functions (SGPT=35mg/dL), bilirubin 1.7 mg/dL with a direct component of 1.4mg/dL. Suspicion of severe autoimmune hemolytic anemia was made. Workup for G6PD deficiency, acquired cold antibody hemolytic anemia and other causes of hemolysis were negative. On suspicion of drug related hemolysis, Ceftriaxone was discontinued and switched to ciprofloxacin and vancomycin. The patient remained hemodynamically stable, his serial blood monitoring showed an increasing trend of hemoglobin. He recovered without any use of steroids or IV immunoglobulins.

Conclusion: Ceftriaxone is a commonly used beta lactam in hospitalized patients. This case highlights beta lactams as a cause of severe acute hemolysis. In relevant clinical settings, patients should be carefully monitored for any evidence of hemolysis and should be briefed about the side effects of the antibiotic. Early diagnosis and prompt treatment with discontinuation of the offending agent, blood transfusion, and supportive care is essential to

prevent severe complications and fatal outcomes.

Keywords: ceftriaxone, hemolysis, hematuria

7.87

DIRECT OBSERVATION OF UNDERGRADUATE MEDICAL STUDENTS IN OUTPATIENT SETTING FOR ASSESSMENT OF DIAGNOSTIC REASONING AND CLINICAL SKILLS

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Introduction/ Objective Direct observation of medical student performance is a robust method of formative and summative assessment. It provides an opportunity to gauge knowledge, skills, and clinical reasoning during patient care. It improves students' performance and skills through feedback and student-teacher interaction. Implementing a model for direct observation through mini-Cex can strengthen the assessment of on-going student performance in clinical years, improve and ensure the quality of teaching, learning, and assessment processes.

Methods This 1-year study involved core clerkships of MBBS Year 3 (Family Medicine, Internal Medicine, and Surgery) and 4 (OBGYN, Pediatrics, and Psychiatry). The supervising faculty attended a training workshop to standardize the teaching model. DO was performed within the first hour of the clinic, and each student had at least two opportunities with the same faculty in the rotation. The validated 5-Point mini-Cex was used for Direct Observation and a separate form for feedback from students and faculty. SPSS V25 was used to analyze and identify changes in student performance between direct observations. Feedback questionnaires were categorized by a Likert scale. *Results:* Data from a total of 420 mini-Cex forms and 87 feedback forms were analyzed. Feedback forms

included 70 feedback forms from students and 17 from participating faculty. 33 (47.1%) and 37 (52.9%) students provided feedback from MBBS years 3 and 4 respectively. Students experienced similar improvements in their data gathering, interview, physical exam, diagnostic and management skills in both years ($p>0.05$). In their feedback faculty reported strengths in terms of improved faculty-student interaction and student feedback opportunity with limited clinic time as the primary challenge. *Conclusion:* Direct Observation Clinics can create an opportunity for “assessment for learning” that is an essential component of an assessment program at the undergraduate medical education level, especially for a competency-based model of medical education.

Keywords: Undergraduate Medical Education, Direct Observation Clinics, mini-Cex

7.88

GALL BLADDER HYDROPS: A RARE CASE

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Background: Gall bladder hydrops is a very rare disease seen in children. It is also known as mucocele gall bladder and refers to the non-inflammatory distension of the mucus filled gall bladder. It is also rare cause of right upper quadrant mass in children and typically diagnosed when the gallbladder content is clear mucous like fluid replacing the green or brown bile. Here in we report a 2-year-old boy presenting to clinic with epigastric pain then diagnosed to have gallbladder hydrops on Ultrasound and CT scan. *Case:* A 2-year-old boy, presented to a hospital in Herat, Afghanistan with high grade fever and was given antibiotics (cephalosporin). He later developed mild epigastric pain and thus an ultrasound was performed which showed enlarged gallbladder and was labelled as gall bladder hydrops. He was referred to Aga Khan University Hospital. On arrival, he complained

of similar mild epigastric pain but no fever. On examination, the abdomen was soft with mild tenderness on deep palpation. Ultrasound was performed which revealed an enlarged gall bladder 13cm in diameter without postprandial contraction. CT scan performed to rule out choledochal cyst, findings redemonstrated an enlarged gallbladder, however the liver, pancreas and ducts were normal. Blood investigations which included CBC, lipase, amylase, LFTs, Creatinine were normal. *Plan:* given ursodeoxycholic acid, follow up after 6 months, monitor pain and monitor for abdominal distension. If pain persists, return to AKUH and will eventually perform cholecystectomy. The cause of gall bladder hydrops has not been found yet as patient returned back to Afghanistan and refused further testing at the moment. Further assessment shall be performed if he returns back for follow-up.

Conclusion: Gallbladder hydrops is very rare in children. It should be considered as a differential diagnosis of abdominal pain in children, diagnosed and managed to prevent complications.

Keywords: Gall Bladder hydrops, mucocele, epigastric pain

7.89

ASPERGILLUS FUMIGATUS AND ASPERGILLUS FLAVUS-SPECIFIC IGG CUT-O S FOR THE DIAGNOSIS OF CHRONIC PULMONARY ASPERGILLOSIS IN PAKISTAN

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Despite a high burden of chronic pulmonary aspergillosis (CPA) in Pakistan, Aspergillus-specific IgG testing is currently not available. Establishing cut-o s for Aspergillus-specific IgG for CPA diagnosis is crucial due to geographical variation. In settings such as Pakistan, where

non-Aspergillus fumigatus (mainly A. flavus) Aspergillus species account for the majority of CPA cases, there is a need to explore additional benefit of Aspergillus flavus-specific IgG detection along with A. fumigatus-specific IgG detection. This study was conducted at the Aga Khan University, Karachi, Pakistan after ethical approval. Serum for IgG detection were collected after informed consent from healthy controls (n = 21), diseased controls (patients with lung diseases, n = 18), and CPA patients (n = 21). A. fumigatus and A. flavus IgG were detected using Siemens immulite assay. The sensitivity and specificity of A. fumigatus-specific IgG were 80.95% and 82.05%, respectively at a cut-o of 20 mg/L. The sensitivity and specificity of A. flavus-specific IgG were 80.95% and 79.49% at a cut-o of 30mg/L. We report, for the first time, performance of A. flavus-specific IgG for CPA diagnosis. Although there was no statistically significant difference between the performance of both antigens, it seems contextually relevant to include A. flavus IgG in the CPA diagnostic algorithm in regions with higher non-A. fumigatus CPA infections.

Keywords: chronic pulmonary aspergillosis, Aspergillus IgG, Pakistan

7.90

BRUCELLOSIS IN PAKISTAN: A NEGLECTED ZONOTIC DISEASE.

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Brucellosis is a zoonotic disease; endemic but neglected in the South Asian countries including Pakistan. It causes economic loss to the livestock sector and leads to systemic infection in humans. Brucellosis was neglected in Pakistan since long. According to the Staged Tool for the Elimination of Brucellosis (STEB), Pakistan carries a grim landscape of the disease with no structured control activities. This article describes the five-year national brucellosis

control strategic plan (2018-2023) formulated by the government of Pakistan using the one-health approach for the prevention and control of disease across the country. The plan incorporates components of surveillance, research, diagnostic capacity, awareness and vaccination using a multi-disciplinary approach.

Keywords: Brucellosis, zoonotic disease, Pakistan

7.91

CONTRIBUTION OF HOUSE DUST CONTAMINATION TOWARDS LEAD EXPOSURE AMONG CHILDREN IN KARACHI, PAKISTAN.

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Introduction/Objectives: Lead exposure is associated with impaired neurodevelopment among children. House dust is recognized as one of the important secondary sources of lead exposure in children. We assessed the relationship between lead contamination in house dust and blood lead level in Pakistani children.

Methods: We investigated lead contamination in house dust samples collected from 59 houses in Karachi, Pakistan.

Results: The lead content of house dust in Pakistan was relatively higher than that reported in previous studies. Weekly lead intakes from house dust were considerably higher among Pakistani children. In Pakistani children, 12% (7 of 58) showed lead intake values greater than the previous Provisional Tolerable Weekly Intake of lead. A correlation (Pearson's correlation = 0.37) was found between weekly lead intake from house dust and blood lead level in Pakistani children. In addition, blood lead levels were significantly higher in children with high lead intakes than in children with low and medium lead intakes.

Conclusion: House dust is an important source of lead exposure in Pakistani children.

Keywords: Lead, House-dust, children

7.92

LEVELS AND DETERMINANTS OF FINE PARTICULATE MATTER AND CARBON MONOXIDE IN KITCHENS USING BIOMASS AND NON-BIOMASS FUEL FOR COOKING.

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Introduction/Objectives: To assist interpretation of a study in rural Pakistan on the use of biomass for cooking and the risk of coronary heart disease, we continuously monitored airborne concentrations of fine particulate matter (PM_{2.5}) and carbon monoxide (CO) for up to 48 h in the kitchens of households randomly selected from the parent study.

Methods: Satisfactory data on PM_{2.5} and CO respectively were obtained for 16 and 17 households using biomass, and 19 and 17 using natural gas.

Results: Linear regression analysis indicated that in comparison with kitchens using natural gas, daily average PM_{2.5} concentrations were substantially higher in kitchens that used biomass in either a chimney stove (mean difference 611, 95% CI: 359, 863 µg/m³) or traditional three-stone stove (mean difference 389, 95% CI: 231, 548 µg/m³). Daily average concentrations of CO were significantly increased when biomass was used in a traditional stove (mean difference from natural gas 3.7, 95% CI: 0.8, 6.7 ppm), but not when it was used in a chimney stove (mean difference -0.8, 95% CI: -4.8, 3.2 ppm). Any impact of smoking by household members was smaller than that of using biomass, and not clearly discernible.

Conclusion: In the population studied, cooking with biomass as compared with natural gas should serve as a good proxy for higher personal exposure to PM_{2.5}.

Keywords: Biomass fuel, cooking, particulate matter/carbon monoxide

7.93

ASSESSING THE ASSOCIATION BETWEEN FINE PARTICULATE MATTER (PM_{2.5}) CONSTITUENTS AND CARDIOVASCULAR DISEASES IN A MEGA-CITY OF PAKISTAN.

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Introduction: Concerning PM_{2.5} concentrations, rapid industrialization, along with increase in cardiovascular disease (CVD) were recorded in Pakistan, especially in urban areas. The degree to which air pollution contributes to the increase in the burden of CVD in Pakistan has not been assessed due to lack of data. This study aims to describe the characteristics of PM_{2.5} constituents and investigate the impact of individual PM_{2.5} constituent on cardiovascular morbidity in Karachi, a mega city in Pakistan.

Methods: Daily levels of twenty-one constituents of PM_{2.5} were analyzed using samples collected at two sites from fall 2008 to summer 2009 in Karachi. Hospital admission and emergency room visits due to CVD were collected from two large hospitals. Negative Binominal Regression was used to estimate associations between pollutants and the risk of CVD. All PM_{2.5} constituents were assessed in single-pollutant models and selected constituents were assessed in multi-pollutant models adjusting for PM_{2.5} mass and gaseous pollutants.

Results: The most common CVD subtypes among our participants were ischemic heart

disease, hypertension, heart failure, and cardiomyopathy. Extremely high levels of PM2.5 constituents from fossil-fuels combustion and industrial emissions were observed, with notable peaks in winter. The most consistent associations were found between exposure to nickel (5-14% increase per interquartile range) and cardiovascular hospital admissions. Suggestive evidence was also observed for associations between cardiovascular hospital admissions and Al, Fe, Ti, and nitrate.

Conclusions: Our findings suggested that PM2.5 generated from fossil-fuels combustion and road dust resuspension were associated with the increased risk of CVD in Pakistan.

Keywords: fine particulate matter (PM2.5), cardiovascular disease, Pakistan.

7.94

INCIDENCE, PATTERNS AND ASSOCIATED FACTORS FOR OCCUPATIONAL INJURIES AMONG AGRICULTURAL WORKERS IN A DEVELOPING COUNTRY.

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Background: Injuries are common among agricultural workers, and a large section of the population is employed in agriculture worldwide. We aimed to determine the incidence, patterns and associated risk factors of occupational injuries among the agricultural workers in a developing country.

Methods: A cross-sectional study in Hyderabad, Pakistan was conducted from December 2012 to February 2013. Information was collected about incidence, pattern and associated risk factors of occupational injuries from 472 agricultural workers. Injury incidence and patterns for place, severity, type, agent, parts of body affected and work activity were calculated. Analysis was performed using SPSS version 19.0.

Multivariate logistic regression was performed to calculate the adjusted odds ratio (OR) with 95% confidence interval, to identify the putative risk factors for occupational injuries.

Results: Incidence of occupational injuries was 35.0 per 100 per year (95% CI: 28.9 - 42.7). Cuts (70%) and hand tools (71%) were the most common type and agent for injury, respectively. Majority of injuries occurred during harvesting (55%). Increasing age [AOR 1.03 (95% CI: 1.01 - 1.05)], income

Keywords: agricultural workers, injuries, Pakistan

7.95

STUDY TITLE: VASOPRESSIN IN CONJUNCTION WITH NOREPINEPHRINE IN SEPTIC SHOCK: A RETROSPECTIVE COHORT STUDY FROM A LOW MIDDLE-INCOME COUNTRY

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Objective: Guidelines recommend use of norepinephrine as the first line treatment for fluid-refractory septic shock, and if septic shock persists vasopressin may be initiated. Since there is limited data from low middle-income countries with high disease burden of sepsis, we aimed to compare the outcomes of using vasopressin adjunct to norepinephrine in comparison to norepinephrine alone. *Design:* Retrospective cohort study. *Setting:* Aga Khan University Hospital, Karachi, Pakistan. *Patients:* Six hundred and fifty-three patients diagnosed with septic shock from January 2019 to December 2019, with four hundred and ninety-eight given norepinephrine only and one hundred and fifty-five given norepinephrine-vasopressin combination. *Interventions:* None. *Measurements:* Primary outcome was in-hospital mortality. Secondary outcomes were duration of vasopressor used, length of hospital stay, length

of ICU stay, and days on ventilator support. Main Results: After adjustment by multivariable logistic regression, it was found that mortality was not significantly associated with the norepinephrine-vasopressin combination (aOR: 0.633 [95% CI: 0.370-1.081]). However SOFA score on admission (1.100 [1.014-1.193]), lactate on admission (1.167 [1.109-1.227]), duration of vasopressor used (1.481 [1.316-1.666]) and level of care (3.025 [1.682-5.441]) were found to be independently associated with the adjunct usage of norepinephrine and vasopressin.

Conclusion: The use of norepinephrine-vasopressin combination has remained debatable in literature. Our study showed that although there was no difference in mortality between the two groups, admission SOFA scores and admission lactate levels were found to be significantly higher in the norepinephrine-vasopressin group. Hence physicians from Pakistan used the norepinephrine-vasopressin combination in resistant septic shock patients who were sicker to begin with. Furthermore, duration of vasopressor therapy and ICU admission were also significantly higher in the combination group. Considering the recent hyperinflation of vasopressors costs and that most healthcare expenditure for patients in Pakistan is out-of-pocket, this can consequently lead to unwarranted financial burden for patients and their families.

Keywords: Sepsis, Septic shock, Vasopressors **7.96**

COMPARISON OF DPSC AND SHED IN TERMS OF PROLIFERATION AND SELF-RENEWAL

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Introduction: Mesenchymal stem cells (MSCs) are used clinically in tissue engineering and regenerative medicine. Dental pulp stem cells (DPSCs) and stem cells from human exfoliated

deciduous teeth (SHED) are two well-known mesenchymal stem cell sources. One of the desirable features required in cell based therapy is high proliferation potential of cells. The rate of proliferation varies depending on tissue source and population heterogeneity. Herein, we compared proliferative and self-renewing potential of DPSC and SHED.

Objective: To compare DPSC and SHED for their proliferation and self-renewal properties. *Materials & Methods:* Cryopreserved DPSC P6 and SHED P3 were revived and expanded. Population doubling time (PDT) was estimated at a cell density of 1×10^4 and 3×10^4 cells per well in 24-well plates using trypan blue exclusion method in duplicate. Colony forming unit was determined at mean cell densities ranging from 5.6, 11.1 and 22.2 cells / cm² in a 35mm plate.

Results: At lower cell density, DPSC and SHED exhibit growth rate of 0.4759 with PDT of 34.65 h and 0.4929 with and PDT of 33.74 h respectively. Whereas at higher cell density, DPSC and SHED exhibit growth rate of 0.3808 with PDT of 43.66 h and 0.4929 with PDT of 38.74 h respectively. The mean number of colonies produced by DPSC and SHED were 0.5, 2 and 1 and was 13, 19 and 29.5 respectively at plating densities of 5.6, 11.1 and 22.2 cells per cm². DPSC exhibited a colony forming efficiency of 1, 2 and 0.5 while SHED demonstrated an efficiency of 26, 19 and 14.75 at plating densities of 5.6, 11.1 and 22.2 cells per cm² respectively.

Conclusion: SHED exhibit higher proliferation, shorter PDT, higher frequency and efficiency of colony forming units than DPSC in vitro suggestive of a better stem cell source for tissue engineering purpose.

Keywords: DPSC, SHED, Proliferation

7.97

TREND OF ANAESTHESIA RESEARCH FROM LOW INCOME COUNTRIES. A DECADE'S BIBLIOGRAPHIC ANALYSIS OF INDEXED JOURNALS OF PAKISTAN

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Background/Context: South Asian countries contribution to anaesthesia related research and publication is less compared to the high-income countries.

Objectives: To investigate the contribution of the South Asian countries to the anaesthesia research and its subspecialties published in five indexed journals of Pakistan from January 2007 to December 2016. *Methods and Material:* A computerized literature search was carried out to identify published articles related to anaesthesia, critical care and pain research contributed by authors from eight countries of SAARC region and published in Pakistani indexed journals over a ten year period. Statistical analysis used: Frequency and percentage were computed and analysed using SPSS version 19.

Results: 183 articles were extracted with majority contribution by institutions of Pakistan (97.8%), India contributed 2.1%. There were no articles from other SAARC countries. 27% of these articles were randomized controlled trials, 20% case reports and 19.5% observational studies. Collaborative research either national or international among the SAARC countries or for outside SAARC countries was 16%.

Conclusions: There was little contribution from SAARC countries to the published anaesthesia, critical care and pain research in indexed Pakistani journals. There is need to develop a culture of collaborative research and its dissemination in the South Asian region.

Keywords: Anaesthesia, Research, Pakistan

7.98

COMPLIANCE WITH RISK ASSESSMENT FOR THROMBOEMBOLISM AND THROMBOPROPHYLAXIS MEASURES FOR SURGICAL PATIENTS IN A TERTIARY CARE HOSPITAL

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Introduction: Thromboembolism is recognized as one of the most common preventable morbidity and mortality in hospitalized surgical patients. According to the NICE guidelines risk assessment and preventive measures for thromboembolism are the major patient safety interventions that must be followed to avoid morbidity and mortality.

Objectives: To determine compliance with risk assessment and thromboprophylaxis measures for surgical patients in a tertiary care hospital

Materials And Methods: Study Design: Prospective audit Duration of study: From August to October 2017 Inclusion criteria: General surgery patients undergoing electively surgery of more than 60 minutes duration Exclusion criteria: Patient undergoing emergency surgery

DATA COLLECTION: After approval/exemption from ERC, patients fulfilling the inclusion criteria were enrolled. Data was collected on preformed form by investigator after the patient is in preoperative holding area. Initial assessment form filled at time of admission to the ward were reviewed for any risk assessment and its documentation. Physicians order document in the file were chased for any prescribed thromboprophylaxis. Pharmacy orders were checked on computer for prescribed thromboprophylaxis. Nursing notes were also reviewed if the orders were carried out for prescribed thromboprophylaxis. Lastly, it was checked at preoperative holding area that if

the patient has received the prescribed treatment or not.

Data Analysis: Statistical analysis was performed using SPSS ver.19 Results: During study period 269 (119 [44.2%] men and 150 [55.8%] women) patients were enrolled in study, Mean age was forty eight years. 41% patients presented with systemic co-morbid conditions. Our results shows VTE assessment was not documented in the file within 24hours of admission. 184[68.4%] patients received the prescribed thromboprophylaxis preoperatively. I/V hydration was most common (118 [64.1%] measure of thromboprophylaxis prescribed followed by combination of hydration & TED stocking in 32 [17.3%] patients. VTE guidelines were easily accessible in clinical area in 259 [96.3%] cases.

Keywords: Thromboprophylaxis, Assesment, DVT

7.99

COMPARISON OF HEALTH SERVICE VOLUME TRENDS BETWEEN CONTRACTED OUT AND GOVERNMENT MANAGED TALUKA HOSPITALS AND RURAL HEALTH CENTERS: REVIEW OF DISTRICT HEALTH INFORMATION SYSTEM DATABASE, SINDH PAKISTAN

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Background Contracting out of government secondary and primary health care facilities services to private providers is being extensively practised in Sindh as part of a government Public-Private Partnership (PPP) reform. This paper, drawn from a larger PPP assessment study, presents an analysis of change in service volume of curative and preventive care at health facilities managed by private providers compared to government-managed health

facilities using the national District Health Information System (DHIS) database.

Methods Secondary data analysis of DHIS data was conducted for a three-year period (2017-19) and a descriptive analysis made of service volume trends over three years for key indicators. Mean annual service volume per health facility was computed for privately managed Taluka Headquarter Hospitals (THQs) and at Rural Health Centers (RHCs) and government-managed THQs and RHCs. Results PPP managed THQs and RHCs both showed a visible increase over three years in out-patient department (OPD) cases, female OPD, child OPD, antenatal care (ANC) visits and facility-based deliveries as compared to government-managed facilities. Increase in diabetes screening was seen but little change in hypertension cases screened at PPP facilities over three years. In comparison, OPD volume at government-managed facilities remained stagnant over the three years' duration, whereas ANC volume increased but at a lesser pace than PPP facilities. Immunization and family planning volume showed no discernible progress in both PPP & government-managed THQs and RHCs.

Conclusions Results indicate that curative and maternal care volumes improve at government facilities contracted to private providers, however greater attention to family planning, NCD screening and childhood immunization is required. DHIS database provides a useful low resourced monitoring system and can benefit from validation checks at healthcare facilities.

Keywords: Contracting out, health services, Pakistan

7.100

DOES PURCHASING PRIVATE SECTOR HEALTH SERVICES MAKE A DIFFERENCE IN COVERAGE, QUALITY AND EQUITY IN EASTERN MEDITERRANEAN REGION COUNTRIES ? : A SYSTEMATIC REVIEW

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Introduction: The initiative of governments purchasing private health services is relatively newer approach to improve essential services for population health and is underway in several Eastern Mediterranean Region (EMR) countries amongst others. This approach includes contracting out, health insurance schemes and demand-side financing modalities. **Methods:** This systematic review assesses available evidence of the impact of purchasing private health services in EMR on the coverage and quality of health services. We searched PubMed, Popline, CabHealth, and Google Scholar using MeSH and keywords. Two reviewers screened for relevant articles extracted data and performed quality assessment in duplicate. We performed descriptive thematic analysis exploring effects of these approaches on coverage, quality and equity.

Results: The evidence of private sector contracted facilities from Afghanistan, Pakistan and Iran suggests significant increase in curative and maternity service utilization and better functionality of services when compared to government-managed facilities. Evidence for health insurance schemes from Lebanon, Egypt, Iran, Tunisia, and Sudan suggests improved utilization of curative health services amongst insured, less is known about uptake of primary healthcare services. The evidence from demand side financing modalities (cash transfers, vouchers) in Pakistan, Afghanistan and Yemen suggests significant increase in utilization of maternal, newborn and family planning services and a pro-poor effect due to deliberate targeting of low-income groups, but outreach is limited to few thousand beneficiaries. There is uncertain effectiveness for large scale ups and sparse evidence on quality and equity.

Conclusion: Initial evidence on strategic purchase of private services shows increase in service utilization across contracting, insurance and demand side schemes, with thin evidence on pro-poor utilization except for demand-side mechanisms, and lack of concerted evidence on quality of services. Rigorous evaluation on standard parameters of coverage, quality and equity is needed to gauge true potential, and better understand how design of purchasing schemes affect performance outcomes.

Keywords: health financing, contracting, Utilization

7.111

HEALTH EXPENDITURE AND UTILIZATION SURVEY THATTA DISTRICT, 2019

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Introduction: There is growing demand to devolve health services from the provinces to districts. However, district level data on health seeking behavior is rarely available, especially in the case of health expenditures. The objective of this research is to aid district Health management of Thatta District with robust evidence on health seeking behaviour and household health expenditures with a population representative data.

Methods: Health expenditure and utilization survey (HEUS) is a cross section survey, carried out in 2018 (N=1392 households). The survey include data on demographics, health seeking, Out-of-Pocket Health Expenditure (OPHE), household income, expenditures and assets. Household OPHE, its catastrophic and impoverishment impact on the household was estimated. **Findings:** Around 60% of the respondents were adults (18-60 years). Women were 47% of the sample. Most of the adult respondents (75%) were illiterate while 32% were employed at the time of survey. Health

seeking in Thatta had largely relied on private providers including private clinics (25% for communicable diseases (CD) and 15% for non-communicable diseases (NCD)) and private hospital (45% for CD and 48% for NCDs). Median household out of pocket health payments were PKR 28800 (IQR 58860). The incidence of financial catastrophe was 47%, while 10% of the households were impoverished due to their OOP health payments. *Conclusion:* The findings of HEUS depicts an alarming picture of health seeking and healthcare financing in the district. It calls for intervention that target health seeking that can be rationalized with improved access and quality of care, by targeting the primary healthcare and effective referral system albeit health education can improve rational use of medicine and curb self-prescription that would potentially contain OOP health payments.

Keywords: Out-of-Pocket Health Expenditure, Financial Catastrophe, Poverty

7.112

ECONOMIC CONSEQUENCES OF SMOKING RELATED ILLNESSES IN PAKISTAN

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Background: The estimates of economic burden due to smoking provide an opportunity to assess overall impact on the economy and generate evidence for possible public health policy intervention. In this study, we estimated the smoking-attributable expenditure being paid by the patient in Pakistan.

Methods: we used a prevalence-based disease-specific cost approach by including three major tobacco attributed diseases i.e. lung cancer, chronic obstructive pulmonary disease (COPD), and coronary vascular diseases (CVDs). We analyzed only the out of pocket healthcare expenditure including direct and indirect costs and calculated the smoking-attributable expenditure by multiplying the total annual

expenditure by the corresponding smoking attributable fractions (SAFs).

Results: Total smoking attributed out of pocket expenditures amount to Rs 192 billion (USD 1.3 billion) in 2018. Smoking-attributable expenditure on cardiovascular disease was PKR 123 billion (USD 0.9 billion) which was 69% of the total economic cost of tobacco related diseases in Pakistan. Economic cost in males was nearly three times higher than females.

Conclusions: our study showed a significant preventable financial burden on the families in Pakistan due to tobacco use which can be prevented by implementing tobacco control policies effectively.

Keywords: Health Economics, Smoking Tobacco, Cost

7.113

FIRST PASS SUCCESS IN TRACHEAL INTUBATION WITH VIDEOLARYNGOSCOPY FOR HEAD AND NECK CANCER PATIENTS: A REGISTRY BASED, RETROSPECTIVE COHORT STUDY

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Introduction/Objective: The incidence of difficult intubation is higher in head and neck cancer patients than in the general surgical population (15.75% vs. 2.5%). Videolaryngoscopy (VL) is a relatively recent development that attempts to improve the success of tracheal intubation in difficult airway management. The primary objective is to assess ease of intubation by first pass success during videolaryngoscopy. Additionally, we determined number of attempts, use of accessory maneuvers and adjuncts to facilitate intubation

Methods: This was a registry-based, retrospective, cohort study approved by AKU ERC (2020-3500-8487). We included all adult

patients from 1st January 2018 to 31st December 2019 underwent oral cancer surgery in whom videolaryngoscope was used as a primary device for airway management. A predefined template for data extraction was used. Continuous data were compared using Student's t-test and categorical data using chi-square test.

Results: A total of 128 patients were retrieved from registry database who underwent head and neck cancer surgery and were also intubated by videolaryngoscope. The average age of the patients was 50.70 ± 12.97 years (range: 14-79) and mean BMI was 26.15 ± 6.23 kg/m². The average inter-incisor distance and thyromental distance (TD) was 2.53 ± 1.11 cm [Range: 0.2-6 cm] and 6.86 ± 1.73 cm [Range: 3-14 cm] respectively. Out of 128 patients, IID of 28(21.8%) patients was below and equal to 1.5cm and TD of 47(36.72%) patients was ≤ 6 cm. There were 86.7% (111/128) of patients successfully intubated in first attempts with videolaryngoscopy and only 15(11.7%) required second attempt. A total of 19 of 128 (14.8%) patients needed alteration of airway management technique at induction, 64(50%) required external pressure and Magill's forceps were used for 22(17.2%) patients.

Recommendation/Conclusion: In patients with head and neck cancer, videolaryngoscopy was associated with higher first pass success specially in the presence of decreased inter-incisor distance other predictors of difficult airway

Keywords: Videolaryngoscopy, Head and Neck Cancer, Tracheal Intubation

7.114

SPATIOTEMPORAL VARIATION AND SOCIO-ECONOMIC FACTORS OF FINANCIAL HARDSHIPS OF OUT-OF-POCKET HEALTH EXPENDITURE (OPHE) IN PAKISTAN

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Introduction: Financial hardships of out-of-pocket health expenditure (OPHE) is a growing concern for health policy makers in many low and middle-income countries. In this paper, we estimate financial hardship of OPHE in Pakistan. We provide spatiotemporal variation among four provinces and over 2001-2015 that would help to review existing health services delivery and financial risk protection plans. *Methods:* We use the data sets of four rounds of Household Integrated Economic Surveys (HIES) 2001-02, 2005-06, 2010-11 and 2015-16. We estimate OPHE share in household total and non-subsistence expenditure, catastrophic headcount if the household OPHE $\geq 10\%$ of their total expenditure or OPHE $\geq 25\%$ of their non-subsistence expenditure. We estimate impoverishment of OPHE using national poverty lines. Finally, we explore socio-economic factors of financial catastrophe and impoverishment of OPHE. *Results:* Over the years, catastrophic headcount and impoverishment of OPHE had decreased at national level and in the provinces of Sindh and Khyber Pukhtoonkhawa (KPK). Province of KPK and year 2005-06 had witnessed highest incidence of financial catastrophe and impoverishment of OPHE among provinces and years of analysis. Households in rural areas, household in middle and rich quintiles and household headed by a male were more likely to encounter financial catastrophe and impoverished due to their OPHE.

Conclusion: Inter-provincial variation in financial hardships of OPHE provide aide to provincial level priority setting. High impact of OPHE in non-poor and in rural areas calls for enhanced targeting of financial risk protection plans. High impact of OPHE in KPK calls for revisiting health insurance scheme of the province and with further research on health seeking behavior in the province.

Keywords: Out-of-Pocket Health Expenditure, Equity, Financial hardship

7.115

DEVELOPING ROLE MODELS IN CLINICAL SETTINGS: A QUALITATIVE STUDY OF MEDICAL STUDENTS, RESIDENTS AND CLINICAL TEACHERS

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Objective: To explore how positive role modelling attributes can be developed in students, residents and clinical teachers. **Methods:** The qualitative study using focus group discussions was held at Aga Khan University, Karachi from March to May 2018, and comprised medical students, residents and clinical teachers. Overall 11 focus group discussions were conducted till data saturation was achieved. Content analysis was used to analyse the data which was transcribed verbatim.

Results: Of the 116 subjects, 60(51.7%) were medical students, 35(30.2%) were residents and 21(18%) were clinical teachers. Of the 11 focus group discussions, 4(36.5%) each were held with the students and the residents, while 3(27%) were held with the teachers. Five major themes that emerged from the study included definition of role models, attributes of role models, role modelling as a learnt behaviour, challenges in developing role models, and recommendations for developing positive role models. A number of attributes of positive and negative role models were identified by the participants. All the participants including students, residents and teachers appreciated the importance of role modelling in developing professionalism among health professionals and medical students. Factors hindering development and demonstration of positive role modelling were also identified and possible solutions were suggested.

Conclusion: Clinical teachers needed to be made cognizant of their role as positive role models in developing professionally competent physicians. The medical institutions needed to develop and implement policies that would enhance positive role modelling by the teachers and facilitate learning of positive attributes at all levels.

Keywords: role modeling, health professions, focus group discussions

7.116

RESPIRATORY PATHOGENS IN PATIENTS WITH ACUTE EXACERBATION OF NON-CYSTIC FIBROSIS BRONCHIECTASIS FROM PAKISTAN

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Abstract Setting: This study was performed at the pulmonology clinics of the Aga Khan University, Karachi, Pakistan

Objective: To study the spectrum and antimicrobial spectrum of pathogen yielded from respiratory specimens in adult patients with acute exacerbation of non-cystic fibrosis (CF) bronchiectasis. **Study design:** This cross-sectional study was performed from 2016-2019. Respiratory specimens were collected from adult patients with acute exacerbation of non-CF bronchiectasis presenting in pulmonology clinics. Microbial cultures were performed using standard methodology. Susceptibility testing was performed and interpreted using Clinical Laboratory Standard Institute criteria.

Results: A total of 345 positive cultures from 160 patients presenting with acute exacerbation were evaluated. The most frequent organisms were *Pseudomonas aeruginosa* (n=209) followed by *Hemophilus influenzae* (n=40) and *Staphylococcus aureus* (n=24). High rates of antimicrobial resistance were found in all these pathogens. Proportion of *Pseudomonas*

aeruginosa strains resistant to ciprofloxacin, imipenem, ceftazidime and piperacillin-tazobactam were 27.1%, 16.8%, 14.8% and 13.1% respectively. 65% of *Hemophilus influenzae* strains were resistant to cotrimoxazole and ciprofloxacin and 66.7% of *Staphylococcus aureus* strains were resistant to methicillin.

Conclusion: High antimicrobial resistance in non-CF bronchiectasis patients against commonly used antimicrobials is a concern and highlight need for urgent community level interventions to improve clinical outcome in these patients.

Keywords: Etiology, Infection, Drug resistance

7.117

INDIVIDUAL AND WORKPLACE FACTORS OF OCCUPATIONAL HAZARDS KNOWLEDGE, ATTITUDE AND PRACTICES AMONG TEXTILE MILL MANAGERS IN KARACHI, PAKISTAN: A CROSS SECTIONAL STUDY

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Introduction: This survey was part of a larger study, MultiTex RCT, and focused on the knowledge, attitude and practices of textile mill managers who play a crucial role in ensuring occupational health and safety (OHS).

Objective: To determine individual and workplace factors associated with knowledge, attitude and practices regarding occupational hazards among textile mill managers.

Methods: This cross-sectional study was conducted in Karachi from December 2019 to April 2020, and included 112 managers from 29 mills. A 53-item structured questionnaire was used which included 26 items for knowledge (exposure to cotton dust and its health effects,

and prevention), 14 for attitude (on perceived significance of occupational health and safety) and 13 for practices (organizational and individual practices, including use of facemasks). Scores for knowledge, attitude and practices were calculated as percentages (mean \pm standard deviation). Univariate and multivariable linear regression analysis was conducted using Stata 13.

Results: Mean age of the participants was 41 years (± 9) and 45% (n=50) had an educational level of graduate or above. Approximately 56% (n=63) had a duration of work more than 20 years, and 62% (n=70) belonged to mills having good occupational health and safety (OHS) conditions. The mean scores were: 47.2% (± 10) for knowledge, 91.6% (± 7.3) for attitude and 55.6% (± 20.9) for practices. In multivariable models, managers with graduate or higher level of education were found to score 4.69% (95% CI: 0.8, 8.6) more in knowledge section and 8.1% (95% CI: 0.6, 16) more in practices section. Managers from mills with poor OHS conditions were found to score 10.8% less in practices section (95% CI: -18, -3.3).

Conclusion: Our findings imply a need to hire more qualified managers and strict implementation of OHS protocols in textile mills.

Keywords: Cotton dust, textile industry, knowledge, attitude and practices

7.118

SIGNIFICANCE OF AKUH MEDICAL PHYSICS CERTIFICATE PROGRAM FOR PRIVATE SECTOR HOSPITAL IN PAKISTAN

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Introduction: The Aga Khan University Hospital, Karachi (JCIA Accredited), Pakistan's first private international university, is committed to the provision of education, research and health care of international standard

relevant to Pakistan and the region. In line with this vision, state-of-the-art Radiation Oncology facility started, Two year Medical Physics program in 2009. Medical physicists play an imperative role in Radiotherapy. They are skilled professionals with multi-disciplinary responsibilities: radiation safety, treatment planning, treatment delivery, and quality assurance in radiation therapy. *Methodology:* The program prepares the student for clinical practice in radiation therapy (RT) physics through structured training, didactic and hands-on, supervised and mentored by qualified clinical practitioners. The program design combines the didactic course work structure of the M.Sc. programme at McGill University and the Residency Program in Medical Physics at British Columbia Cancer Agency. The program objectives follow the guidelines of the American Association of Physicists in Medicine. The syllabus and the reference text are based on the IAEA recommendations. This poster will outline the details and achievement of this program.

Result: Since 2009 total 9 batch were passed out, include 2 to 3 trainee per batch. Out of 19 trainees 14 trainees are giving there services as Medical Physicist in different private hospitals.

Recommendation: In Pakistan only two institute providing education in this unique field. PIEAS have degree program and there candidate provide there services to government sector whereas our certified physicist cover private sector. There is no licensing body in Pakistan. IMPCB will be the future of Pakistani Physicist.

Keywords: Medical Physicist, hand-on training, Radaition Oncology

7.119

QUALITY OF LIFE OF SPOUSES OF WOMEN WITH BREAST CANCER

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Introduction Globally, breast cancer is one of the most common cancer in women. when a woman is diagnosed with breast cancer, then all responsibilities come on spouses' shoulder. Studies have also revealed that spouses play an important role during the illness of wives. However, if a spouse is not prepared for these responsibilities; this results in an increased anxiety and frustration. Additionally having limited knowledge about the disease process, and lack of coping strategies, financial burden, and self-image as a man imposed by society can have and self-image as a man imposed by society can have health implications on spouses' quality of life. *Purpose* The purpose of this study is to present a review of the published literature and clinical observation related to the quality of life of the spouses. *Methodology* A comprehensive computerized search was carried out. Literature was searched via electronic databases; CINAHL, Pub Med, Blackwell Synergy, Science Direct, and Google scholar between 2010 to 2020. These data base were examined by using the key terms spouse as caregivers; caregiver burden; coping; breast cancer; support system; quality of life; hope; gender role. *Results* The studies revealed that mostly when spouses perform the caregiver role, they remain strong in front of their wives and children, and hide their feelings and issues. However, they builds emotional disturbance, changes in daily living, balancing home and work life, children care, financial adjustment, and changes in marital relationships. Studies also showed that due to unviability of inadequate support, they deal with issues by their own. This all increase harmful consequences on their quality of life.

Conclusion In Pakistani context, the informal caregiver role is not limited to spouses. The detail exploration of this topic in Pakistani context will help the researcher to plan the interventions. Health care professionals should planned holistic couple base interventions,

including. Therapeutic communication Partner counselling Support group

Keywords: spouse as caregivers, breast cancer, quality of life

7.120

COMPARISON BETWEEN CONVENTIONAL & PIEZOCISION ASSISTED ORTHODONTICS IN RELIEVING ANTERIOR CROWDING: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Prolonged orthodontic treatment is a great concern and poses risks to the teeth and surrounding tissues. Orthodontic tooth movement can be accelerated by introducing regional insult, which increases the bone turnover and hence the reorganizing activity. Evidence suggests piezocision to be minimally invasive and clinically effective. The aim of the present study was to compare the effectiveness of conventional and piezocision assisted orthodontics in relieving anterior crowding. *Materials and Methods:* Electronic and manual searches were conducted in multiple databases including PubMed, Dental and Oral Sciences, Cochrane and Cinahl Plus until April 2019. Initial search yielded 3013 studies with 8 articles meeting the inclusion criteria. The primary outcome assessed was time required for the alleviation of crowding. The secondary outcomes evaluated were pain, root resorption and periodontal health. Studies having homogenous data were included in the meta-analysis using the RevMan software. *Results:* Out of the eight articles that fit the inclusion criteria, six were RCTs and two were NRCTs. Significant differences were found in alignment time and pain experienced by the patient between conventional and piezocision assisted orthodontic treatment. However, gingival health and root resorption showed non-significant differences. The forest plot of meta-analysis depicted significant difference ($p = 0.03$) in the

alignment time between the treatment modalities. Difference in pain levels were found to be non-significant ($p = 0.78$). *Conclusions:* Piezocision is effective in accelerating orthodontic tooth movement and alleviating crowding when compared to conventional therapy. No negative effects on periodontal health, root resorption and pain perception were found in the long term.

Keywords: Minimally invasive, Crowding, Tooth movement

7.121

TRANSITION TO ONLINE TEACHING AMID COVID-19 PANDEMIC: PERSPECTIVE OF POST GRADUATE TRAINEES OF MEDICINE DEPARTMENT IN A TERTIARY CARE HOSPITAL

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Introduction The COVID-19 pandemic has immense affect on medical education . Despite worldwide adoption of e-learning , it was not implemented by many institutions in Pakistan till current situation where , only e learning has given opportunity to continue teaching sessions . The purpose of current study is to assess perceptions of postgraduate trainees about online teaching , amid COVID-19 pandemic. *Methods* This cross section survey was conducted between August 2020 to September 2020 at department of medicine ,Aga khan university hospital Karachi . The study participant were postgraduate graduate trainee of internal medicine and allied specialties .

Results Responses were obtained from 51 participants and majority were from department of internal medicine (74.5%) followed by neurology , cardiology and pulmonology . Few postgraduate trainee has ever attended on line courses (61%) or workshops (35.3%) and did not received orientation before commencing e learning activities (35.5%) . Although resident believes that e learning

sessions are interesting , knowledgeable ,relevant to their learning needs , feasible (82.4%) but only few (33.3%) considered on line sessions as effective as face to face teaching sessions, provided adequate motivation & engagement in sessions (45.1%) , sufficient time for interaction with facilitators and had frequent technical issues (65%). The major hindrances as perceived by residents are technical issues (94%) , lack of interaction with facilitators and peers (55% ,)and computer literacy of trainee (n = 28, 55%) . Majority (90%) of residents opted to have hybrid model for teaching session in the future .

Conclusion The COVID -19 pandemic has given us opportunity to re structure our traditional class room based education system .However a strategic approach is required for successful implementation of e learning .

Keywords: COVID-19, e learning, residents

7.122

PREVENTING INFANT MALNUTRITION WITH EARLY SUPPLEMENTATION (PRIMES) STUDY

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Preventing Infant Malnutrition with Early Supplementation (PRIMES) Study Fyezah Jehan, Imran Nisar, Shabina Arif, Benazir Baloch, Muddassir Altaf, Khusboo Liaquat, Najeeb Rahman, Imran Ahmed **Background:** Childhood undernutrition and micronutrient deficiencies is the major cause of childhood morbidity and mortality, can cause severe problems persisting into adult life including increased risk of chronic diseases, deficits in cognitive function and reduced work capacity. Despite ongoing research, effective solutions for reliably preventing childhood malnutrition have remained elusive. Although some nations have achieved substantial progress in preventing or treating childhood malnutrition in the past two

decades, more progress is needed in South Asia and Sub-Saharan Africa. **Objective:** This is a descriptive and correlational study to assess the relationship between infant dietary intake and weight change in low-income countries. The objectives of the PRIMES study are to examine local infant feeding practices and experiences with infant weight (Aim 1), and characterize neonatal weight loss/gain patterns, dietary intake, and growth and assess the relationship between infant dietary intake and weight change in low-income countries (Aim 2). **Methodology** This is a mixed-methodology study using both a qualitative and a quantitative prospective cohort study design, both of which will occur in four countries. Total 220 newborns and their mothers were enrolled in Pakistan. They were followed from birth until one month of age and anthropometry was assessed, dietary survey and hemoglobin measurement were performed. Their fathers and next-oldest siblings were enrolled for anthropometry and hemoglobin (fathers only). **Results** Number of newborns screened were 411 out of which 366 met inclusion criteria and 45 had exclusion criteria. 146 were consent refused for the study. A total of 220 newborns were enrolled. Out of 220 newborns 47% were males and 53% were females. About 14% newborns weighed less than 2500g weight while 86% were adequate weight babies. Percentages of newborns with gestation ages >38weeks, 36-38weeks, and

Keywords: malnutrition, breast feeding, weight changes

7.123

REPORTING CARRIERS IS IMPORTANT FOR PAKISTAN:

REPORTING HETEROZYGOUS CARRIER STATUS ON MONOGENIC RENAL STONE DISORDER GENES IN PAKISTAN: NEXT GENERATION SEQUENCING AGAINST A 102 GENE PANEL REVEALS HETEROZYGOUS CARRIER STATE IN FIVE DIFFERENT RECESSIVE GENES IN FIVE PATIENTS (16.6%) IN PRELIMINARY

ANALYSIS OF 30 SELECTED PAKISTANI RENAL STONE PATIENTS

Imran Khan Jalbani, Syed Raziuddin Biyabani, M. Arif Mateen Khan, Aysha Habib Khan, Saqib Qazi, Salman Kirmani, Salman Kirmani, Zahra Hasan, John C Lieske, Jamsheer Talati
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In Pakistan, Renal Stone (RS) disease is recurrent, starts before age 25 years and often recurs and 52% have family history. Consanguinity is common in Pakistan. Risk for genetic cause is high we believe carrier rates must be significant in the general population. We recently reported that 16.6% of selected patients with RS had pathogenic variants on four genes (AGXT, GRHPR, KCNJ1, and SLC34A3). We report on the carrier status and its importance. **Methodology:** Twenty three adult and seven pediatric Pakistani RS patients attending AKU Urology Clinics were selected for high possibility of genetic cause of RS. Clinical, laboratory data & NGS sequencing against a panel of 102 monogenic renal stone disorder genes recorded. The data was searched for heterozygous (HZ) mutations. **Findings** 1. One patient each had a HZ state on SLC4A1, VDR, GRHPR, CLCNKB, and FGF 23 2. One patient with homozygous variants on the SLC34A3 had additional heterozygous mutation on the same gene, causing a TRIALLELIC variant. 3. One patient had a HZ carrier state as digenic mutation on the SLC4A1 gene (dRTA) with homozygous AGXT mutation. **Discussion** Literature on DNA analysis for stone disease is silent on carrier state. Population studies indicate 1 in 70 carrier rate for one monogenetic disease RS disease: Primary Hyperoxaluria A carrier state is an indicator of possible risk of sibs having RS. Finding a carrier will allow genetic counseling, benefit future sibs, and allow the carrier to intelligently plan marriage. **Conclusion** 1. Carefully selected patients can yield significant genetic mutation more frequent.

2. Our study shows the importance of documenting carrier states in reports on DNA analysis. 3. Genetic counseling should become integral parts of units treating pediatric and young adult RS formers. 4. Rural populations need to be made aware of the pitfalls of intermarriage and consanguinity.

Keywords: Monogenic renal stone disorders, heterozygous, homozygous, , triallelic and digenic mutations

7.124

TEACHING EQUITY AND ETHICS IN POST-GRADUATE CURRICULUM ON BIO-ETHICS

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Introduction: Principles of bio-ethics and equity are the core themes of health policy. Teaching equity with policy perspective is a challenging task as the students of bio-ethics hail from a diverse academic background. The objective of this research is to propose a module in the curriculum of masters of bio-ethics program. **Methods:** A panel of three experts (Health Policy and Economics, Medical Curriculum, Social Scientist) participated to develop the curriculum of the module on equity, ethics and health policy for health professionals using Kern's six steps model. **Critical review** (including learning objectives, pedagogies, and assessment strategies and evaluation methods for the module) of the existing bio-ethics curriculum was carried out. This was followed by an extensive literature review focusing low and middle income countries. The topics included were health policy content analysis, philosophical basis of health policies and principles of bio-ethics. **Findings:** Broadly embedded in the egalitarian, utilitarian and libertarian philosophies, We proposed

curriculum spread over a semester with six themes; Theories of ethics and equity, Health, healthcare and its determinants, Equity and its types, Universality and Selectivity in healthcare, Equity analysis of health, and Health policy and health outcomes. The objective of the theoretical curriculum is to enable the participant to differentiate and interpret different topics. The objective of the applied part is their ability to apply and interpret these topics. An assessment plan comprising of summative and formative components were proposed to align with the module learning objectives. Conclusion: The topic of Equity is core concept of health policies and bio-ethics. We expect that by including this module, the participants will be equipped with hands-on knowledge and applications in their respective professional settings. We plan to evaluate the curriculum with the help of a pre and post tests and feedback and evaluation reports of faculty and the participants.

Keywords: Medical Education, Bio-Ethics, Equity

7.125

FACTORS AFFECTING THE CHOICE OF SUB-SPECIALTY AMONG MEDICAL RESIDENTS

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Introduction: Choosing a medical specialty is a complex and partially understood process. Residents choose their specialty after a rigorous process. The choice of specialty not only effects on student but also on the medical discipline and the country too, in terms of deficit of medical professionals in certain specialties and unrestrained number of doctors in other specialties Aim: This study helps to determine factors related to choosing of subspecialty among residents. Design: Questionnaire based cross sectional study Setting and participants: This study was conducted in the Department of

Medicine of The Aga Khan University Hospital, Karachi, Pakistan. A total of 70 residents were included in the study. The study beforehand was conducted after ERC approval. Results: A total of 70 residents were included in the study from internal medicine and sub- specialties of medicine. Among them 23(32.9%) were male. All of them were enrolled in exit exam of FCPS. Overall the factors influencing the choice of specialty mainly included variety of medical problems (91.4%), academic experience (78.6%), autonomy potential (75.7%) and role model (58.6%) whereas financial reason (61.4%) and family influence (58.6%) had no significance. Conclusion: This study suggested that specialty choice is based on complex factors and the most influencing among the respondents were inspiration during clinical rotation, variety of medical problems and prestige of specialty. Identification of factors influencing specialty choice may provide an insight and comprehension to mentor medical students and directors of residency training programs to determine and explore strategies to increase recruitment and expansion of the primary care human resources. Moreover, a thorough research in this area is needed to determine and establish the factors that impact medical residents to choose a specific field of study. Better knowledge of the influencing factors would be beneficial in determining educational direction and policy.

Keywords: specialty choice, medical residents, residency program

7.126

ASSOCIATION OF SAFETY ATTITUDES WITH THE ORGANIZATION CITIZENSHIP BEHAVIOR AMONG HEALTHCARE WORKERS OF TERTIARY CARE PRIVATE HOSPITALS OF KARACHI, PAKISTAN

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Healthcare providers who work on a front line level like doctors, nurses, pharmacist &

physiotherapist etc. have a responsibility to maintain balance between provision of care and patient safety. They perform well and employ a high level of efforts when they know the organization is supporting them in valuing their work and help them in achieving excellence of care towards the patient. This study was conducted to determine the association of Safety Attitudes with the Organization Citizenship Behavior among Healthcare Workers of Private Hospitals of Karachi, Pakistan. A cross sectional analytical study was conducted in tertiary hospitals of Karachi, Pakistan. The total number of healthcare workers who were invited to participate in this study were n=380 includes physician, nurses, pharmacists & physiotherapist. Responses were taken through the quantitative questionnaire comprised of questions pertinent to safety attitudes & OCB at workplace. SPSS version 19 was used for analysis of results. Among all healthcare providers, majority participants were nurses (53.9%) of tertiary care hospitals of Karachi, Pakistan. Work experiences of participants were ranging from novice (40.5%) to 20 years & more (10.3%). Further, male to female ratio revealed that there were more female (61.8%) participants in the study as compared to male (38.2%). Linear regression analysis revealed that OCB has moderate association (0.539) with safety attitudes and while analyzing regression results, we may also infer that there is a positive significant impact of OCB on safety attitudes among healthcare workers. This study has provided valuable information to healthcare leadership of private hospitals and quality management stakeholders about the strategies to prevent medical errors and promote safety culture by enhancing and focusing on the morale, job satisfaction & work attitude of healthcare workers.

Keywords: Safety Attitude, Organization Citizenship Behavior, Healthcare Workers

7.127

GEOMAPPING MONOGENIC RENAL STONE DISORDERS TO REGIONS ACROSS STUDIES: INTER AND INTRA-COUNTRY DIFFERENCES BETWEEN AKU REPORT AND OTHERS

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Renal Stone (RS) disease is very common in Pakistan, constituting 50% of a urological unit's workload, and having a presumed prevalence of 12%. Often recurrent, many stones begins in childhood and 52% have a family history. Consanguinity is common in Pakistan. It is important to know the genetic variant pattern in Pakistan and compare with findings in other countries. We recently reported that 16.6% of selected 30 patients had pathogenic variants on 4 of 102 monogenic renal stone disorder genes (AGXT, GRHPR, KCNJ1, and SLC34A3); and a 16.6% carrier rate on 5 genes. This poster focuses on comparison of patterns of gene variants in other studies from Pakistan and abroad. **Methods:** All published genetic studies on Renal stones in Pakistani or Pakistani origin patients were accessed, and the data on genetic variants were tabled and compared with Western studies of Daga and Braun. **Findings:** 1. In Pakistani patients, AGXT variants were noted in three studies (Khalique; Talati; and Biyabani) but not in Amar's report of relatively unselected patients from Punjab and Upper Sindh. 2. Amar found most mutations were on 3 dominant in most and one recessive genes in only one patient. None had AGXT and GRHPR variants. Biyabani noted homozygous mutations on 4 recessive genes; and heterozygous mutations on SLC 4A1, VDR, FGF23, CLCNKB, GRHPR ; compound heterozygous on SLC34A3. 3. The spread of affected genes among Pakistani subjects were different between Amar's and

Biyabani's (AKU) studies 4. The genes common to all studies in Europe America and Pakistan were AGXT, GRHPR, SLC4A1, SLC34A1. Conclusions As gene affected and variant found differ in Amar's and Biyabani's study, and as Khalique has a greater number of suspected PH at her institution, construction of a geo-gene map of geo-regional distribution and an ethno-genetic mapping of mutations will be useful.

Keywords: Heterozygous mutation, homozygous mutations, digenic mutation

7.128

WORK RELATED MUSCULOSKELETAL DISORDERS (WRMSDs) AMONG SURGERY RESIDENT TRAINEES WORKING IN A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN: A CROSS SECTIONAL STUDY

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Abstract: Background: Work-Related Musculoskeletal Disorders (WRMSDs) are a group of disorders that affect muscles, tendons, skeleton, cartilage, ligaments, and nerves. Surgery trainees are at high risk for developing WRMSDs because many procedures they perform require ergonomically challenging positions for extended hours. Unfortunately, there is a huge gap in understanding and operationalization of ergonomically friendly environment in operating rooms.

Objective: To determine the prevalence and identify the association between WRMSDs and working hours in operation theater among surgery trainees at a tertiary care hospital in Karachi, Pakistan. *Methods:* This is an analytical cross-sectional study that will be conducted at the Aga Khan University Hospital (AKUH), Karachi, Pakistan. We will purposively select 87 residents (out of 113) from different specialties including; cardiothoracic, general surgery,

neurosurgery, ophthalmology, orthopedics, otolaryngology, pediatric surgery, plastic surgery, urology, and gynecology. We will exclude those who are pregnant or are on leaves at the time of data collection. We will use the Nordic Musculoskeletal Questionnaire for estimating the prevalence of WRMSDs and the Global Physical Activity Questionnaire to determine the association of WRMSDs with physical activity. We will include sections in the questionnaire to provide information on covariates including working hours, the number of surgeries, specialty, and duration of work. We will collect data online through Epicollect, according to the availability of residents, during or after working hours. We will analyze data using STATA version 14 by applying Cox regression models to calculate hazard ratios.

Results: We plan to initiate data collection during March 2020; preliminary findings will be available by end of August 2020.

Conclusion: WRMSDs are easily preventable through behavior modifications. Our study will not only identify the prevalence of WRMSDs in Pakistan, but also important associations which may help develop preventive strategies and improve the working conditions for surgery trainees.

Keywords: Musculoskeletal disorders, physical activities, Trainees

7.129

INITIATION OF WARFARIN HELPLINE SERVICE IN HEART LUNG, VASCULAR SERVICE LINE IN OUTPATIENT DEPARTMENT AGA KHAN UNIVERSITY

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Background: Warfarin is the high alert medication which requires close monitoring and management. It is prescribed in various indications like Atrial Fibrillation, left

ventricular thrombosis, prosthetic heart valves, pulmonary embolism, stroke and deep vein thrombosis. It is regulated according to the value of International Normalized Ratio (INR).

Objectives: To facilitate patient taking warfarin due to various indications To provide timely referral in case of warfarin toxicity

Methodology: A dedicate warfarin helpline number was assigned to a dedicated nurse in outpatient heart lungs and vascular clinics. Patient identified with various indications and discharged on warfarin are provided a detail information regarding the drug and helpline card by discharge nurse. They contact on helpline number from Monday to Saturday from 8-5 Pm and inpatient areas like CCU and CICU on weekend and off timings 5pm to 8 am. Details of current dose, current INR, treating physician or surgeon, other medicine, any bleeding episode, other symptoms which may be related to taking warfarin are inquired and dose is adjusted according to INR protocol supervised by credentialed faculty present in the clinic. This record is maintained individually in excel sheet on daily basis. The data analysis and results are shared with the QIC team and leadership on quarterly basis in SL1 QIC meeting. Result: Total 1277 patients are facilitated from January 2019 to June 2020. The final complied data of all the parameters maintained is in process. Conclusion: our quarterly data shows that initiation of warfarin helpline service has resulted in improvement with regards to patient's follow-up, quality of life with warfarin and facilitation in dose adjustment. It has also improved timely referral to emergency department if warfarin toxicity happens.

Keywords: INR, wafarin, Toxicity

7.130

PROPHYLACTIC MESH PLACEMENT FOR THE PREVENTION OF INCISIONAL HERNIA IN HIGH-RISK PATIENTS AFTER ABDOMINAL SURGERY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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*Background and objectives:*In high-risk populations, the efficacy of mesh placement in incisional hernia (IH) prevention after elective abdominal surgeries has been supported by many published studies. This meta-analysis aimed at providing comprehensive and updated clinical implications of prophylactic mesh placement (PMP) for the prevention of IH as compared to primary suture closure (PSC).

*Materials and methods:*PubMed, Science Direct, Cochrane, and Google Scholar were systematically searched until March 3, 2020, for studies comparing the efficacy of PMP to PSC in abdominal surgeries. The main outcome of interest was the incidence of IH at different follow-up durations. All statistical analyses were carried out using Review Manager version 5.3 (The Nordic Cochrane Centre, The Cochrane Collaboration, 2014) and Stata 11.0 (Stata Corporation LP, College Station, TX). The data were pooled using the random-effects model, and odds ratio (OR) and weighted mean differences (WMD) were calculated with the corresponding 95% confidence interval (CI).

*Results:*A total of 3,330 were identified initially and after duplicate removal and exclusion based on title and abstract, 26 studies comprising 3,000 patients, were included. The incidence of IH was significantly reduced for PMP at follow-up periods of one year (OR= 0.16 [0.05, 0.51]; p=0.002; I²=77%), two years (OR= 0.23 [0.12, 0.45]; p<0.0001; I²=68%), three years (OR= 0.30 [0.16, 0.59]; p=0.0004; I²= 52%), and five years (OR=0.15 [0.03, 0.85]; p=0.03; I²=87%). However, PMP was associated with an increased risk of seroma (OR=1.67 [1.10, 2.55]; p= 0.02; I²=19%) and chronic wound pain (OR=1.71 [1.03, 2.83]; p= 0.04; I²= 0%). No significant difference between the PMP and PSC groups

was noted for postoperative hematoma (OR= 1.04 [0.43, 2.50]; p=0.92; I2=0%), surgical site infection (OR=1.09 [0.78, 1.52]; p= 0.62; I2=12%), wound dehiscence (OR=0.69 [0.30, 1.62]; p=0.40; I2= 0%), gastrointestinal complications (OR= 1.40 [0.76, 2.58]; p=0.28; I2= 0%), length of hospital stay (WMD= -0.49 [-1.45, 0.48]; p=0.32; I2=0%), and operating time (WMD=9.18 [-7.17, 25.54]; p= 0.27; I2=80%).

Conclusions: PMP has been effective in reducing the rate of IH in the high-risk population at all time intervals, but it is associated with an increased risk of seroma and chronic wound pain. The benefits of mesh largely outweigh the risk, and it is linked with positive outcomes in high-risk patients

Keywords: incisional hernia, mesh closure, suture closure

7.131

COVID-19 AND LIVER INJURY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background and Aims The prevalence and extent of liver damage in coronavirus disease 2019 (COVID-19) patients remain poorly understood, primarily due to small-sized epidemiological studies with varying definitions of “liver injury”. We conducted a meta-analysis to derive generalizable, well-powered estimates of liver injury prevalence in COVID-19 patients. We also aimed to assess whether liver injury prevalence is significantly greater than the baseline prevalence of chronic liver disease (CLD). Our secondary aim was to study whether the degree of liver injury was associated with the severity of COVID-19. **Materials and Methods**

Electronic databases (PubMed and Scopus) were systematically searched in June 2020 for studies reporting the prevalence of baseline CLD and current liver injury in hospitalized COVID-19 patients. Liver injury was defined as an elevation in transaminases >3 times above the upper limit of normal. For the secondary analysis, all studies reporting mean liver enzyme levels in severe versus non-severe COVID-19 patients were included. A random-effects model was used for meta-analysis. Proportions were subjected to arcsine transformation and pooled to derive pooled proportions and corresponding 95% confidence intervals (CIs). Subgroup differences were tested for using the chi-square test and associated p-value. Means and their standard errors were pooled to derive weighted mean differences (WMDs) and corresponding 95% CIs. Results Electronic search yielded a total of 521 articles. After removal of duplicates and reviewing the full-texts of potential studies, a total of 27 studies met the inclusion criteria. Among a cohort of 8,817 patients, the prevalence of current liver injury was 15.7% (9.5%-23.0%), and this was significantly higher than the proportion of patients with a history of CLD (4.9% [2.2%-8.6%]; p < 0.001). A total of 2,900 patients in our population had severe COVID-19, and 7,184 patients had non-severe COVID-19. Serum ALT (WMD: 7.19 [4.90, 9.48]; p < 0.001; I2 = 69%), AST (WMD: 9.02 [6.89, 11.15]; p < 0.001; I2 = 73%) and bilirubin levels (WMD: 1.78 [0.86, 2.70]; p < 0.001; I2 = 82%) were significantly higher in patients with severe COVID-19 when compared to patients with non-severe disease. Albumin levels were significantly lower in patients with severe COVID-19 (WMD: -4.16 [-5.97, -2.35]; p < 0.001; I2 = 95%). **Conclusions** Patients with COVID-19 have a higher than expected prevalence of liver injury, and the extent of the injury is associated with the severity of the disease. Further studies are required to assess whether hepatic damage is caused by the virus, medications, or both.

Keywords: COVID-19, liver injury, liver biomarkers

7.132

CT SCAN CHEST FINDINGS IN COVID-19 AND ITS RELATIONSHIP TO DURATION OF INFECTION

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Background: In late 2019, a novel coronavirus, designated severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was recognized as the cause of COVID-19 in China. The disease has ranged quickly around the world. RT PCR has sensitivity of 30 to 50%. Chest imaging is of great importance for the diagnosis and management of patients with COVID-19 infection. CT scan is more sensitive than initial RT-PCR testing. **Objective:** The purpose of this study is to determine initial CT scan findings and their relationship to presenting symptoms in COVID-19 patients. **Materials and methods:** The study is a cross sectional study. The study was done from 1st June 2020 to 31st August 2020. 70 patients were enrolled. Age, gender, symptoms, its duration, RT PCR from respiratory secretions were obtained. Number of days between symptom onset or date of the first positive test and the day on which first CT scan was done and CT scan chest findings reported by radiologist was obtained. **Results:** A total of 70 patients (48 male and 22 female) were included in the study. Mean age of patients was 57.3 ± 13.3 ; range: 25-84. The most common symptom at presentation was fever (81.4%), shortness of breath (74.3%) and cough (57.1%) respectively. The most common finding in our patients was presence of ground glass opacity in 31(44.3%) presented in peripheral location in 41 patients (58.6%) and rounded in morphology 49(70%). Lower lobe was most commonly involved. 58.9(82.9%) had bilateral disease involvement. The total lobes mean severity score 7.5 ± 5.4 ;

range: 0-20. Ground glass opacity was seen in early stage of the disease. **Conclusion:** This study showed characteristic findings of ground glass opacity and consolidation with peripheral predilection. Inclusive, imaging helps in determining early onset of disease, disease severity and follow-up

Keywords: COVID 19, infectious disease, CT-Scan

7.133

TO DETERMINE THE MEAN PROCALCITONIN LEVELS IN ADULTS WITH SEPSIS AND TO DETERMINE THE FREQUENCY OF RAISED PROCALCITONIN LEVELS IN ADULTS WITH SEPSIS.

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Department of Medicine*

ABSTRACT Introduction: Procalcitonin is an acute-phase reactant which marks the inflammatory conditions, especially those of bacterial origin. This elevated procalcitonin level during inflammation is associated with bacterial endotoxin and inflammatory cytokines. Raised levels of serum PCT in conditions such as viral infections and noninfectious inflammatory conditions such as autoimmune disease and chronic inflammatory processes are much less distinct, occasionally more than 0.5 ng/mL. **Objectives:** To determine the mean procalcitonin levels in adults with sepsis and to determine the frequency of raised Procalcitonin levels in adults with sepsis. **Study Design:** cross-sectional study. **Settings:** Medicine department at the Aga Khan University Hospital (AKUH), Karachi. **Study Duration:** 1 st January 2019 to 30 th June 2019 **Materials & Methods:** A total of 118 patients with age group of more than 18 till 85 years of age of both gender having sepsis were included. Major burns, Severe trauma, Acute multiorgan failure other than infection and Major abdominal or 2 cardiothoracic surgery were excluded. Patients with sepsis admitted in Medicine department at the Aga Khan

University Hospital (AKUH) were followed with their vitals as recorded in hospital documents. And Procalcitonin level is followed which is acquired through hospital data. Procalcitonin level test through PCT assay. Results: Age range in this study was from 18 to 85 years with mean age of 59.31 ± 15.12 years. Majority of the patients 85 (72.03%) were between 51 to 85 years of age. Out of 118 patients, 62 (52.54%) were male and 56 (47.46%) were females with male to female ratio 1.1:1. Mean procalcitonin levels was 13.15 ± 21.23 ng/ml. Frequency of raised Procalcitonin levels in adults with sepsis was found in 82 (69.50%) patients. Conclusion: This study has shown that the mean procalcitonin levels was 13.15 ± 21.23 ng/ml and frequency of raised Procalcitonin levels in adults with sepsis was found in 69.50% patients. Keywords: sepsis, Procalcitonin levels, raised.

Keywords: sepsis, procalcitonin, raised

7.134

VALIDATION OF NON-SKIN PIERCING GLUCOMETER DEVICE FOR DIABETIC PATIENTS IN A DEVELOPING COUNTRY

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Introduction/Objective: Diabetes Mellitus (DM) accompanies risk of fluctuating blood glucose (BG) levels. The greatest challenge is to keep glucose at optimum desirable levels, which requires frequent monitoring of blood Glucose levels throughout. A failure in good BG control may lead to complications like severe hyperglycemia, keto-acidosis, coma and complications associated with multiple organs. Multiple injections for therapy and multiple pricks for BG monitoring are required by Insulin Dependent Diabetes Mellitus (IDDM) to maintain their optimum levels. Therefore, a user friendly non-skin piercing glucometer (NSPG)

could reduce the pain and difficulty of performing multiple pricks at low cost. We propose to validate an NSPG device against a gold standard of venous blood glucose (VBG), along with capillary blood glucose (CBG). We will also assess the disease management, cost burden of home based SBGM device and quality of life (QOL) of these patients. Methods: A stratified sample of 360 IDDM patients falling in three age groups 10-20; >20-30 and >30-45 years, visiting the diabetic clinics at a tertiary care hospital will be enrolled. Information on patient characteristics, health related information, frequency and management of BG monitoring, insulin therapy and quality of life (QOL) related to daily BG testing will be obtained. Bland-Altman technique will be used to validate the NSPG device measurements with VBG, as well as CBG. Mean differences in measurement between NSPG and VBG, CBG and VBG, and NSPG and CBG will be plotted and paired t test will be used as a test of significance. However repeated measure ANOVA will be done for comparing all 3 groups. Also the mean difference of cost will be done using one way ANOVA. Conclusion: Expected results of device validation will result in freedom from pain of multiple pricks at affordable cost and facilitating frequent use, decreased dependence on others for BG monitoring and hence better outcomes in terms of BG monitoring, control and QOL.

Keywords: Blood Glucose, Insulin Dependent Diabetes Mellitus, Non-skin piercing glucometer

7.135

EVALUATION OF DIGITAL INNOVATION IMPLEMENTED BY PUBLIC PRIVATE PARTNERS IN HEALTH SYSTEM OF SINDH PROVINCE: A QUALITATIVE APPROACH

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Background: Digital innovations improve service delivery by providing reliable and efficient solutions to health facility managers, Public Private Partnership (PPP) partners and the government stakeholders. PPPs have been operating in Sindh province but evaluation of the digital innovations developed and implemented by PPPs have not been conducted till date. **Objective:** We sought to conduct evaluation of digital interventions implemented at government health facilities managed by PPP partners. **Methodology:** A framework was developed for digital innovation evaluation using World Health Organization's (WHO) guideline recommendations on digital interventions and WHO's Approach to Digital Health. A novel framework was developed which evaluated interventions in 3 stages. It mapped and categorized interventions under WHO's six building blocks framework for health system: human workforce, drug-supplies, service delivery, HMIS, leadership & governance and health financing in first stage. In second stage interventions were categorized on the level of maturity: pre-prototype, prototype, pilot, demonstration and scale-up phase. In the third stage end-user acceptability, technological features, quality assurance and potential for roll-out across health facilities were assessed. Evaluation visits were conducted, in-depth interviews were done with private partners and government stakeholders to assess digital innovation. **Results:** Digital innovations such as monitoring staff through biometric attendance, computerized patient record, computerized medicine-logistics system for speedy, transparent availability of medicines are in place requiring roll-out support. Telemedicine services are at very early stage and require strengthening through connectivity support, e-governance and standardized SoPs. Independent applications for frontline-health workers are in pilot-prototype stage, however since several such pilots are already in place in Sind/ nationally, pilots should be consolidated into a single Application. While PPP partners have digital dashboards, these links have not been extended to the PPP Node.

Conclusion: Public private partnerships can provide much needed opportunity to design and implement innovations in health system with specific focus on service delivery.

Keywords: public private partnership, digital innovation, health system evaluation

7.136

INAPPROPRIATE USE OF PROTON PUMP INHIBITOR FOR STRESS ULCER PROPHYLAXIS IN A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN

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Background: The use of proton pump inhibitors (PPI) has been expanded inappropriately. PPI are among the most selling drugs in the world. There is growing evidence that PPI are associated with significant adverse effects along with undue financial burden. Inappropriate prescription of PPI is common in inpatients **Objective:** The objective is to determine the frequency of inappropriate use of proton pump inhibitors for stress ulcer prophylaxis **Materials and methods:** This prospective observational study was conducted in the Department of Medicine of The Aga Khan University Hospital Karachi. 151 adult patients admitted in the hospital were included. All those patients who received PPI due to a condition mentioned by American Gastroenterology Association (AGA) as an indication for PPI, were labeled as PPI appropriately indicated. While those patients who received PPI without a condition mentioned by AGA as an indication for PPI, were labeled as PPI inappropriately indicated. **Results:** Out of these 151, 72 (47.7 %) were males Mean age was 57.2 ± 18.2 years. Route of administration was oral in 110 (72.8%) and IV in 41 (27.2%) patients. Out of 151 patients, 100 (66.2%) patients were receiving PPI without any specific indication while 51 (33.8%) patients were receiving PPI with appropriate indications

Conclusion: Inappropriate use of PPI is quite common among admitted patients. Evidence based medicine teaching, implementation of institutional protocols and frequent review of treatment regimen are required to limit inappropriate PPI administration.

Keywords: Proton pump inhibitors, stress ulcer, inappropriate

7.137

EQUIPPING COMMUNITY HEALTH WORKERS WITH DIGITAL TOOLS TO COMBAT COVID-19 IN LMICS

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Background: Community health workers (CHWs) are well-positioned to play a pivotal role in fighting the pandemic at the community level. Covid-19 outbreak has led to a lot of stress and anxiety among CHWs as they are expected to perform pandemic related tasks along with the delivery of essential healthcare services. In addition, movement restrictions, lockdowns, social distancing, and lack of protective gear have significantly affected CHWs routine workflows and performance. To optimize CHWs functioning, there is a renewed interest in supporting CHWs with digital technology to ensure an appropriate pandemic response.

Discussion: The current situation has necessitated the use of digital tools for the delivery of Covid-19 related tasks and other essential healthcare services at the community level. Evidence suggests that there has been a significant digital transformation to support CHWs in these critical times such as remote data collection and health assessments, use of short message service and voice message for health education, the use of digital megaphones for encouraging behavior change, and digital contract tracing. A few LMICs such as Uganda, and Ethiopia have been successful in operationalizing digital tools to optimize CHWs functioning for Covid-19 asks and other

essential health services. Conclusion: Yet, in most LMICs, there are some challenges concerning the feasible and acceptability of using digital tools for CHWs during the Covid-19 pandemic. In most cases, CHWs find it difficult to adopt and use digital health solutions due to lack of training on new digital tools, weak technical support, issues of internet connectivity, and other administrative related challenges. To address these challenges, engaging governments would be essential for training CHWs on user-friendly digital health solutions to improve routine workflows of CHWs during the Covid-19 pandemic.

Keywords: Community Health workers (CHWs), digital tools, Covid-19

7.138

SELF-MEDICATION WITH ANTIBIOTICS AMONG PRACTICING NURSES: A SINGLE CENTER STUDY

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Introduction: Self-medication practice with antibiotics has exponentially surged. The objective of the present research was to underscore the prevalence and factors associated with antibiotic self-medication among practicing nurses. Methods: A descriptive cross-sectional research study was conducted at a tertiary care hospital of Karachi, Pakistan from July 2016 to August 2016. Results: In this study, 54.2% (26/48) practicing nurses were females. The mean age was 28.1 ± 7.6 years. Of the 48 nurses recruited, 60.4% (29/48) were practicing antibiotic self-medication. The antibiotic self-medication prevalence was comparatively greater among males; 58.6% (17/29). The most frequently used antibiotics for self-diagnosed health issues was Amoxicillin/Clavulanic Acid 72.4% (21/29). The predominant route of antibiotic administration was oral; 93.1%

(27/29). In addition, the common factors urging for self-medication with antibiotics was knowledge about the antibiotics 72.4% (21/29). Furthermore, the regular health complaints that predisposed nurses to practice antibiotic self-medication were fever 79.3% (23/29) and sore throat 65.5% (19/29). Over two-thirds of the nurses procured non-prescriptional antibiotics from community 86.2% (25/29) and hospital pharmacies 75.9% (22/29). Earlier experience of antibiotics uses 51.7% (15/29) and opinion of family and friends 41.3% (12/29) were found to be fundamental to selection of antibiotics. Merely 20.7% (6/29) of the nurses finished the entire antibiotic course. Interestingly, more than one-third of the nurses did not check for antibiotic instructions; 79.3% (23/29). The antibiotic adverse effects were encountered by 41.4% (12/29) of the nurses and were largely related to gastrointestinal system; diarrhea, nausea and vomiting. Most of the nurses calculated the antibiotic dosage based on past experience 55.2% (16/29) and discussion from family or friends 44.8% (13/29). The key factor inclining to change the antibiotic dosage was worsening health condition in 79.3% (23/29) of the nurses. Conclusion: Our preliminary findings delineated that antibiotic self-medication is a frequent practice among practicing nurses.

Keywords: Antibiotic, Self-medication, Practicing Nurses

7.139

MENTAL HEALTH OF HEALTH CARE PROFESSIONALS, WITH LESSONS ON BUILDING RESILIENCE- A LITERATURE REVIEW

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Introduction The coronavirus-19 strain has quickly spread across the globe, becoming a deadly pandemic. The virus has affected the world in numerous negative ways, with the

burdens of not only the disease, but the associated self-isolation and changes in life. Hospitals and healthcare professionals are overburdened with increasing demands. Numerous studies exist on the effects on the general population but very little literature is present on healthcare professionals and their mental health during the pandemic, along with means to support them and boost their resilience. The aim of this article is to review global studies conducted on mental health of health care professionals during Covid and also to identify the work done to build resilience among them. **Methods** A literature search was done using databases including the National Library of Medicine's MEDLINE (PUBMED), Google scholar, Pakmedinet.com and the WHO database. Literature search was done till September 2020 using a combination of key terms including mental health, health care professionals, COVID-19 and resilience. **Results** The majority of studies were conducted in China. All the studies show increased scores assessed through a wide array of scales, on mental health illnesses such as anxiety, depression, insomnia and distress among health care professionals. Nurses, female and front-line workers were at higher risk. Degree of exposure to COVID cases and working in rural healthcare centers was also found to be contributing factors for increased symptoms. Very few studies have been conducted on this topic and very limited work has been done to alleviate the mental distress among health care professionals during the Covid pandemic. **Conclusion** More research is required on mental health of healthcare professionals, with associated regulations to protect healthcare professionals and provide them with resources. Targeted interventions for at-risk populations such as frontline workers, nurses and women are also strongly recommended.

Keywords: Covid, Resilience, Healthcare Professionals

7.140

KNOWLEDGE, ATTITUDE AND PRACTICES OF HEALTHCARE PROFESSIONALS REGARDING ANDROPAUSE IN LOWER MIDDLE INCOME COUNTRIES

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Introduction: Andropause, also known as Late Onset Hypogonadism (LOH) is a disease affecting men as they age, due to decreasing levels of the hormone testosterone in the body. During this phase, Men experiences wide range of physical, psycho-social and sexual symptoms which affects their quality of life. To the best of our knowledge there have been no study exploring knowledge, attitude and practices of health care professionals on andropause in Pakistan, and little research exists in other lower-middle income countries. This presents a potentially large unrecognised gap of data to be addressed. The aim of the study was to assess the knowledge, attitudes and Practices of Healthcare Professionals regarding andropause in lower Middle Income Countries **Methods:** A Cross-sectional will be conducted on consultants, residents and interns within the Urology, Psychiatry and Family Medicine departments of the Aga Khan Hospitals in Karachi, Pakistan, along with Dar-es-Salaam, East Africa and Nairobi, Kenya. The data collection will be done through online survey using structured questionnaire. The data will be analysed using descriptive and inferential statistics. **Results:** We expect to find low scores for knowledge, attitude and practices in our study, as compared to previous literature in Higher Income countries. Primary sources of knowledge are expected to be colleagues, and the media. The scores are expected to vary among the disciplines, being highest in Urology, and also to correlate with more years of healthcare experience. Higher scores for Attitude section are expected compared to Knowledge and Practices. Results are expected to match

studies in similar countries, such as India. **Recommendation/Conclusion:** Knowledge and Practices regarding Andropause in Healthcare Professionals Is lacking in Lower-Middle Income, more research needs to be done to address this. Teaching sessions and strict local guidelines may help improve the low levels of knowledge, attitude and practice.

Keywords: Andropause, LMIC, Healthcare Professionals

7.141

PERCEPTIONS AND EXPERIENCES OF PATIENTS ON TELEPSYCHIATRY DURING CORONAVIRUS PANDEMIC IN PAKISTAN

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Introduction: Telemedicine is the use of media and technology, to assist in providing medical care over long distances. Telepsychiatry is a form of telemedicine provides psychiatric care and evaluation using information technology. The coronavirus pandemic in Pakistan, and its resulting lockdown, has made in-person patient-doctor interactions at the hospital, a serious infection risk. Aga Khan Hospital has offered psychiatric consultation online consultations to combat this. No research has been done so far on the perceptions and experiences of patients in this unprecedented situation in Pakistan. The aim of our study is to assess patient perceptions and experiences on telepsychiatry during the coronavirus pandemic in Pakistan. **Methodology:** Using qualitative exploratory design, in-depth interviews were conducted with patients who received telepsychiatry or teletherapy online services during coronavirus pandemic in AKU, Karachi, Pakistan. The data was collected through telephonic interviews using semi structured interview guide during August-October 2020. Verbatim transcripts of the interviews will be analyzed using content analysis. **Results:** A preliminary analysis shows that the majority of participants preferred in-

person consultations to telepsychiatry. The reasons for in-person consultation included comfort, hospital environment and better patient-doctor interaction. Most participants also stated both should be an option, however telepsychiatry clinics are useful for short follow ups, or in times of crises or travel. Few respondents mentioned audio-visual technical issues and unfamiliarity with the service. Cost was cited as a major issue, respondents stated that online consultations should be cheaper. Conclusion/Recommendations: Telepsychiatry is an accepted form of consultation for majority of respondents but only as a secondary option. The option for in-person consultations is preferred. telepsychiatry and teletherapy overall should continue as an option for patient interactions.

Keywords: Telemedicine, Telepsychiatry, Perceptions

7.142

IDENTIFICATION OF MONOGENIC CAUSES OF RENAL STONE DISEASE IN A SERIES OF 30 PAKISTANI PATIENTS USING A 102 GENE NEXT GENERATION SEQUENCING PANEL

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Purpose: To (i) determine the mutation discovery yield (proportion of stone formers for a set of selected characteristics) of genetic testing in selected groups of patients in our two ongoing studies using a unique Mayo Clinic Next Generation Sequencing (NGS) panel of 102 candidate genes and (ii) to correlate the specific genes and mutations detected with phenotypes of the affected individuals. Methods: Preliminary analysis of NGS data from 30 patients enrolled in two on-going studies on

renal stone patients (pediatric and adult age groups) was done. All these patients were enrolled as per study specific inclusion criterion. DNA from 30 patients was sent to Mayo Clinic, USA for NGS against a panel of 102 genes known to result in renal function abnormalities. Results Variants were noted in 9 genes of a panel of 102 monogenic renal stone disorder genes. 1. 5 of 30 patients were homozygous for pathogenic variants in one of 4 genes. A pair of siblings from the pediatric age group had PH2 (GRHPR). One each had PH1 (AGXT), Bartters II (KCNJI), and hereditary hypophosphatemic rickets (SLC34A3). 2. Two patients were homozygous, and two patients were heterozygous for variants of uncertain significance (VUS) in a gene associated with a form of distal renal tubular acidosis (SLC4A1). Conclusions We have achieved a specific clinical diagnosis in 4/30 families and identified VUSs in SLC4A1, which need further analysis to establish their potential pathogenicity. From these preliminary results, identification of a variant is highly beneficial as it allows genetic counseling and prevention of disease transmission to the next generation. Dissemination of this information to urological, pediatric and nephrological societies is necessary in order to encourage appropriate screening and counselling.

Keywords: Monogenic renal stone disorders, heterozygous, homozygous, digenic mutation

7.143

SELF-POISONING IN PAKISTAN- IMPLICATIONS FOR SUICIDE PREVENTION

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Introduction Globally, approximately 800,000 die by suicide each year. Studying and controlling the most common suicide methods is considered one of the most effective prevention strategies. self-poisoning is used by an estimated

13.7% of victims, the majority being in low and middle-income countries (LMIC). Suicide and attempted suicide are criminalized acts, both under-studied and researched in Pakistan. The objectives of this study are to review the literature on self-poisoning, type of poison used, case-fatality ratio and the populations at risk. **Methods** A literature review was conducted to identify all studies on self-poisoning in Pakistan. Various databases including Pubmed, Psychinfo, Google Scholar, and Pakimedinet.com were searched using MeSH terms relating to 'self-poisoning', 'deliberate self-harm', 'poison ingestion', 'methods & means of suicide', 'prevention strategies' and 'suicide' among others. **Results:** In total 55 articles were retrieved: Sindh (n=26), Punjab (n=20), KPK (n=6) and Balochistan (n=1). Two further studies covered different cities and provinces of Pakistan. Data collection and reporting was not standardized, many studies did not disaggregate for reasons of poisoning or give socio-demographic details separately. Organophosphates were the most common agent, with a larger incidence of self-poisoning seen among females. Other poisons included rat-poison, corrosives, bleach and kerosene. Prescribed medications such as benzodiazepines, and recreational agents such as alcohol or cannabis were used in fewer cases. Case-fatality ratio varied from 3.5% to 27%. **Conclusions** Research on self-poisoning in Pakistan is lacking. Data collection needs to be systematic and standardized. Alongside socio-demographics, information recording type of poison, accessibility, time lag between ingestion and treatment, reasons, and outcomes is needed. It is important to disaggregate on reasons for poisoning, with socio-demographic details recorded separately. This helps identify at-risk populations and measures taken for primary and secondary prevention. Information obtained can inform policy on the regulation, sale and storage of pesticides in Pakistan.

Keywords: self-poisoning, suicide, Pakistan

7.144

ANDROPAUSE, AN OVERVIEW

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Introduction Andropause, also known as Late-onset hypogonadism (LOH) is the decline of androgenic hormones, mainly testosterone. This decline is seen with aging, and presents itself symptomatically after middle age. Men experience a wide range of physical, psychosocial and sexual symptoms which affects their quality of life. The aim of this study is to perform a literature review on andropause, to provide an overview of the disease, including its prevalence, awareness and treatment.

Methodology A literature search was done using databases including the National Library of Medicine's MEDLINE (PUBMED) and Google scholar. Literature search was done till November 2020 using a combination of key terms including mental health, health care professionals, COVID-19 and resilience. MeSH terms relating to 'andropause' 'LOH' 'TDS' were used **Results** A total of 22 studies were included, The majority of which had been conducted in Iran (8), the second most studies were found in India (5). Studies found a wide variation in estimated prevalence of andropause, with a prevalence of 48.18% for symptomatic andropause in India. Numerous studies found significant relationships between severity of hypogonadism symptoms and age. 58% of doctors in a study in the Phillipines reported lack of information on the disease as a major inhibiting factor to providing treatment. Similarly, majority of clinicians in a study in Canada found their own knowledge lacking. Higher Income countries reported higher knowledge of andropause in healthcare professionals. There were no studies on andropause conducted in Pakistan, as well as fewer studies in Lower-Middle Income Countries overall. **Conclusions** Research on andropause prevalence, and its treatment modalities, is lacking. There is a knowledge gap

especially in lower income countries. More thorough and standardised research is required regarding andropause. There is a lack of knowledge among healthcare professionals that needs to be further identified and remedied through policy reforms.

Keywords: Andropause, Urology, Prevalence

7.145

TECHNOLOGY UTILIZATION FOR HEALTH SYSTEM STRENGTHENING AT DISTRICT LEVEL: A REVIEW OF SOLUTIONS OF LOW- AND MIDDLE-INCOME COUNTRIES

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Back ground: Health system in low- and middle-income countries face constraints due to under developed infrastructure, lack of human resource capacity, non-equitable resource allocation. District health is where decisions effect the population at community and individual level. Objective: We sought to do a systematic review of technology solutions available at the level of district health in low- and middle-income countries since year 2010.

Methodology: We searched online databases of PubMed, google scholar and science direct. The iterative approach was used for finalizing search terms. Boolean operators and mesh terms were used for final search. The articles retrieved in search (n=74) were saved in endnote libraries. Initially articles were screened using title by 2 researchers, followed by second line of screening through abstracts. Full texts were retrieved for 24 articles. These articles were reviewed and tables were developed for articles. For developing narrative review articles were categorized into themes using the WHO six building blocks approach. Results: Articles focused on staff attendance, supplies with monthly monitoring, infrastructure technology,

service delivery and health promotions solutions. Biometric attendance, app-based geo tag and time stamped attendance was identified in few papers. For tracking of drugs and hospital supplies use of bar codes, radio frequency identification (RFID) and serialization were discussed in few papers. Infrastructure technology such as modular fiberglass units, 3D printed units and shipping containers for clinic, lab and surgical unit development. Service delivery through telemedicine practices, automated treatment services using Artificial Intelligent (AI) doctor - for screening. Articles focused on health promotion through use of social media. Use of apps for front line health workers, dashboards for data visualization, District Health Information System (DHIS) system and Medicine Logistic Management Information System (MLMIS) system were discussed in 5 papers.

Conclusion: Use of dashboards, one stop solution for patient with interoperability of data are necessary for integration of technology solutions into existing health system.

Keywords: digital health, health system, district health

7.146

COALITION BUILDING TO ADVOCATE FOR SMOKE-FREE KARACHI – A PILOT STUDY PROTOCOL

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Background: In 2002, Pakistan passed the Prohibition of Smoking and Protection of Non-Smokers Health Ordinance. The legislation sought to prohibit cigarette smoking in all public places as well as ban the sale of cigarettes to minors under 18. Two years later in 2004, Pakistan ratified the WHO Framework Convention on Tobacco Control (WHO FCTC) which provides strategies for policy

development and implementation in order to reduce global tobacco consumption. The project will determine whether a coalition consisting of researchers, NGO and community stakeholders can effectively design an intervention that promotes high compliance with Pakistan smoke-free law. Objectives: Baseline assessment: a. Compliance with smoke-free laws: AKU will conduct a baseline observational assessment of smoke-free laws compliance in restaurants of different types in UC6 of the district east, Karachi. b. Knowledge assessment: Knowledge, awareness, and challenges in implementing smoke-free laws will be assessed for restaurant owners, managers and staff. This will also be conducted by AKU. 2. Intervention: Based on the findings of the baseline survey, SPARC (Advocacy group) will design a six-month duration intervention with the aim to reduce smoking inside the restaurants and improve compliance with the law. 3. Impact Evaluation: The effectiveness of the intervention delivered by SPARC will be determined via a post-intervention assessment, which will be conducted by AKU. Strategies and Activities: i. Coalition feedback: once in three months meeting with the stakeholder coalition, the purpose of meeting will be to explore avenue from where potential issues with the coalition can be addressed. ii. Institutional feedback: It is important to ensure that the effects of the intervention being translated into policy changes at the institutional level. Therefore, the research group plans on conducting feedback meetings with institutional management iii. User feedback: The survey will help collect the public's observations in regard to environmental changes relating to article 8. Also, this will give a holistic picture of the progress and provide timely feedback on the effectiveness of the project. Sustainability: Since the inception of the project, we will be engaging with stakeholders from both government and non-government organizations. This will involve social mobilization and some training for these opinion-leaders so they can 'voluntarily' and 'actively' work for the alliance.

Keywords: Smoke free, advocacy, coalition

7.147

ACCEPTANCE AND PREFERENCE OF MOBILE BASED HEALTH INTERVENTION IN PATIENTS AND CARE GIVER OF TYPE 1 DIABETES MELLITUS

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Introduction: Due to prevalent use of mobile phone in underdeveloped countries they can be used for the management of T1DM in resource limited settings. Most effective features for mhealth are still unknown. This study is conducted to assess the acceptance and preference of mHealth based behavioral intervention in patients and care givers of T1DM children and adolescents followed at Aga Khan University Hospital Karachi. The information obtained can guide to formulate the best possible mobile phone-based intervention that can help patients belonging to underdeveloped countries to achieve better management of their diabetes. **Methods:** This study was conducted in pediatric inpatient and outpatient units of Aga Khan University Hospital, Karachi. It is a cross sectional survey-based study. Data was collected after informed consent from 253 patients or care giver of T1DM patients on a structured questionnaire. The main emphasis was to find out the use of mobile phones and smart phones in our society and to understand acceptance and preferences for mobile phone-based interventions for management of T1DM. **Results:** 152 fathers, 66 mothers of T1DM patients and 35 patients were interviewed. Accessibility to mobile phones was 94 % in the studied population, 90 % had smart phones. Majority suggested mother's mobile phone number for enrolment in mhealth-based intervention. Preference for type of intervention varied with people opting for mobile phone-based messaging (32%), calls (22.52%), application-based intervention (25.69%) and

what's App (19.76 %). Two-way (interactive), and informative communication was preferred. Urdu and roman Urdu were preferred for phone calls and SMS, respectively. Conclusion: Informative two-way SMS reminders in local language was preferred mhealth interventions. Parents specially mothers need to be involved in mobile health based behavioral intervention. Although studies on a large scale should be performed to confirm these findings.

Keywords: Type 1 Diabetes, Mobile Health, Acceptance and Preference

7.148

INTRADUCTAL PAPILOMA OF BREAST ON CORE NEEDLE BIOPSY, EXCISION OR FOLLOW-UP? A RETROSPECTIVE REVIEW FROM A TERTIARY CARE CENTRE IN PAKISTAN

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Background: Intraductal papillomas (IDPs) of the breast are benign, however those with atypia and solid proliferation are typically excised. Some controversy surrounds excision of Intraductal papillomas without atypia. This study assesses the rate of upgrading of an IDP identified on core needle biopsy to malignancy on surgical excision. Design: From a prospectively maintained institutional pathology database, 55 cases of core biopsy proven papillary lesions of the breast, performed from 2012-2019 were retrospectively identified. Radiologic-pathologic correlation, as well as correlation of core biopsy results with final pathology on excision was performed. Results: Of the 55 patients with IDP, 38 (69.1%) had IDP without atypia while 17/55 (30.9%) had IDP with atypia on core needle biopsy. All these underwent surgical excision and only 4/55 (7.3%) patients demonstrated upgradation on

excisional biopsy (figures 1 and 2). Of those that upgraded, no evidence of atypia was noted on initial core biopsy. 3/4 (75%) upgraded to ductal carcinoma in situ (DCIS) and 1/4 (25%) showed IDP with atypical ductal hyperplasia (ADH). Among those who upgraded to DCIS or atypia on excision, 3/4 (75%) had a mass and microcalcifications on mammography, while 1/4 did not have any significant findings on breast imaging (p-value = 0.003). Conclusion: The rate of upgrading of IDP to lesions of concern may depend on the presence of certain mammographic features. Excision must be considered in patients with mass and microcalcifications on mammography, where core biopsy reveals IDP. Though no significant upgradation to malignancy was seen on excision of IDP with atypia, this may be related to a small sample size. Further study is warranted to identify those cases of IDP where close observation may be safe.

Keywords: Intraductal papilloma, Excision, Upgrade

7.149

CLINICAL PROFILE AND PHARMACOLOGICAL RISK FACTORS IN CHILDREN PRESENTING WITH HYPERVITAMINOSIS D AT AGA KHAN UNIVERSITY

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ABSTRACT: Background: The increased awareness about vitamin D deficiency provoked significant increase in supplementation. The toxicity following consumption of vitamin D is rare but excessive/prolonged/disproportionate intake may lead to hypervitaminosis D and toxicity. Objectives: To determine the frequency, clinical features, and pharmacological risk factors of hypervitaminosis D. Methods: This is a retrospective cross-sectional study. All children < 18 years with

vitamin D levels performed between January 1 to December 31, 2018 at AKUH Clinical Laboratory were evaluated. Medical records of children at AKUH with vitamin D level >50ng/ml were reviewed for clinical features and pharmacological risk factors. Result: A total of 118,149 subjects were tested for serum vitamin D level in 2018, out of which 16,316 (13.8%) were children 50 ng/ml. Vitamin D supplementation was reported in 33.1% and 97.9% were prescribed by physicians. Mega-doses were utilized by 34.17% while rest had taken different combination in tablets/syrups form. In mega-doses, 600,000 (44.1%) and 200,000 units (45.5%) vitamin D injections were commonly prescribed. The 600,000 units (35.3%) were administered intramuscularly, 200,000 units (25%) Orally. The main reasons for prescribing were aches/pains (8.5%), rickets (2.8%) and vitamin D deficiency (8.1%). The symptoms at presentation were abdominal pain (14.7%), and constipation (15.7%). High serum calcium was observed in 21.4%. Conclusion: Vitamin D supplementation should be used with caution as toxicity though rare but may happen and cause serious effects specially with frequent mega doses.

Keywords: Hypervitaminosis D, vitamin D toxicity, children

7.150

ROLE AND CONTRIBUTION OF PRIVATE SECTOR IN MOVING TOWARDS UNIVERSAL HEALTH COVERAGE (UHC) IN THE EASTERN MEDITERRANEAN REGION

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Introduction: The private sector has in the past two decades expanded significantly in EMR. In some countries, an estimated 70% of the population seek healthcare from the private sector. Yet issues related to the private health sector have not been addressed properly by

many Ministries of Health [MoH]. Objectives: The objectives of the study were to assess the current role of the private sectors with a particular emphasis on composition, regulation, consumer information, and purchasing/financing of private health services towards UHC. Methods: Document and desk review method along with relevant grey literature search was used to gather information on variables under study. Pertinent information were also retrieved from WHO country profiles and Global observatory data. Results: Private sector utilization is particularly high in low & middle-income states of the region. Above 50% of hospitals in the region are in the private sector. Similarly, the utilization of private hospital beds has also increased to 24% compare to 20% in 2014. In the region, above 60% of the clinics, 70% of the diagnostic centres, and 80% of the pharmacies are run by the private health sector. Countries where public spending on health is low, have higher spending by households. The average out of pocket expenditure in the region is 48%, with the highest percentage in Yemen (81%) and lowest in Oman (5.6%). Regulation of entry of private health providers and the industry in some form is in practice in all EMR states however, regulation of hospitals and clinics remains a grossly overlooked area. Recommendation/conclusion: Dialogue platforms should be built to engage the private sector in setting national health policies, strategies, and health sector reform process. Detailed mapping of the private sector is required for the identification of services provided, areas of overlap, and complementarity with the public sector.

Keywords: Private Healthcare Sector, Universal Health Coverage, Regulation

7.151

UNLOCKING HUMAN CAPITAL: REVEALING RELATIONSHIPS BETWEEN EARLY CHILDHOOD EXPERIENCES AND ADOLESCENT AND YOUNG ADULT HEALTH STATUS--EVIDENCE FROM A

COHORT STUDY IN OSHIKHANDASS, PAKISTAN

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Background Adolescence is a critical point in the realisation of human capital, as health and educational decisions with long-term impacts are made. We examined the role of early childhood experiences on health, cognitive abilities, and educational outcomes of adolescents followed-up from a longitudinal cohort study in Pakistan. Methods Adolescents previously followed as children aged under five years were interviewed. Childhood data were available on diarrhoea, pneumonia, and parental/household characteristics. New data were collected on health, anthropometry, education, employment, and languages spoken; nonverbal reasoning was assessed. A multivariable Bayesian network was constructed to explore structural relationships between variables. Findings Of 1868 children originally enrolled, 78.3% were interviewed as adolescents (mean age 22.6 years); 65% lived in Oshikhandass. While 70.5% of their mothers and 30.1% of fathers had received no formal education, adolescents reported a mean of 11.1 years of education. Childhood diarrhoea and pneumonia had no associations with nonverbal reasoning scores, health measures, education, or employment. Relationships were found between nonverbal reasoning and adolescent height, age, educational attainment, and speaking English, which was linked to the childhood home environment, mediated through maternal education. English speakers (26.7%) had higher more education, better self-reported child health and childhood socioeconomic status, and were more likely to have left Oshikhandass. Interpretation In this population, by adolescence, human capital was unlocked through investments in educational opportunities, especially for females. Speaking English was an

indication of socioeconomic status and educational opportunity.

Keywords: Adolescent, Human Capital, Bayesian network Analysis

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HOOKED ON- THE LURE OF INTERNET ADDICTION AMIDST COVID-19

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Internet addiction has been seen to rise significantly during the SARS-CoV-2 pandemic, especially during the quarantine period. Closure of offices, marketplaces, educational institutes, and lack of social interactions has led to an upsurge in the usage of the internet not only for academic and work but also for relaxation and a muddle through monotonic life amidst pandemic. This sudden up-surgings may have drastic effects on individuals in terms of depression, anxiety, and an altered mental status. It is essential to understand the effects of this addiction on the general population. Young's and Temperance's model; one of the behavioral models explain behavioral changes among individual related to internet addiction amidst crisis situation. This paper aims to discuss the intercalated interplay between biological characteristics such as brain plasticity, psychological and predisposing characteristics, environmental and need-based factors during the pandemic has led to internet addiction. This could help health and governmental authorities in developing effective methods to reduce internet addiction prevalence through generating guidelines and policies along with preventive measures like counseling, therapeutic interventions, and a hotline service.

Keywords: internet addiction, COVID-19, behavioral model

7.153

PILOTING AN IN-PERSON SIMULATION-BASED TRAINING WORKSHOP FOR CRITICAL CARE WORKERS IN PAKISTAN AFTER THE FIRST-WAVE OF COVID-19

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Background: The COVID-19 surge in Pakistan revealed apparent deficits in the availability of intensivists and critical care staff. This led to an increased investment in pioneering educational interventions to train a multitude of healthcare workers in the management of critically ill patients. Aga Khan University developed a novel hands-on workshop in order to expand the cadre of healthcare staff trained in critical care. **Objective:** To expeditiously train healthcare professionals in Pakistan in the management of critically ill patients with COVID-19 through a combination of didactic lectures and hands-on simulation-based workshops. **Materials and Methods:** A total of 28 participants affiliated with six public-sector hospitals from Sindh underwent a two-day intensive in-person course consisting of two didactic interactive case-based lectures and twelve hands-on sessions. This workshop focused on the basic principles of diagnosing, treating and monitoring COVID-19 patients. All participants completed pre- and post-tests consisting of 30 multiple choice questions. A feedback evaluation form was also disseminated to all the participants to assess the workshop in terms of course content, duration and method of teaching. **Results:** The course participants were predominantly males (75%), with medical officers (32%), post-graduate residents (21%), and directors (14%) representing the largest groups. 43% had a background in medicine, 11% in anaesthesiology and 11% in pulmonology. Most (36%) had >5 years of experience. The mean and standard deviation in the baseline knowledge score of the pre-test were 10 ± 4.4 (33%) and the post-test

score showed a significant improvement with a mean of 14 ± 4.3 (47%) ($p < 0.0005$). All participants completed the feedback form, where 96% felt that they will be able to use the skill-set and knowledge acquired during the workshop. 68% of the participants expressed that the duration of the case-based interactive sessions was adequate and 64% felt that the mode of teaching was conducive to learning. **Conclusion:** Our study highlights the dearth of baseline critical care knowledge in Pakistan and the applicability of hands-on training for improvement of knowledge.

Keywords: critical care, covid-19, education

7.154

DETERMINING FACTORS ASSOCIATED WITH THE PRESCRIBING PATTERNS OF MULTIVITAMINS AND MINERALS IN PAKISTAN

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Introduction Data regarding the prescribing patterns of Physicians in regard to multivitamins and minerals (MVM) within Pakistan shows paucity. Multiple perils such as overconsumption of MVMs, widespread micronutrient deficiencies and cross reactions of MVMs with other drugs (in the case of polypharmacy) are all alarming reasons to further undertake research within this area. Studying the factors that influence prescribing habits will yield insight into the pros and cons of inadequate or adequate MVM prescriptions, to further help in designing and implementing a policy that benefits all parties involved. **Objectives** The study will provide insight into an assessment of the current prescribing patterns of physicians working across Pakistan, the factors associated with the aforementioned prescribing practices and the perspective of health care providers regarding The Drug Regulatory

Authority of Pakistan (DRAP) advisory. Methods A cross-sectional web-based survey will be conducted between December 2020 to January 2021 with n=600 Healthcare workers who are currently practicing. Questions regarding their profession and education, details on MVM prescription and indication, and knowledge of the recent policy change regarding nutraceuticals products prescription, will be assessed. The analysis will be done by SPSS 17.0 in two steps; descriptive statistics and inferential statistics. Mean, standard deviations, and t-tests will be calculated for continuous variables and proportions, chi-square, and Fisher exact tests for categorical ones. Logistical regression will be performed for model building. Impact & Outcomes Our study will assess the factors that influence prescribing habits of practicing physicians, to enable the investigators to analyze and preferably modify them, by introducing and recommending policy level changes, that will address issues such as over-prescription and offer cost-effective alternatives, amongst other recommendations. The prescribing habits will be treated as the main outcome of the study – including frequency, type, formulation and factors considered by individuals before prescription.

Keywords: Multivitamin, Multimineral, Prescribing Habits

7.155

ENTEROBACTERIACEAE BACTEREMIA IN CRITICAL CARE AND NON-CRITICAL CARE UNIT: A RETROSPECTIVE STUDY COMPARING TREND IN THE CARBAPENEM RESISTANCE

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Objective: The aim of the study was to investigate the carbapenem susceptibility of the enterobacteriales isolated from blood stream infection in patients admitted in both critical and non critical unit between the years 2011 to 2016.

Background: Gram negative bacteria related sepsis is associated with high morbidity and mortality. The empirical treatment of gram negative rods is governed by the susceptibility profile of these organisms specific for different hospitals accordingly. A retrospective data of the susceptibility profile would be essential for monitoring and ensuring the proper empirical treatment in all patients. **Methods:** This retrospective study was conducted in Aga Khan University hospital, Karachi between year 2011 and 2016 in the Clinical Microbiology section, Department of pathology and laboratory medicine. The culture and susceptibility data for non-duplicate isolates of inpatients were collected via the integrated laboratory and management system. **Results:** A total of n=1909 non duplicate isolates were evaluated from both wards and critical care areas. The ratio of male to female was 1063: 846. The most common pathogens isolated were Escherichia coli (non critical unit :n=976, 61.5%, critical care unit : n=158, 48.9%) and Klebsiella pneumoniae (non critical unit n=401, 25.3%, critical care unit : n=117, 36.2%). The overall carbapenem susceptibility has a significant difference with a p value of <0.05 ,and showed more resistance among isolates from critical care unit. Amongst the critical care areas, Intensive care unit (ICU) showed an overall resistance of n=37,43%, Neonatal intensive care unit (NICU) n=28, 33%, Coronary care unit (CCU) n=10, 12%, Coronary intensive care unit (CICU) and Acute coronary care unit (ACU) n=4,5% in both, Paediatric Intensive Care Unit (PICU) n=2, 2% and High dependency unit (HDU) n=1, 1%. The trend for carbapenem non susceptibility percentage resistance noted in the year of 2011, 2012, 2013, 2014, 2015, 2016 was 0.88%, 1.13%, 1.26%, 2.46%, 3.72% and 4.54% respectively from the in-patient wards. The overall resistance noted in critical care unit for year 2011, 2012 ,2013,2015,2016 were 3%, 2%, 6%, 3%, 6% and 8% respectively. **Conclusion:** There is an overall increase in resistance trend from 2011 to 2016 among the enterbacteriales

and these are markedly higher among isolates from critical care units

Keywords: enterobacteriales, carbapenem susceptibility, critical non critical

7.156

CAN GOVERNMENT CONTRACTS WITH PRIVATE PROVIDERS IMPROVE THE QUALITY AND VOLUME OF PRIMARY HEALTHCARE SERVICES? IMPLICATIONS FOR UNIVERSAL HEALTH COVERAGE IN SINDH

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Introduction: Primary and secondary government health facilities in Sindh are extensively contracted-out to private entities as a bold reform to improve service delivery. We assess whether i) contracting-out the management of government health facilities has impacted the quality and volume of primary health services, and ii) what governance and financing drivers underly progress and constraints. **Methods:** 44 PHC facilities through stratified random sampling (26 contracted and 18 non-contracted facilities) were surveyed and assessed on 129 indicators. Methods included direct observation checklists, record review, 220 staff interviews, 44 health manager interviews, 412 client exit interviews. DHIS database was reviewed for service volume. Data was compiled into a Balanced-ScoreCard and performance scores computed across 9 domains. Digital innovations for management interventions were assessed for usability and maturity framework. Governance and payment analysis comprised of 59 key informant interviews and a desk review of policy, legal and financial frameworks, tendering criteria, terms of contracts, service

targets and packages, monitoring reports, budget and fund utilization. **Results:** PPP facilities had Satisfactory rating in 6 domains :infrastructure (79%), human resource (78%), equipment (71%), medicines/supplies (86%), DHIS (78%), patient satisfaction (76%); Borderline rating in 2 domains: service delivery standards (58%) and service volume (51%); Unsatisfactory rating for diagnostics (39%). Government-managed facilities scored Borderline in 5 domains of infrastructure (37%), human resource (53%), medicines/supplies (50%), DHIS (53%), patient satisfaction (62%); and Unsatisfactory for equipment (32%), diagnostics (12%), service delivery standards (22%) and service volume (31%). Promising digital innovations were introduced but require inter-operability with DHIS. Weak capacity to write performance-based contracts and for expenditure/ outcome monitoring, insufficient and delayed budgets, contractual risks poor cohesion with outreach preventive program constrains further promise of delivery. **Conclusion:** Contracting private providers resulted in superior structural quality but mixed results for service volumes, requiring governance capability for more meaningful impact.

Keywords: Private Sector, UHC, Quality

7.157

CONTRASTING QUALITY PERFORMANCE INDICATORS OF CORONARY ARTERY GRAFTING SURGERY WITH INTERNATIONAL BENCHMARK

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Background: Achieving quality improvement in coronary artery bypass grafting (CABG) requires maintaining standards in the delivery of cardiac surgical care as per established benchmark. It requires systematic collection of perioperative data and analysis to monitor performance by comparing the results to large

international databases. The aim of this study was to compare institutional performance measures with international benchmark and secondarily observe compliance to quality performance indicators (QPI) for CABG procedures. **Material and Methods:** We are maintaining a computerized cardiac surgical database. The data is collected prospectively with regards to preoperative characteristics, intraoperative measures and postoperative outcomes. The eleven measures of quality for CABG in four domains of perioperative care were selected as per Society of Thoracic Surgeons (STS). This retrospective observational analytical study was conducted from January 2010 to December 2019 in the Section of Cardiothoracic Surgery, Aga Khan University Hospital, Karachi, Pakistan.

Results: The data of QPIs in four domains were collected and compared with international benchmark. The medical domain included preoperative beta blockers (65% vs 95%) and medicine on discharge include beta blocker (97% vs 97%), statins (89% vs 98%) and antiplatelet (96% vs 97%). The intraoperative domain included use of internal mammary artery (94% vs 97%). The other two domain include postoperative mortality (3.0% vs 2.2%) and postoperative major morbidities; Prolonged Ventilation >24hrs (5.3% vs 7.9%), Reoperation (2.9% vs 2.3%), Deep Sternal Wound Infection (0.6% vs 0.3%), Renal Insufficiency (0.9% vs 2.1%) and permanent Stroke (0.8% vs 1.3%). The yearly trends of institutional data shows improvement in the QPIs particularly in Prolonged ventilation and perioperative medicines (p

Keywords: Quality, Benchmark, CABG

7.158

COMPARISON OF MORPHINE WITH NALBUPHINE IN A MULTIMODAL APPROACH FOR PAIN RELIEF IN PATIENTS UNDERGOING GYNECOLOGICAL PROCEDURES: A

RANDOMIZED CONTROLLED DOUBLE-BLIND CLINICAL TRIAL

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Introduction Intravenous opioids are commonly used agents to provide analgesia in perioperative period. Morphine, the pure agonist, is the gold standard for pain control. Nalbuphine, a synthetic opioid, is an alternative to morphine to reduce its side effects. Currently, Pakistan is facing critical shortage of morphine for pain control and we strongly feel the need to have an alternative of Morphine in our population for pain control. The objective of the study is to compare the analgesic requirement of nalbuphine with morphine by measuring pain score using multimodal analgesia in patients undergoing gynecological surgeries.

Methodology: This double-blind randomized controlled trial was conducted in Operating Room and surgical ward of the Aga Khan University Hospital Karachi. After taking approval from Clinical Trial Unit and Ethics review committee of AKU, total of 66 women scheduled for Total Abdominal hysterectomy were enrolled. Standard General anesthesia was given with intravenous ketamine 0.3 mg/kg, study drugs 0.1 mg/kg body weight and propofol 2 mg/kg. It is followed by intubating dose of atracurium 0.5 mg/kg. Anesthesia was maintained with 50% oxygen and 50% Nitrous oxide, and isoflurane. If intra-operatively BP or HR was increased 20 percent above the baseline, additional 2 ml bolus of the study drug was given. In the recovery room Patient Control Analgesia of study drug was started at 1 ml bolus, 10 minutes lockout time, with 1 ml of background infusion up to 24 hours. Intravenous Paracetamol 6 hourly in 24 hours was also given. Patient's pain was assessed by using numerical rating scale at different study timings in recovery room and in surgical ward for 24 hours. Post-operative nausea & vomiting and sedation were also measured.

Results: The results of this study are under analysis and will be presented.

Conclusion: The conclusion will be presented based on the results.

Keywords: Gynecological Surgeries, Nalbuphine vs morphine, multimodal approach for gynecological surgeries

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PREVALENCE AND DETERMINANTS OF BYSSINOSIS AND LUNG FUNCTION IMPAIRMENT AMONG TEXTILE WORKERS IN KARACHI, PAKISTAN: FINDINGS FROM THE MULTITEX RCT STUDY

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Introduction: We share findings from baseline survey of the MultiTex RCT study on respiratory health of cotton textile workers. *Objective:* To determine prevalence and determinants of byssinosis and impaired lung function among textile workers in Karachi, Pakistan.

Methods: We conducted a cross-sectional survey from June-December 2019, involving 1818 adult male workers across 34 spinning and weaving mills in Karachi. We defined byssinosis according to the WHO and Schilling's criteria on frequency of symptoms; and conducted spirometry to determine lung function indices: forced expiratory volume (FEV1); forced vital capacity (FVC) and ratio (FEV1/FVC). Univariate and multivariable logistic and linear regression analysis was conducted using Stata 13.

Results: Mean age was 32 years (± 10) and median duration of work 10 years (IQR: 4–16). Prevalence of byssinosis was 3.4% (95% C.I: 2.6–4.3) and 3.9% (95% C.I: 3.0–4.8) according

to WHO and Schilling's criteria, respectively; and reduced FEV1 (

Keywords: Cotton dust, textile industry, byssinosis; lung function; Pakistan

7.160

POST-OPERATIVE PAIN MANAGEMENT MODALITIES EMPLOYED IN CLINICAL TRIALS FOR ADULT PATIENTS IN LMIC; A SYSTEMATIC REVIEW

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Background: Unrelieved postoperative pain afflicts millions each year in low and middle income countries (LMIC). Despite substantial advances in the study of pain, this area remains neglected. Current systematic review was designed to ascertain the types of clinical trials conducted in LMIC on postoperative pain management modalities over the last decade.

Methods: A comprehensive search was performed in June 2019 on PubMed, Cochrane Library, CINAHL Plus, and Web of Science databases to identify relevant trials on the management of postoperative pain in LMIC. Out of 1450 RCTs, 108 studies were reviewed for quality evidence using structured form of critical appraisal skill program. Total of 51 clinical trials were included after applying inclusion/exclusion criteria.

Results: Results are charted according to the type of surgery. Eleven trials on laparoscopic cholecystectomy used multimodal analgesia including some form of regional analgesia. Different analgesic modalities were studied in 4 trials on thoracotomy, but none used multimodal approach. In 11 trials on laparotomy, multimodal analgesia was employed along with the studied modalities. In 2 trials on hysterectomy, preemptive pregabalin or gabapentin were used for reduction in rescue analgesia. In 13 trials on

breast surgical procedures and 10 on orthopaedic surgery, multimodal analgesia was used with some form of regional analgesia.

Conclusion: We found that over the past 10 years, clinical trials for postoperative pain modalities have evolved in LMIC according to the current postoperative pain management guidelines i.e. multi-modal approach with some form of regional analgesia. The current review shows that clinical trials were conducted using multimodal analgesia including but not limited to some form of regional analgesia for postoperative pain in LMIC however this research snapshot (of only three countries) may not exactly reflect the clinical practices in all 47 countries.

Keywords: Post-Operative Pain, LMIC, Multimodal Analgesia

7.161

IS EFFECTIVE POST-OPERATIVE PAIN MANAGEMENT POSSIBLE WITHOUT APPROPRIATE PAIN ASSESSMENT AND ITS DOCUMENTATION? AN EXPERIENCE OF A TERTIARY CARE HOSPITAL

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Abstract Background: In our tertiary care hospital, surgical ward nurses are responsible to assess and manage patient's pain postoperatively under the guidance of physicians. Recent literature shows that surgical ward nurses usually underestimate patient's pain leading to delayed or inadequate pain management in post-operative period. Purpose To review the documentation of pain assessment and management practices of surgical ward nurses in postoperative period at our tertiary care hospital. *Methods:* Two hundred and sixty adult patients after common surgical procedures in the discipline of gynecology, general surgery and orthopedic surgery were included in this retrospective study. A data collection form was

designed which includes patient's demographics, information related to surgical procedure, details of pain scores (static and dynamic), any rescue analgesia and associated complications for first 24 hours postoperatively. Data was retrieved from patient's medical records after reviewing nursing notes and regular bedside charts for vital signs.

Results: Total two hundred and sixty patients were included in this study with male to female ratio of 35.8: 64.2 %. For post-operative pain management, PCA (Patient controlled analgesia) in 63% and continuous epidural analgesia in 37 % of the patients were used. Records of routine 4 hourly post-operative pain assessment by nurses were found in all surgical patients in first 24 hours post-operatively. On arrival in surgical ward, 15 patients (5.8%) had moderate pain at rest (static pain) and 77 patients (29.6%) had moderate pain on movement (dynamic pain) on routine assessment. Only 7 patients reported severe pain and received rescue analgesia on arrival in surgical ward.

Conclusion: Post-operative pain assessment (pain score) and its documentation was found in all surgical procedures as per hospital protocol however appropriate steps for adequate pain management was not taken by surgical ward nurses (per pain score documented) Key words: Postoperative pain assessment, pain score documentation, pain management and surgical ward nurses.

Keywords: Postoperative pain assessment, surgical ward nurses., pain management

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TO EXAMINE THE DRIVERS SHAPING THE POLICY RESPONSE AND PROGRAMMING FOR ADOLESCENT HEALTH, ACROSS HEALTH AND RELEVANT SECTORS

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Introduction: In Pakistan, one in eight adolescent girls and one in five adolescent boys are underweight with 56.6% of adolescent girls are anemic. Adolescent Health (AH) is a critically impactful but under-explored area. The overall objective of the study is to examine the drivers shaping the policy response and programming for Adolescent Health, across Health and relevant sectors.

Methods: A political economy analysis guided by a conceptual framework using Nutrition and Tobacco Control as tracers was undertaken. It included review of existing national and provincial plans and policies, an online search of global evidence using both multi-disciplinary and health search engines and Semi-structured interviews with 19 national and 65 provincial stakeholders from all 4 provinces with direct or indirect links to nutrition and tobacco.

Results: There has recently been a significant policy push from the development partners regarding AH and they are seen leading the implementation and coordination of the programmes through the Ministry of National Health Services. However, a coherent Adolescent Strategy and Framework for Action is yet to be seen. Current tobacco policies are gender-neutral and not age specific whereas nutrition policies for adolescents mainly focus on adolescent girls under the wider RMNCH umbrella. Critical agencies like Pakistan tobacco board, and agriculture departments still lack involvement. Aligning federal AH agendas

with provincial priorities post devolution has been challenging. Provincial approaches vary significantly based on their demography, political environment and departmental capacities and mandates. Merely providing the provinces with a vague menu of action will not ensure implementation in the absence of a legislation and earmarked budget.

Conclusion: Our findings have helped identify the complex ways in which the political economy dynamics of policy and programmes affect the AH agenda and emphasized the importance of coordinated efforts to bring together governmental and non-governmental actors at national and subnational levels.

Keywords: Adolescent Health, Political Economy, Policy and Planning

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THROMBOTIC COMPLICATIONS AMONG HOSPITALIZED COVID-19 PATIENTS IN A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN

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Introduction: Severe Acute respiratory Syndrome Coronavirus 2 (SARS-Cov-2) infection results in a hypercoagulable state and an increased incidence of arterial and venous thrombotic events has been reported in patients. To date, there has been no study from Pakistan on thrombotic events in coronavirus disease 2019 (Covid-19) patients.

Material and methods: A retrospective observational study of hospitalized patients with at least one positive SARS-Cov-2 PCR result was carried out in Aga Khan University Hospital, Karachi, Pakistan from March 2020 to June 2020. Clinical, laboratory and radiological data were reviewed for evidence of arterial or venous thrombotic events

Results: A total of 709 Covid-19 patients were admitted from March 2020 to June 2020. Thrombotic events were identified in 8.4% (64) cases; 48 (75%) were males and 16 (25%) were females. Mean age was 64.25 ± 14.41 years. 6 (9.4%), 7 (10.9%), 26 (40.6%), 25 (39.1%) had mild, moderate, severe and critical Covid-19 respectively. 56 (87.5%) had arterial and (12.5%) had venous thrombotic events. Myocardial injury was reported in 64 cases (78.1%); Non ST segment elevation myocardial infarction in 49 (76.6%) and ST segment elevation MI in 1 case (1.6%), radiologically confirmed pulmonary embolism in 5 cases (7.8%). 6 (9.4%) had ischemic stroke, there was one case of cerebral venous sinus thrombosis, one case of acute limb ischemia and one case of vascular access thrombosis was reported. Median D Dimer level on admission were 2.20 mg/L (IQR 1.0-7.9) and maximum D- Dimer levels were 7.7 mg/L (IQR 2.5-15.6). 29 (45.3%) patients died, there was a statistically significant difference (p-value

Keywords: Thrombosis, Covid-19, SARS-CoV-2

7.164

PAKISTAN: RESILIENCE FOR HEALTH AND NUTRITION SERVICES IN DISASTER-PRONE-SETTINGS.

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Introduction: Pakistan ranks very high in vulnerability to disaster risk, and a number of adverse natural disasters have occurred in the past two decades and their frequency is increasing. This study provides new operational evidence on shock resilient health systems for responding to pandemic and natural disasters in Pakistan. Through a multi-layered study, it investigates how the health system responds to maintain essential health service (EHS) delivery during floods, droughts and pandemics (COVID-19).

Methods: Key informant interviews of 15 National and 80 provincial stakeholders from all 4 provinces were conducted around contingency planning, coordination and risk financing for shocks; response by high-risk districts in Sindh, Punjab and KP were assessed using key informant interviews with district stakeholders, health care providers and focus group discussions with lady health workers. Focus group discussions and KIIs with community stakeholders were also conducted for resilience in responding to shocks. This was supported by a review of national and provincial policy documents, district MIS data, and relevant global literature. The study has a cross-cutting focus on gender and marginalized groups. Data was coded using a conceptual framework and analyzed using MAXQDA.

Results: Initial analysis revealed that preparedness plans for disaster management exist at national and provincial levels however, they lack a dedicated focus on maintaining EHS, and nutrition services and do not account for the vulnerable population. At the district level, shortage of medicines, supplies, workforce, and access to services emerged as the major barriers to provision of EHS during disasters. Impact of disasters on livelihood disrupted access to health and nutrition services at community level. Communities coped by pooling resources for food, and transport etc.

Conclusion: The government needs to make EHS and nutrition during disaster preparedness and response a national priority coordinated across all sectors in order to improve resilience reduce vulnerability.

Keywords: Essential Health Services, Disaster resilience, Nutrition

7.165

EVALUATION OF THE EFFICACY OF COMMERCIALY AVAILABLE HAND SANITIZERS BY TWO LABORATORY METHODS: EXPERIENCE FROM A QUALITY CONTROL LAB IN KARACHI.

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Title: Evaluation of The Efficacy of Commercially Available Hand Sanitizers by Two Laboratory *Methods:* Experience from A Quality Control Lab in Karachi.

Introduction: Use of effective hand sanitizers is one of the proven ways to achieve antiseptis thereby preventing the spread of infection via direct contact. In recent time, large amount of sanitizers, owing to the COVID-19 pandemic, are commercially available in the market often times with no proven efficacy. Consumption of suboptimal and under tested sanitizers may give false security of infection prevention. *Objective:* Of our study was to evaluate the anti-microbial efficacy of commercially available hand sanitizers. *Materials and Methods:* We tested the efficacy of seven commercially available hand sanitizers in reducing the growth of microorganisms by two different methods namely fingertip and membrane filtration method. This study was conducted in the Quality control section of the Microbiology laboratory,

Aga Khan University Hospital. ATCC strains of five microorganisms: Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Bacillus species and Candida albicans were used. 0.5 McFarland inoculum of each microorganism along with 1/10th dilution in sterile water was prepared. In fingertip method after handwashing, inoculated colonies from the microorganisms and their dilutions were applied to the fingertips and after hand sanitization with each of the test sanitizers after 20 seconds and 60 seconds finger tips were applied to the culture media. Membrane filtration method was also performed on sanitizers and the respective dilutions for efficacy testing. *Results:* By fingertip method, six of the seven sanitizers tested showed no growth after 20 and 60 seconds of exposure whereas, one sanitizer showed growth of all the control organisms after 60 seconds of exposure. Only three sanitizers could be tested using membrane filtration method as the viscosity of testing gels damaged the filtration membrane. None of the tested sanitizers showed any growth.

Conclusion: Quality control testing of the efficacy of hand sanitizers by easily employed and time saving laboratory methods is an efficacious measure in a cost effective setting for infection prevention.

Keywords: Covid-19, Hand Sanitizer, Quality Control