

# Oman Medical Specialty Board Research Forum 2021/2022: Abstracts

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## ANESTHESIA

### Central Venous Catheter Tip Malposition Following Internal Jugular Vein cannulation in Pediatric Patients with Congenital Heart Disease

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#### ABSTRACT

**Objectives:** We sought to identify the relative risk of a catheter tip malposition following right or left internal jugular vein cannulation as determined by postoperative radiographic evidence in pediatric cardiac surgical patients. Moreover, this study aims to assess between the two approaches of the relative risk of the catheter tip position in major veins other than in the intended position in the right superior vena cava or right atrium. **Methods:** This was a prospective observational study where included 200 pediatric patients undergoing various types of cardiac surgery at the tertiary cardiac care center in Muscat, Oman, from June 2019 to February 2021. **Results:** Our data showed that 50.0% of patients in the right internal jugular vein (Group I, n = 100), and 50.0% in the left internal jugular vein (Group II, n = 100) were accessed under ultrasound guidance after administration of anesthesia. The position of the catheter tip was ascertained by a plain chest X-ray. The central venous catheter tip was deemed to be in a malposition if the tip was in a vessel other than the superior vena cava or right atrium. The ipsilateral or contralateral jugular veins and the ipsilateral or contralateral subclavian veins were considered as malposition. In Group I, 4.0% of the patients had the central venous catheter tip in a malposition. In Group II, 6.0% had a left superior vena cava. The rest of Group II, the central venous catheter tip was in a malposition in 22.3% of patients (21/94, relative risk = 6.90;  $p < 0.001$ ). Malposition into the right subclavian vein was more frequent with the left internal jugular vein access (11/94, 11.7%) compared with the right internal jugular vein access (relative risk = 13.12,  $p = 0.015$ ). **Conclusions:** The incidence of a malposition of a central venous catheter tip following either right

or left internal jugular vein approach was ascertained. The relative risk of a malposition occurring with the left internal jugular approach was higher and the commonest site of malposition was in the right subclavian vein.

### The Effect of Intraoperative Transesophageal Echocardiography Probe Placement on The Endotracheal Tube Cuff Pressure in Adults

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#### ABSTRACT

**Objectives:** The primary objective was to compare the baseline endotracheal tube cuff pressure (CP) with the maximal CPs recorded during various stages of intraoperative transesophageal echocardiography (TEE) in adult patients undergoing cardiac surgery. The secondary objective was to observe the changes in ventilation parameters due to TEE probe placement. **Methods:** This prospective observational study was conducted at the National heart center over period of six months. Thirty-five adult cardiac surgical patients underwent elective on-pump coronary bypass surgery were included in this study. Following induction of general anesthesia and tracheal intubation with a cuffed endotracheal tube, the CPs were monitored at five time zones (TZs): prior to TEE probe insertion (TZ1), during insertion of probe (TZ2), during probe manipulation (TZ3), probe in trans-gastric position (TZ4), and during removal of the probe (TZ5). Data was analyzed using Shapiro–Wilk test as a test of normality of CP measurements, Kruskal–Wallis test for relationship between continuous parameters, and Wilcoxon signed rank and Friedman tests to find the differences between time points. A  $p$ -value  $\leq 0.050$  was considered statistically significant. **Results:** No patient had tracheal hypoperfusion signs [e.g., hoarseness and dysphagia]. There was a statistically significant increase in CP values between the base line [TZ1] and the peak pressures during other time zones ( $p = 0.001$ ), also in peak airway pressures during volume-controlled mode of mechanical ventilation. There was no correlation between body mass index and CPs at various time points ( $p > 0.050$ ). **Conclusions:** TEE probe placement in patients with tracheal intubation may be associated with a

significant increase in CP that may interfere with tracheal mucosal perfusion pressure. It may also result in increased peak airway pressures during mechanical ventilation. Operators should be aware that if CP is not monitored, intraoperative TEE may result in unrecognized high CP that may cause tracheal mucosal hypoperfusion.

## BIOCHEMISTRY

### MDRD or CKD-EPI for Glomerular Filtration Rate: An experience from Oman

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#### ABSTRACT

**Objectives:** To evaluate the performance of modification of diet in renal disease (MDRD)<sub>186</sub>, MDRD<sub>175</sub>, and chronic kidney disease - epidemiology (CKD-EPI) equations in comparison to a gold standard method of glomerular filtration rate (GFR) measurement (99Tc-DTPA renogram) using data from a tertiary hospital in Oman. Also, to correlate the three equations in calculating eGFR, and their impacts on re-classifying CKD stages in adult patients. **Methods:** This retrospective cross-sectional study recruited 48 patients who underwent 99 Tc-DTPA renogram procedure for GFR measurement in Royal hospital, from January 2016 to October 2021. Data of serum creatinine were also obtained for 30,348 adult patients from January 2021 to September 2021, and eGFR was calculated using the three equations. All data were analyzed using Microsoft Excel (version 2108). Correlation, accuracy, precision, and bias were determined. **Results:** The mean age of 48 patients was 38±10.4, in which 35.4% were females. The median (mL/min/1.73m<sup>2</sup>) of the reference GFR was 106.0, whereas the median eGFR for the MDRD<sub>175</sub>, MDRD<sub>186</sub>, and CKD-EPI equations were 92.5, 98.3, and 102.1, respectively. All three equations correlated moderately with the reference GFR (0.428, 0.428, and 0.523, respectively) with statistical significance ( $p < 0.010$ ). The CKD-EPI showed lesser bias (3.7 vs. 12.9 and 7.5 for MDRD<sub>175</sub> and MDRD<sub>186</sub>, respectively) and more accuracy (95.8% vs. 91.7% and 93.8%), however, it was the least precise (25.1 vs. 22.3 and 23.8). For the second group, a total of 30,348 patients were included with a mean age of 43.2±13.6, 58.4% of them were females. The MDRD<sub>186</sub> performed similarly to the CKD-EPI equation at CKD stages 3a to 5, and differed significantly at stages 1 to 2. Whereas the MDRD<sub>175</sub> differed significantly with both equations at stages 1 to 3b; however, was similar at stages 4 to 5. **Conclusions:** The CKD-EPI equation had the highest accuracy and the least bias and precision in the general population. The MDRD<sub>186</sub> CKD classification differed significantly from the CKD-EPI equation at CKD stages 1 to 2 only.

The CKD-EPI equation is preferred to MDRD for the detection and classification of early CKD stages.

### Predictors of Steroid Resistance in Patients with Focal Segmental Glomerulosclerosis (FSGS)

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#### ABSTRACT

**Objectives:** To determine the biochemical predictors of steroid resistance in patients with focal segmental glomerulosclerosis (FSGS). **Methods:** This is a retrospective case-control study. Data collected from hospital information systems of two tertiary care hospitals in Oman, Royal hospital and Sultan Qaboos University Hospital, from 2006 to 2020. Patients presented with proteinuria and had biopsy proven FSGS were included. Those who have secondary causes of FSGS were excluded. Patients were identified as steroid resistant based on persistent proteinuria or double of plasma creatinine for > 8 weeks post-therapy. Predictors' data collected retrospectively from first visit. **Results:** Out of 135 FSGS patients, 32 cases with primary FSGS and treated with steroid were found and analyzed. A total of 19 (59.4%) patients were found to be resistant to steroid. Among these, 11 (61.1%) of which were males and 8 (57.1%) were females. Male patients presented with FSGS at earlier age compared to females ( $p < 0.010$ ). Baseline parameters taken and showed that there is no significant difference in serum creatinine, urine protein, urine creatinine, and urine protein creatinine ratio between steroid resistance and steroid dependent patients. Females presented with higher level of serum and urine creatinine as a disease manifestation compared to males. However, gender was not found to be a predictor of steroid resistance in FSGS patients. Presence of comorbidities like obesity, hypertension, or type 2 diabetes was not associated with steroid resistance in FSGS patients. Baseline total and non-HDL cholesterol levels were significantly higher in patients who developed steroid resistance ( $p < 0.050$ ). ROC curve applied to see these markers as predictors for steroid resistance FSGS. By using Youden's index, the optimal cut point for total cholesterol was 6.7 mmol/L with 94% sensitivity and 58% specificity (95% CI: 56.5–94.5). Likelihood ratio was 2.3. **Conclusions:** Lipid profile may serve as a predictor of steroid resistance in patients with FSGS. Knowing the possibility of resistance can help in avoiding unnecessary exposure to steroid with its side effects. Larger sample size is needed, and further studies are required to study histological and novel biomarkers of steroid resistant FSGS.

## EMERGENCY MEDICINE

### Marine Envenomation in Oman: A Retrospective Review from a Tertiary Care Hospital

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#### ABSTRACT

**Objectives:** Injuries by marine creatures are a common presentation to Oman's emergency departments (EDs). However, despite the difference of the marine fauna globally, there is no study on envenomation by the creatures in the local waters of Oman or any of the waters of Arabia. **Methods:** We conducted a retrospective chart review of marine envenomation cases presenting to the ED of one of the main tertiary hospitals in Oman, Khoula Hospital, between 2018 and 2019. We included patients of all ages who presented with injury secondary to contact with a marine creature. Multiple parameters were recorded, including causative creatures, symptoms, and medications. **Results:** A total of 78 cases were included in this study, the majority (67.9%) were adults (18-64 years), and 82.1% were males. Sea urchins accounted for most of the envenomation (52.6%). Pain was the most common presenting symptom (65.4%). The most common medication received in the ED was tetanus toxoid with non-steroidal anti-inflammatory drugs being the most common prescribed medication on discharge. Blood investigations were ordered in seven patients with overt discrepancy of ordering profile. Imaging was done in 19 patients, X-ray being the most ordered. All of the patients were discharged home on their first visit. Six of patients re-attended the ED for different reasons. **Conclusions:** The study explores a previously-uncharted area in the literature. Adults remain the most affected age group of accidental injuries. Sea urchins are the common causative organisms. Despite the presence of fatally-envenomating creatures in Oman's water, none of the patients developed life-threatening symptoms.

### The Association between Emergency Physician Fatigue and Computed Tomography Ordering

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#### ABSTRACT

**Objectives:** Radiological testing plays a vital element

in the chain of management of emergency department which it is frequently requested and performed. We aim to describe the association between a physician fatigue and the frequency of negative radiological imaging or negatives inpatient referrals. **Methods:** We conducted a retrospective longitudinal study in the Emergency Medicine Department at Sultan Qaboos University over a period of three month among 2065 patients were underwent computed tomography (CT) testing or inpatient referrals. **Results:** A total of 1016 patient has been involved in the study for the CT scans. The highest percentage of the requested CT was brain CT (51.1%) among all scans followed by a renal scan of 22.5%. The frequency of scans was 42.5% (n = 400) in the morning shift, followed by 36.7 % (n = 345) and 20.8% (n = 196) in the afternoon and night shifts, respectively. Among those, the negatives scan in all shifts, where not accumulating in the second half of the shift, indeed, the negative percentage was as the following: 49.4% (first half of the shift) compared to 50.6% in the second half of the morning shift, (48.5% vs. 51.5%) in the afternoon shift, and 59.7% compared to 40.3 % in the night shift, so there was no impact of physician fatigue into clinical judgment in regards to the radiological testing. However, in comparing to inpatient referrals, we found there was association between physician fatigue and negative inpatient referrals in the afternoon shift. The total patient was 1049, which 372 patients in the morning shift, and 337 vs. 340 patients in the afternoon and night shift, carrying a percentage of 35.5%, and 32.1% vs. 32.4% respectively. Among those, negative inpatient referrals (no admission) was as the following: first half of the morning shift (58.5% vs. 41.5%) in compared to afternoon shift (29.1% vs. 70.9%) and the night shift (50.0% vs. 50.0%). By using chi-square testing, we found a statistically significant difference in the proportion of negative referrals between first and second half of the afternoon shift among the inpatient referrals ( $p < 0.001$ ). **Conclusions:** There was an association between the emergency physician fatigue and inpatient referrals in the afternoon shift, however there was no impact found over the CT ordering.

### Comparison of Observation alone Verses Interventional Procedure in Hemodynamically Stable Patients with Pneumothorax: A Systematic Review and Meta-Analysis

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#### ABSTRACT

**Objectives:** Numerous studies are suggesting that stable pneumothorax can be treated by observation alone. This study aimed to compare observation alone versus interventional procedure in treating hemodynamically stable adult patient with pneumothorax for outcomes of clinical efficacy, tolerability, and safety. **Methods:** In this systematic review and meta-analysis, we searched PubMed and Google Scholar databases from inception until June 2020 for (RCTs) comparing observational therapy with conventional therapy in management of pneumothorax in adult. Tension pneumothorax and pediatric aged group were excluded. **Results:** Three RCTs enrolled 446 patients. Compared to chest tube, observation had almost same failure rate (risk ratio (RR) = 4.30, 95% confidence interval (CI): 0.23-81.82;  $p = 0.330$ ) and same mortality (RR = 1.01, 95% CI: 0.31-3.33;  $p = 0.980$ ). Risks of complications including tension pneumothorax and empyema were similar between chest tube and observation (RR = 3.15, 95% CI: 0.67-14.87;  $p = 0.150$ ) and (RR = 1.55, 95% CI: 0.21-11.56;  $p = 0.670$ ); respectively. There was no statistically significant difference in hospital days between chest tube and observation. **Conclusions:** In stable adult patients with pneumothorax, the observation has same efficacy and safety in treating pneumothorax compare to chest tube.

## ENT

### Characteristics and Outcome of Laryngeal Squamous Cell Carcinoma in Omani Adults in Al-Nahdha Hospital from 2006 to 2017

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#### ABSTRACT

**Objectives:** The primary objectives of the study were to assess the different characteristic of laryngeal squamous cell carcinoma and the management strategies. The secondary objective was to identify the survival outcomes of laryngeal squamous cell carcinoma in Omani adults. **Methods:** A retrospective study including all Omani adults who had laryngeal squamous cell carcinoma. This study was conducted from 2006 to 2017. The information was obtained from medical information system (al Shifa'a) of Al-Nahdha Hospital. In addition to demographic information, we analyzed variables related to the epidemiology and pathogenesis of laryngeal carcinoma. In particular, we examined data on gender,

age, tobacco use and alcohol consumption. On the other hand, we studied the characteristics of tumors, particularly their location, staging and management plan. **Results:** A total of 100 cases of laryngeal squamous cell carcinoma were reviewed. Ninety percent of the cases were male, in which 94% were at the age of > 40 year. Regarding the location of tumor, 71 patients with glottic cancer, 25 with supraglottic cancer, and four patients with subglottic cancer. The most common present complain of these cases were hoarseness of voice (95%), difficulty in breathing (25%), swallowing problem (19%), sore throat (9%), neck swelling (5%), otalgia (3%), and weight loss (2%). The most common risk factor associated with this cancer is smoking (57%), then alcohol (8%). Majority (59%) of the patients were presented in advanced stage and 41% were presented early. Radiotherapy was the most common modality of treatment in 53%, followed by chemoradiotherapy in 38%, while surgery account for 22%, and 6% refused treatment. The outcome of these cases was non-recurrence (58%), recurrence (14%), and death (9%). The survival rate was 91%. **Conclusions:** Given the complexity of laryngeal cancer treatment, all patients should have a comprehensive assessment and treatment plan in a multidisciplinary setting. The current results can stimulate further research on this malignancy which consider one of the common cancers presenting in ENT department in Oman.

## FAMILY MEDICINE

### Assessing Barriers to Initiation of Insulin Therapy in Patients with Type 2 Diabetes Mellitus

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#### ABSTRACT

**Objectives:** This study aimed to identify the main barriers that prevent patients with diabetes mellitus from accepting insulin therapy. **Methods:** This cross-sectional study was conducted at the FAMCO clinic in Sultan Qaboos University Hospital between 1 July 2019 and 31 March 2020. The questionnaire, which was administered in Arabic, included demographic data and 17 specific items on barriers to insulin therapy. **Results:** A total of 257 participants were included in the study. The commonest barriers were as follow inconvenience of insulin therapy (30.0%), fear of addiction (26.5%), fear of the need to increase the frequency of blood sugar checking (23.7%), side effects of insulin (23.0%), and

busy lifestyle (22%). Other barriers including difficulty to learn, difficulty to inject due to physical disabilities, lack of support by family, fear of stigma, or feeling of personal failure did not have a major impact and people did not see them as barriers. All of these constituted less than 20.0%. **Conclusions:** This study addressed the barriers which might influence the decision to accept insulin therapy amongst diabetic patients in Oman. The main barriers were inconvenient treatment, fear of addiction, a busy lifestyle, and frequent blood glucose checking. Therefore, these barriers should be taken into consideration by healthcare providers.

### Prevalence and Associated Factors of Nocturnal Enuresis among Primary School Children in Oman

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#### ABSTRACT

**Objectives:** Nocturnal enuresis (NE) is a common issue worldwide. We aimed to determine the prevalence and associated risk factors of NE in Oman. **Methods:** This cross-sectional study was conducted between September 2018 and May 2019 at six primary schools in North Al-Batinah and Muscat. The target population included primary school children aged between 5–11 years old. Sample stratification was used to select the study population. A previously validated four-part questionnaire was used to assess the sociodemographic characteristics, the presence, frequency, and timing of enuresis, and associated risk factors. **Results:** Out of the 1100 questionnaires distributed, 849 were completed and included in the final analysis (response rate: 77.2%). The majority of the children were female (53.5%) and under 10 years (85.7%). The overall prevalence of nocturnal and daytime enuresis was 19.9% and 4.4%, respectively. There was a steady decrease in the frequency of NE with increasing age ( $p < 0.001$ ). Moreover, NE was significantly associated with poor academic performance ( $p = 0.040$ ) and a family history of NE among siblings and parents ( $p \leq 0.001$ ). **Conclusions:** Our findings were comparable to other epidemiological studies from different countries. Overall, NE among primary school children is a relatively common problem in Oman that requires further attention.

### Knowledge, Attitudes, and Practices Regarding Cervical Cancer Screening among Omani Women Attending Primary Healthcare Centers in Oman: A Cross-Sectional Survey

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#### ABSTRACT

**Objectives:** This study aimed to assess knowledge, attitudes, and practices regarding cervical cancer, cervical cancer screening, and Papanicolaou (Pap) smear testing among Omani women, and to establish a correlation with various sociodemographic characteristics. **Methods:** A multi-center cross-sectional survey was carried out from August 2019 to January 2020 and included 805 women, attending 18 primary healthcare centers in Oman. A pre-tested questionnaire was utilized to assess the participants' sociodemographic characteristics, cervical cancer risk factors, knowledge, attitudes, and practices related to cervical cancer, cervical cancer screening, and Pap smear testing. **Results:** A total of 805 women were participated in the study (response rate: 100%). Overall, 67.5% and 50.9% had heard of cervical cancer and Pap smear testing, respectively; however, only 13.4% and 10.9% demonstrated high levels of knowledge concerning these topics. Knowledge was significantly associated with educational level, type of educational qualification (i.e. if their degree was related to healthcare), monthly income, and employment status ( $p \leq 0.050$  each). Only 15.7% of the participants had previously undergone Pap smear testing, although 42.7% were willing to undertake such screening in future. No associations were noted between Pap smear practice or willingness and sociodemographic characteristics, family history of cervical cancer, personal history of cervical cancer, or related risk factors. **Conclusions:** Knowledge regarding cervical cancer and Pap smear testing was suboptimal among a cohort of Omani women. This may be a factor behind the increased number of cervical cancer cases in Oman such as, a well-structured awareness and educational program are needed to address this issue.

## GENERAL DENTISTRY

### Attitude and Intended Behaviour of General Dentists in Oman towards Patients with Disabilities in Primary Health Care Services

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#### ABSTRACT

**Objectives:** To evaluate behaviour and attitude of general dentists working in Oman in primary health care towards

patients with disability. **Methods:** This study is a cross sectional survey. The International Association of Disability and Oral Health tool was used to measure the attitudes and intended behaviours of the dentists. The questionnaire was sent to general dentists working in primary health care service centres all around Oman through a link by email and WhatsApp messages. The questionnaire had three parts: demography, personal experience, and clinical scenario. Chi-square test was used to find the association between two categorical variables. A  $p$ -value  $< 0.050$  was considered statistically significant. **Results:** A total of 115 responses were obtained. Among these, Female were 86%. Omani participants were 86%. Only 10.5% were consider themselves having disability and 50% have immediate social circle included a person with a disability. Majority (78%) of the subjects treated a person with disability. Majority (73%) received undergraduate, 58% from Oman and 15% from abroad. Fifty-nine percent were working as general dentists for 1–5 years. Almost all (90%) agreed to treat the patient, but 16% found it difficult to make this decision. There is a statistically significant relationship with experienced dentists and higher subjective pressure to treat ( $p = 0.047$ ), positive belief ( $p = 0.005$ ), highest motivation to comply ( $p = 0.043$ ), and highest perceived behavioural control over decision to treat ( $p = 0.0001$ ). The dentists who treat a person with a disability have perceived behavioural control over the decision to treat ( $p = 0.010$ ). The dentists who said it is not difficult for them to make decisions in treating patients with disability have highest perceived behavioural control over decision to treat ( $p = 0.008$ ). **Conclusions:** Experienced dentists are more likely to treat patients with disabilities than those who are less experienced. Also, the experienced dentists have higher positive beliefs, higher motivation to comply, and perceived behavioural control over decision to treat patients with disabilities. However, undergraduate education doesn't affect the choice on treating patients with disabilities. The perceived behaviour control affects the dentist in making decisions to treat patients with disabilities.

### Effectiveness of Health Belief Model on the Compliance of Periodontal Patients with Plaque Control: A Single-blind Randomized Control Trial

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#### ABSTRACT

**Objectives:** To evaluate the effectiveness of the Health Belief Model (HBM) suggested by Irwin M. Rosenstock on patients' plaque control and periodontal condition compared with generic counseling and oral hygiene instructions. **Methods:** A single-blinded randomized

controlled trial was conducted into control and intervention groups in Military Dental Center. One hundred and fifteen patients received the same treatment for stage I and stage II periodontitis with 3, 6 and 12 months follow up duration. However, control group had oral hygiene instructions using the general counselling (GC), while the intervention group had oral hygiene instructions using the HBM model. Overall, 67 patients were analyzed at the 3 months follow up. Continuous variables were presented as mean, median, standard deviation, and interquartile range. Categorical variables were reported as frequency and percentage. Mean changes in the outcome variables were compared between the two groups by using the Mann-Whitney U test. A Box-Whisker plot was used to visualize the data. A  $p$ -value  $< 0.050$  was considered statistically significant. **Results:** The median reduction of the bleeding on probing and plaque accumulation between the two groups was statistically not significant at day 90 for the 67 patients in which  $p = 0.512$  and  $p = 0.484$ , respectively. However, the changes in bleeding on probing in the HBM group were about 13.0% in comparison to 11.0% in the GC group, while the changes in the plaque accumulation in the HBM group were about 28.0% in comparison to the 18.0% in the GC group. **Conclusions:** There is clinical evidence of benefit from the HBM model although the results of this study did not reach statistical significance which might be due to the low power and the low number of participants.

## GENERAL SURGERY

### Redirecting the Use of Pre-operative Pulmonary Staging Chest CT in Newly Diagnosed Colorectal Cancer Patients to those with High Risk Features of Lung Metastasis

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#### ABSTRACT

**Objectives:** To investigate the association between lung metastasis and the previously mentioned risk factors in colorectal patients. **Methods:** This retrospective, case-control study was conducted in Royal Hospital, Oman. Patients who were diagnosed with colorectal adenocarcinoma between 2014 and 2019 were included in this study. Data of demographics, tumor characteristics, metastasis from computed tomography reports, and histopathology features were gathered from Al Shifa system. Patients were divided into two groups based on the presence/absence of lung metastasis. Patients were followed-up for one-year post diagnoses to determine progress of detected lung nodules. A statistical analysis

using IBM SPSS Statistics 25 was carried out and  $p < 0.050$  was considered statistically significant with 95% confidence interval. **Results:** A total of 523 patients were included, and majority (57.2%) were male with mean age of  $57.8 \pm 4.02$ . Prevalence of lung metastasis was 17.6% (95% CI = 14.4%–21.1%). There was a significant association of lung metastasis with T3 (56.3%) and T4 (39.4%) tumours (LR = 14.348,  $p = 0.002$ ). Presence of lymph-nodes metastasis also showed significant association with lung metastasis (83.5%,  $p = 0.0001$ ). Patients with liver metastasis at time of diagnosis had also higher risk of lung metastasis (60.2%,  $p = 0.0001$ ). Tumours with neurovascular invasion and KRAS mutation were significantly associated with lung metastasis ( $p < 0.050$ ). However, there was no statistically significant association with age, gender, *carcinoembryonic antigen* level, and histopathology grade. Patients with KRAS mutation has three times higher risk for lung metastasis compared to patients with WT (OR = 3.366, 95% CI = 1.220–9.288,  $p = 0.019$ ). **Conclusions:** Presence of KRAS mutation is the only independent predictor of lung metastasis in colorectal cancer patients. Pre-operative chest computed tomography must be done as part of staging workup for all new patients regardless of the previously mentioned risk factor status.

### Perspectives on Implementing a National Colorectal Cancer Screening Program in Oman: A Cross-sectional Study of Early Barriers and Facilitators

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#### ABSTRACT

**Objectives:** Colorectal cancer (CRC) is the second most common cancer in Oman after breast cancer. Early detection of CRC is associated with decrease morbidity and mortality from CRC. Oman has not yet implemented a colorectal screening program, despite its importance. The aim of this study is to assess the perceived external (environmental) and the internal (organizational) factors that may promote or hinder the implementation of colorectal screening program among different stakeholders in Oman in 2021. Moreover, we aimed to explore the public knowledge and attitude towards the implementation of CRC screening program. **Methods:** This is a cross-sectional questionnaire-based study that was conducted in two different tertiary

hospitals in Oman, Royal Hospital and Sultan Qaboos University Hospital, between February and April 2021. The survey was distributed as hard and soft copy to the front-line staff who would be engaged in the screening program (endoscopy specialists, gastroenterologists, surgeons, pathologists, oncologists, health-plan leaders who are involved in non-communicable disease screening programs, and family medicine physicians). Furthermore, a different questionnaire was distributed to patient's attenders who attending surgical outpatient department (aged > 18 years old). **Results:** A total of 388 patient's attenders and 170 front line staff were invited to fill the self-administered survey. Majority of the participants had poor knowledge about CRC screening and the most common perceived barrier toward the implementation of CRC screening program among patient's attenders was lack of knowledge about the importance of CRC screening (76.0%). On the other hand, the most common perceived barrier among front line staff who would be involved in CRC screening program was shortage of trained providers (92.4%) followed by lack of supplies (91.8%). **Conclusions:** Lack of awareness and knowledge about CRC and the role of screening in mitigating, the impact of the disease affects people's attitude and motivation to participate in any screening program. Therefore, it is important to organize awareness campaigns and educational interventions to improve the community awareness about CRC. Pairing such interventions with those addressing logistic, cultural and motivational barriers would be a result in the successful implementation of CRC screening program. Our cross-sectional study provides a conceptual framework to guide the development of a national CRC screening program in Oman.

### Incisional Hernia Following Oncological Resection at Sultan Qaboos University Hospital: A 10-year Retrospective Study of Incidence and Risk Factors

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#### ABSTRACT

**Objectives:** Incisional hernia is a well-documented complication following intraabdominal oncological surgeries and is attributed to increased morbidity. Several factors have been studied as possible risk factors to develop incisional hernias in this group of patients including age, body habitus, comorbidity, type of malignancy, type of surgery (open, laparoscopic, or robotic), site of incision, suture type, wound closure technique, and wound infections. Multiple methods of repair have been practiced over the years to treat incisional hernias. This study aims to identify the incidence of developing incisional hernia among oncological cancer resection

patients, and to identify the risk factors that increases the risk of development of incisional hernia. **Methods:** This a retrospective cross-sectional study was conducted at Sultan Qaboos University Hospital over a period from January 2011 to December 2020 among oncological cancer resection patients. **Results:** A total number of 161 oncology cancer patients were identified, in which 30 patients developed incisional hernia over the postoperative follow up period. The incidence of development of incisional hernia was 18.6% (95% confidence interval: 12.9% - 25.5%). Multiple risk factors were identified and compared between the patients who developed (IH) and patients who did not develop IH, Comorbidities of (CKD) and liver disease, and receiving neoadjuvant radiotherapy showed a statistically significance. **Conclusions:** Incisional hernia following oncological resection surgeries has an incidence that varies from 5%-20% over the follow up period of 1-4 years. We found that CKD, liver disease, and receiving a neoadjuvant radiotherapy had a statistical significance in the development of IH.

## HISTOPATHOLOGY

### The Association of Programmed Death Ligand-1 Expression with MMR, EBV, and HER-2 status in Gastric Carcinoma in Oman

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#### ABSTRACT

**Objectives:** To evaluate programmed death ligand-1 (PDL-1) expression in gastric carcinoma and further assess its relationship with mismatch repair (MMR) proteins, human epithelial receptor 2 (HER2), and Epstein-Barr virus (EBV) status in Oman. In addition, we evaluate the clinical characteristics of PDL-1, MMR proteins, and EBV and assess the prevalence of MMR deficiency and EBV positive gastric carcinoma. **Methods:** This was a cross-sectional study, with a retrospective analysis of clinical data of all patients who underwent surgical resection for gastric carcinoma between 2010 and 2020 at Sultan Qaboos University Hospital and Royal Hospital (N = 101). Results are described as percentages with confidence intervals. Continuous variables are presented as mean with standard deviation or median with inter-quartile range. **Results:** MMR deficiency was observed in 28 cases (27.7%), and PDL-1 positivity was more frequent in

the event of MMR deficiency than in the event of MMR proficiency. PDL-1 is dependent on MMR ( $p < 0.050$ ). There was no significant relationship between PDL-1 and HER2 or EBV status ( $p > 0.050$ ). While the literature might suggest otherwise, the sample of positive cases was very low and this affects the results. PDL-1 positive gastric carcinoma was associated with the older age group (mean age 70 years) and tumor size (mean size 6.6). HER2 positive gastric carcinoma is more likely to show nodal involvement (Nodal 2 (N2) and N3 stages), ( $p > 0.012$ ). **Conclusions:** Our result was consistent with previous studies performed in other populations and regarding the association between PDL-1 expression and MMR deficiency. There was no significant relationship between PDL-1 expression with HER2 and EBV status probably due to the small number of positive cases, which affects the results.

### Clinicopathological Study of Plasma Cell Myeloma in Oman with Special Reference to its Cytogenetic Features

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#### ABSTRACT

**Objectives:** To study the presenting clinical features, pathological characteristics and outcomes of patients with plasma cell myeloma (PCM). In addition, to compare the genetic mutations of patients with PCM in Oman and other countries and to study the genetic mutations and see if it can have an impact on prognosis. **Methods:** A retrospective, descriptive cohort study of 79 patients diagnosed with PCM from January 2015 to December 2019 in Royal Hospital and Khoula Hospital. IBM SPSS statistics version 27 was used for analysis. Results described as percentages, frequencies, and continuous variables presented as mean with standard deviation or median. **Results:** Of the 79 detected cases of PCM at diagnosis, 10% were < 45 years and 35% were > 62 years. The mean age was 62 years, of which 59% were males and 41% were females. Clinical features at presentation were anemia (71%), lytic bone lesion (41%) and nephropathy (30.9%). Other abnormal serum levels with regard to the cases are hyperproteinemia (33%), hypercalcemia (2.6%), and increased  $\beta$ 2-microglobulin (30%). Immunoglobulin G was the commonest type, followed by immunoglobulin A. The number of patients diagnosed as International Staging System III was 48%. Our study shows that most of the patients have normal cytogenetic analysis (44.9%) followed by translocation t(4:14) (7.2%), and deletion of 13q14 (5.8%). **Conclusions:** Anemia and bone pain in elderly patients must alert the clinician to investigate



along the lines of multiple myeloma. This study shows the mean age is 62 years, which is younger as compared to the western population (69 years) and comparable to one study done in one of the middle-eastern country (Libya, 61 years). The data on the number of patients presenting with bone pains, anemia, fatigue, renal failure, and hypercalcemia were comparable to the western and middle-eastern data. Omani patients had mostly normal cytogenetic profile unlike other international studies, which showed cytogenetic alterations and this calls for further studies like environmental factors in the causation of PCM in Omani population.

## INTERNAL MEDICINE

### Presentation, Complication, and Management of Sickle Cell Disease: A Clinical Situational Analysis Study

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#### ABSTRACT

**Objectives:** We sought to evaluate the symptoms and signs along with investigations, management, and complications of our sickle cell disease population. **Methods:** We conducted a retrospective cohort study of all adults with sickle cell disease who admitted in Royal hospital between 2006 and 2018). Sickle cell trait population were excluded. Required data was collected from the medical records of patients. Chi-squared test was used to analyze association between variables. **Results:** A total of 1075 patients who fulfilled the inclusion criteria. More than half (52.1%) of patients were females. The mean age of patients was 32.9 +11.2 years ( $p = 0.062$ ). For clinical presentation, the mean of vaso-occlusive crisis (VOC) admission was 3.9+7.2. The mean of VOC in males and females were 3.6+5.7 and 4.3+8.3, respectively;  $p = 0.120$ . In acute chest syndrome, 245 (22.8) had one or more admissions, 320 (29.8) had hemolytic crisis admissions, and 460 (42.8) had received transfusion episodes ( $p < 0.001$ ). Furthermore, iron overload was developed in 30 patients ( $p = 0.001$ ). The frequency of avascular necrosis presentation was 100 (9.3%) with  $p = 0.007$ ; however, in osteomyelitis, there was 80 (7.4%) admissions ( $p = 0.007$ ). The majority had cholelithiasis or cholecystectomy with male predominance ( $n = 285, 26.5\%$ ;  $p = 0.001$ ). Recorded hemoglobin (Hb) phenotype showed that 705 (65.6%) were homozygous sickle cell disease and 370 (34.4%) were inherited HbS associated with another gene mutation. The Mean Hb level was 9.2+ 1.2 ( $p < 0.001$ ). **Conclusions:** The sickle disease population is young with a comparative gender distribution. VOC was the most common clinical presentation. Several complications and

management received showed a statistically significant gender association. For greater data representation, we recommend a prospective multi-center study.

### Elevated Peripheral Blood Eosinophils during Acute Exacerbation of Chronic Obstructive Pulmonary Disease: Prevalence and Clinical Significance

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#### ABSTRACT

**Objectives:** An elevated peripheral blood eosinophil (PBE) count during acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is a potential predictor of treatment responsiveness and future exacerbation risk. This study aimed to evaluate the prevalence and clinical significance of elevated PBE counts in hospitalized patients with AECOPD in Oman. **Methods:** This single-center retrospective study included all patients with AECOPD who admitted to Sultan Qaboos University Hospital between January 2017 and July 2019. The patients were classified as having eosinophilic or non-eosinophilic AECOPD based on blood eosinophil counts. An elevated eosinophil count was defined as a blood eosinophil count  $> 0.3 \times 10^9$  cells/L on admission. The length of hospital stay, use of oral and inhaled steroids, number of readmissions per year, and use of mechanical ventilation on admission were compared between the eosinophilic and non-eosinophilic AECOPD groups. **Results:** Out of the 102, 42.2% had eosinophilic AECOPD. The eosinophilic AECOPD group had a reduced length of hospital stay ( $P = 0.020$ ) but an increased risk of readmission within a year ( $P = 0.040$ ). Most patients in both the groups were treated with inhaled and oral steroids. The need for mechanical ventilation did not show a significant different between the groups. **Conclusions:** Eosinophilia is highly prevalent in patients with AECOPD and is associated with a reduced length of hospital stay but an increased risk of readmission in a year. It can be used as a surrogate marker to predict the health outcomes of patients with AECOPD and select the treatment options.

### Epidemiology of Post-transplant Diabetes Mellitus: Presentation, Clinical, and Laboratory Findings of Patients at a Tertiary Care Hospital in Oman

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**ABSTRACT**

**Objectives:** Post-transplant diabetes mellitus (PTDM) is a common and serious metabolic complication after kidney transplant that contributes to death, major cardiovascular events, graft failure, and increased medical costs. This study aims to explore the epidemiology of glucose control among patients and examines the demography, clinical data, and investigatory tests for glucose control among transplant patients. **Methods:** This is an observational retrospective study of all non-diabetic patients who underwent kidney transplant and followed-up at the Royal Hospital, a tertiary care hospital in Muscat, Oman during (2010-2020). All clinical, laboratory, and radiological data were collected from patients' electronic medical record system (Al Shifa) that uses the international classification of diseases. Patients who had DM before the kidney transplant were excluded. PTDM is defined as newly diagnosed DM in the post-transplant setting (irrespective of timing or whether it was present but undetected prior to transplantation or not). Proportions were compared using chi-squared test and independent *t*-test. All statistical tests were performed at a significance level of  $P = 0.050$ . **Results:** During the study period, there was a total of 204 patients, 57.4% were male with a median age of 44.7 years (range: 15-82). The commonest cause of chronic kidney disease was glomerulonephritis (38.2%). PTDM developed in 69 (33.8%) patients with a mean of diagnosis at 43.0 months from transplantation. Body mass index (BMI), family history of DM, age at transplantation, renal replacement therapy prior to transplant, and donor type were statistically significant risk factors for PTDM. In the multivariate analysis, older age (odd ratio (OR) = 1.046, confidence interval (CI): 1.024-1.070), gender (OR = 1.797, CI: 0.999-2.231), and BMI (OR = 1.079, CI: 1.025-1.136) were significant risk factors for the development of PTDM. Death was observed in six patients; four patients were in PTDM group. While graft rejection occurred in 18 patient and six of them were in PTDM group. PTDM was treated differently and most of them were managed by oral hypoglycemic agents and insulin. **Conclusions:** Despite the limitations of the retrospective nature and single center, this is the first study on PTDM in Omani patients. It showed clearly that age, gender, and BMI are the main risk factors for development of PTDM. Hence, an early (pre-transplant period) healthy lifestyle changes including exercise, diet, and weight reduction may decrease the risk of development of PTDM. A study with a larger population (including patients from other institutions in Oman) and standardized follow ups are required in future.

**MICROBIOLOGY****Epidemiology, Clinical Characteristics, and Antimicrobial Susceptibility Pattern of****Salmonella Infections in Oman**

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**ABSTRACT**

**Objectives:** We sought to study the epidemiological, clinical characteristics, and antimicrobial susceptibility pattern of salmonella infection in Oman in patients whose salmonella isolates were sent to Central Public Health Laboratories (CPHL) for testing from Ministry of Health hospitals as a part of national surveillance program of enteric infection. **Methods:** A retrospective analysis of electronic patient records from CPHL database was done for all patients with confirmed positive cultures with salmonella species from January 2016 to December 2018. Clinical and antimicrobial susceptibility data were collected through National Electronic Health Record System and local CPHL database using a standardized electronic form. Multivariate and univariate analyses were done to find out the risk factors for complicated infection using SPSS computer software. Descriptive statistics were used for all other studied variables. **Results:** A total of 427 positive cultures were included in this study. Non-typhoidal salmonella (NTS) strains represented (93.2%, n=398) of cases, while enteric fever was (6.8%, n = 29). For NTS, 49% of patients were  $\geq 2$  years old. The main presenting features were diarrhea (83.0%) and fever (57.0%). Fifty-one cases had invasive NTS (iNTS) infection, and 13% with the main manifestations of bacteremia and musculoskeletal infection. Antimicrobial susceptibility data for NTS showed highest rates of resistance to ciprofloxacin (28.0%) and ampicillin (18.0%), while it remained  $< 5\%$  for other first line agents. However, rates of multi-drug resistant (MDR) NTS were significantly higher in 2018 (n=13). Most patients with NTS had documented recovery with antibiotic therapy or supportive therapy (88.0%). Moreover, infants seem to have the higher tendency to develop disease requiring hospitalization compared to other age groups. Male gender, sickle cell disease, and underlying immunodeficiency were had significant independent risk factors for developing invasive infection. For typhoid infection (n=29), the main presenting clinical feature was fever (93.0%). History of travel to the Indian subcontinent and East Asian countries was also an important risk factor (55.0%). Non-susceptibility to ciprofloxacin was very high in typhoid isolates (90.0%) in comparison to the other first line agents. In addition to the reporting of the first extensively drug resistant (XDR) typhoid isolate in Oman in 2018, two other MDR isolates

were also identified. **Conclusions:** Salmonella infection poses a burden on healthcare system. Infection ranges from self-limiting gastroenteritis to a possibly debilitating invasive disease. Physicians must consider evaluating for complicated iNTS in patients having compatible clinical presentation and risk factors. Use of empirical agents such as ciprofloxacin as outpatient treatment for gastroenteritis was high despite low rates of susceptibility to this agent. This practice must be discouraged. Typhoidal salmonella incidence was mainly related to travel to endemic areas. Risk of MDR or XDR strains should be always considered in patients with appropriate epidemiological link. Further collaboration with other sectors in the country to combat salmonella infection in livestock, food-handlers should be sought to reduce burden of overall disease on health care sector and local economy.

### Epidemiology, Risk Factors, and Outcome of *Candida Auris* at a Tertiary Care Center in Oman

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#### ABSTRACT

**Objectives:** *Candida auris* is a multidrug-resistant pathogenic yeast. It has a wide range of clinical manifestations and associated with high morbidity and mortality rates especially in terminally ill patients. Increasing reports of outbreaks around the world made *Candida auris* a major apprehension for healthcare community. The main aim of this study was to evaluate the epidemiology, risk factors, susceptibility pattern treatment, and outcome of candidemia caused by *Candida auris* in Khoula Hospital from January 2017 to June 2021. **Methods:** All *Candida auris* cases during this study duration were retrospectively analyzed. Initial identification and antimicrobial susceptibility testing for all samples were conducted in Khoula Hospital. All samples were sent to Central Public Health Laboratories for further confirmation of identity and susceptibility. Patient Clinical and demographic data were collected retrospectively using Al Shifa system at Khoula Hospital. Chi-squared test was used to compare risk factors in relation to candidemia and outcome. Kaplan–Meier analysis was used to estimate survival time of patients with risk factors. Cox regression model was used to investigate the association between the risk factors and outcome. **Results:** One hundred and twenty-nine patients were included in this study. Out of which 161 samples of *Candida auris* were isolated. Incidence rate was 1.8 case per 1000 patients. Urine samples were the most common (45.0%). Most of the patients were Omani (70.0%) and young < 65 years (61.0%), and males represented majority of them (65.0%). Most of isolates (70.8%) were considered as colonization and 29.2% as infection. Out of those

infection, 32 (68.0%) candidemia and 7 (15.0%) urinary tract infection represented the majority of the infections. Moreover, the mean length of hospital stay was 86.2+79.0 days and the mean days to detection of *Candida auris* was 32.9+33.0 days. Most isolates were resistant to fluconazole (100.0%), and amphotericin B (95.0%). In addition, presence of central line and intubation were significantly associated with increased risk of candidemia ( $p = 0.050$ ) and longer survival post *Candida auris* detection was also significantly associated with age < 65 years old, absence of diabetes mellitus, and absence of candidemia ( $p = 0.050$ ). The mortality rate was 53.1%. **Conclusions:** Our study showed that the peak year of *Candida auris* was 2019. Early detection of *Candida auris* by screening would help to avert undesirable outcome. Adjustment of avoidable associated risk factors may contribute to the increase of the survival rate.

### Epidemiology, Risk Factors, Clinical features and Outcome of *Candida auris* in Royal Hospital over the Last Four Years (2017-2020)

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#### ABSTRACT

**Objectives:** *Candida auris* is a new strain of fungal pathogen that had emerged in many countries worldwide, including Oman. The invasive infections were linked to high mortality, one of the reasons being multidrug-resistant to major classes of antifungals. The ability to spread from patient to patient, or from contaminated environment to patients within health care settings and tendency to cause major outbreaks. The study mainly aims to describe the trend of *Candida auris* emergence and distributions during the last four years and its outcome. Moreover, we identify the risk factors associated with *Candida auris* infection or colonization to assess the incidence, susceptibility, and resistance pattern as well as assess the implementations and effectiveness of the infection prevention and control measures applied to control the outbreak. **Methods:** A retrospective descriptive cohort was conducted in Royal hospital. Target population are adult patients admitted to Royal hospital from 2017 to 2020, looking for patients positive with *Candida auris* from any sample (screening and clinical) during the study period were defined as infections or colonization cases. **Results:** Overall incidence increasing in trend since 2017, which is contributed to many reasons including implementation of active surveillance and COVID pandemic. Diabetes mellitus and recent admission in another hospital within 6 months were considered statistically significant risk factors in relation to the

infection. Mortality rate was 40.0%. Median of length of hospital stay = 31 (1-380). Statistically Significant risk factors in relation to mortality were chronic kidney disease, intubation, infection, and age. **Conclusions:** Early notification of the cases is vital for early implementation of infection control preventive measures. Active surveillance at Royal Hospital was reflected effectively in controlling the outbreak at the intensive unit care in few months. Current data on the significant risk factors will be utilized later to set a criteria for screening high risk patients for colonization.

## OBSTETRICS AND GYNECOLOGY

### The Etiological Profile of Stillbirth and its Changing Trend in a 10-year Period at Sultan Qaboos University Hospital

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#### ABSTRACT

**Objectives:** Stillbirth or intrauterine fetal death is defined as fetal death that occurs after 20 weeks of gestation or fetal birth weight of  $\geq 500$  g. Stillbirth rate (SBR) is the number of stillbirths per 1000 births (live and stillbirths). This study aimed to determine the SBR and its changing trend during the study period, from January 2010 to December 2019, and to explore its etiologies among stillbirths born at Sultan Qaboos University Hospital. **Methods:** This was a retrospective descriptive cohort study. Details of stillbirths were obtained by reviewing medical records of each stillbirth case using trace care system at Sultan Qaboos University Hospital. The most probable cause of stillbirth was assigned based on available history, clinical findings, and investigations. Data analysis was performed and was described in form of frequency, percentage, pie charts, bar charts, mean, median, and standard deviation. A linear regression test was conducted to find out the trend of SBR over time in years. **Results:** During this study, the leading etiology of stillbirth was intrauterine growth restriction (IUGR) (58.2%) followed by gestational diabetes mellitus (24.9%). Breech presentation, polyhydramnios, maternal infection, placental conditions such as chorioamnionitis, abruption, pregnancy-induced hypertension, and cord accident were other causes. In addition, 64.4% of pregnant women had a previous history of IUGR, preterm, low birth weight, miscarriage, stillbirth, or neonatal death. Overlapping between etiologies makes it difficult to assign specific etiology to each case of stillbirth. **Conclusions:** In this study period, SBR is declining with an overall rate of 5.7 per 1000 births. Stillbirth is caused by

multifactorial conditions that can be classified into three broad categories: fetal, placental, and maternal causes. Most stillbirth causes were preventable. Fetal monitoring for growth restriction and control of diabetes is likely to prevent most stillbirths.

### Obesity and Menstrual Disturbance among Omani School Girls

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#### ABSTRACT

**Objectives:** Menstruation is a normal physiological phenomenon for females indicating their capability for procreation. Menstrual irregularities are common among adolescents, adversely affecting their quality of life. Obesity is one of the factors that contributes to irregularity in menstrual cycles. In Oman due to lifestyle changes over the last 4 decades prevalence of obesity among young females aged (5-19 years) increased from 5.1% to 43.5 %. Hence, the prevalence of menstrual disorders and future subfertility are expected to increase over the coming years. The aim of this study is to assess the relationship between menstrual disturbances and body mass index, and to determine the current mean age of menarche among Omani school girls. **Methods:** This study was a cross-sectional survey which was conducted with collaboration of NDEC among girls at grade 11 in two governmental schools in Muscat starting from September 2019. Data was collected using a questionnaire that included demographic details, anthropometrics measurements, and standard questions describing the menstrual patterns such as their age at menarche, duration of the most recent menstruation intervals, average days of bleeding, and any menstrual problems and their frequency. Questions describing the girl's lifestyle were included in the questionnaire also. **Results:** The total number of girls in this study was 385. The Mean age of girls was 15.7 years and mean age of menarche was 12.7 years. The age of menarche noticed to be earlier among obese girls. Out of the total, 55 (14.3%) of the girls were overweight and 40 (10.4%) were obese. The infrequent cycle with intermenstrual length of  $> 34$  days was found in 79 (20.5%), where 26 (32.9%) of them were overweight and obese, and 2 (2.5%) were underweight. Eighty-five percent of obese girls had dysmenorrhea. Almost 88.0% of girls with acanthosis nigricans were overweight and obese. In addition, the obese girls and overweight had hirsutism, 42.5% and 30.0%, respectively. While only 13.0% of

those with normal and underweight had hirsutism. **Conclusions:** Menstrual disturbances are more common among obese girls. Girls who reported more physical activity and healthy diet were less likely to have menstrual irregularities. A significant association between obesity and the menstrual irregularities and healthy lifestyle among adolescents, highlights the importance of taking measures for educating adolescents and their families to adapt simple and effective lifestyle modifications for a healthy reproductive life during adulthood.

### Prospective Cross-sectional Study on the Prevalence of Depression, Anxiety, and Stress in Women with Recurrent Pregnancy Loss and Infertility Compared to Normal Controls in Oman

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#### ABSTRACT

**Objectives:** To establish the prevalence of stress, anxiety, and depression in patients with recurrent pregnancy loss (RPL) and infertility and to compare it with controls of normal fertility in the Omani population. **Methods:** This is a prospective cross-sectional study. It was conducted in two tertiary care centers: Sultan Qaboos University Hospital (SQUH) and Royal Hospital. The sample size was estimated based on the anticipated prevalence of anxiety and depression among RPL and infertility subjects and controls. Participants were included from general gynecology clinics, RPL clinics, and antenatal clinics. Patients that were non-Omani, refused to participate and did not complete the sociodemographic data, or the questionnaires were excluded from the study. Participants were asked to fill out a paper-pencil survey including sociodemographic data and two questionnaires for psychological assessment: Depression Anxiety Stress Scale (DASS-42) and Becks depression inventory (BDI-II). **Results:** Our study included 111 participants in the RPL group, 131 in the infertility group, and 210 in the control group. Thirty-one percent of RPL reported some level of stress ranging from mild to extremely severe, while in the infertility group, the prevalence was 35.9% compared to 17.1% in the control group ( $p = 0.003$ ). The prevalence of anxiety was 45% in the RPL group, 45.5% in the infertility group, and 28.1% in the control group ( $p = 0.019$ ). Depression measured by DASS-42 was reported highest in RPL patients with a prevalence of 34.2%, while in the infertility group was 33.6% compared to 13.8% in the control group ( $p < 0.001$ ). Similar results for depression were reported based on BDI-II, with a prevalence of 23.4% in the RPL group, 19.1% in the infertility group, and 7.6%

in the control group ( $p = 0.020$ ). **Conclusions:** This study shows the prevalence of stress, anxiety, and depression is higher among patients with RPL and infertility compared to those with normal fertility. Our study did not evaluate the male partner. Further studies are needed to establish methods of providing psychological support to patients and their partners and to evaluate its effect on the outcome.

## OMFS

### Outcome of Tempromandibular Joint Arthroscopic Lysis and Lavage for management of Temporomandibular Joint Disorders

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#### ABSTRACT

**Objectives:** To evaluate the outcome and success rate of temporomandibular joint (TMJ) arthroscopic lysis and lavage in patients with temporomandibular disorder (TMD) non-responding to arthrocentesis. **Methods:** The clinical data of TMJ arthroscopy cases attended the Dental, Oral and Maxillofacial Department, Al-Nahdha Hospital between January 2010 and January 2021 were reviewed retrospectively. Outcome and success rate evaluation was based on reduction of pain, which were measured using visual analogue scale (VAS) and improvement of joint function. The success rate of arthroscopy was determined by the reduction in joint pain (VAS) and improvement of jaw function postoperatively over the follow-up period. At baseline, all patients had high VAS score for pain ranging 7–10 and severe jaw dysfunction. Success of arthroscopy in our study (improvement of mobility and function, and reduced pain and disability) was defined as a postoperative VAS  $\leq 3$  with significant improvement of jaw dysfunction. **Results:** A total of 100 cases undergone arthroscopic lysis and lavage were identified, 47 of them had unilateral procedure (one joint involved) and 53 had bilateral procedures (two joints involved). Thus, a total of 153 TMJs arthroscopy procedures were evaluated. Mean age was 31.7 (range: 12–55 years) with male to female ratio of 1:6. Sixty-eight cases had significant improvement in pain and jaw function without the need for further surgical intervention (VAS was  $p < 0.050$ ). Among the 32 patients who had limited or no improvement, 11 underwent further surgery after arthroscopy. No serious complications were encountered. Readmission for pain management was needed in three cases. Few transient complications that shown complete resolution by 12 months were recorded.

These include numbness of preauricular skin (1 case) and otology-related complication (1 case). The overall success rate was 68%. **Conclusion:** Significant reduction of pain and improvement of jaw function was observed after the use of arthroscopic lysis and lavage in symptomatic and dysfunctional TMJs. Therefore, it can be considered for treatment of early stages of TMD. Further research with longer follow-up is suggested to confirm the favourable findings of this study.

## Complications of Open Reduction and Internal Fixation of Mandibular Condylar Fractures in Oman

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### ABSTRACT

**Objectives:** Mandibular fracture is the second commonest facial fracture. Management of mandibular condylar fractures by open reduction and internal fixation (ORIF) is becoming popular worldwide. The aim of this study is to assess the complications associated with ORIF of mandibular condylar fractures in Oman. **Methods:** We conducted a retrospective cross-sectional study of all patients who underwent ORIF of mandibular condylar fractures at Al-Nahdha Hospital and Sultan Qaboos University Hospital in Muscat, Oman, from January 2008 to December 2020. Data collected included patient demographics, fracture aetiology, type of fracture, surgical approach, and recorded complications. **Results:** A total of 68 patients (59 males and 9 females, mean age of 30.9 years) with 83 mandibular condylar fractures underwent ORIF during the study period. Subcondylar was the commonest type accounting for 62.7% and bilateral fractures occurred in 21 patients. The retromandibular approach was the commonest surgical approach (42.2%). The overall prevalence of complications was 46.0%. The highest recorded complication was transient facial nerve palsy (18.1%), followed by deranged occlusion (16.9%) and restricted mouth opening (9.6%). No permanent facial nerve palsy was recorded. A second surgical intervention was required in 15.8% cases mainly to correct the malocclusion. There was no significant difference in overall complications and patient's clinical characteristics. **Conclusions:** The findings of this study are similar to the globally reported prevalence of complications, except for a slight increase in transient facial palsy associated with some surgical approaches. Although ORIF of mandibular condyle fracture offers a favourable outcome, it carries a risk of developing few complications.

## OPHTHALMOLOGY

### Choroidal Thickness Profile in Healthy

## Eyes in Adult Omani Population: A Cross-sectional, Descriptive Clinical Study

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### ABSTRACT

**Objectives:** Our primary objective was to determine the choroidal thickness (CT) profile in healthy eyes of the adult Omani population. Also, to determine if there is any correlation between sub-foveal CT and age, gender, axial length, and refractive status of the eyes. **Methods:** A cross-sectional, descriptive, clinical study was conducted. Healthy Omani eyes of 150 volunteers age  $\geq 18$  years were recruited and studied in the ophthalmology department at Sultan Qaboos University Hospital (SQUH). Patients' age, gender, visual acuity, refractive error, and axial length were recorded. CT was measured at the foveal center and 500- and 1000-microns temporal, nasal, superior, and inferior from the foveal center using Enhanced Depth Imaging-Optical Coherence Tomography (EDI-OCT) device. Ethical approval was obtained from the institutional (SQUH) research and ethical committee. Data analysis was done using SPSS software. For descriptive purposes, categorized variable was presented as frequency and percentage. Continuous variables were presented as mean with standard deviation and mean with 95% confidence intervals. Independent samples *t*-test and *r*-Pearson's correlation coefficient test were used to analyze the data.  $P < 0.050$  was considered statistically significant. **Results:** CT was obtained for 300 eyes of 150 participants (75 males and 75 females) using EDI-OCT. The mean age of the participants was 33.3 years (range: 21–55 years, SD  $\pm 9.2$  years), and the mean axial length was 23.76 mm (SD  $\pm 0.94$  mm). CT was found to be the thickest at the sub-foveal area with a thickness of 330.88  $\mu\text{m}$  (SD  $\pm 69.52$   $\mu\text{m}$ ; 95% CI). The second-highest thickness of the choroid was found superiorly 500  $\mu\text{m}$  away from the fovea (324.48  $\mu\text{m}$ , SD  $\pm 70.24$   $\mu\text{m}$ ; 95% CI). The lowest CT was located nasally 1000  $\mu\text{m}$  away from the fovea with a mean of 301.160 (SD  $\pm 70$   $\mu\text{m}$ ; 95% CI). A strong negative correlation was found between CT and age at most of the measured sites ( $p < 0.050$ ). There was no statistically significant difference in the sub-foveal CT between males (337.61  $\mu\text{m}$ , SD  $\pm 75.64$ ) and females (324.24  $\mu\text{m}$ , SD  $\pm 62.7$ ) in this study ( $p = 0.242$ ). No significant relationship was found between CT and the axial length or refractive errors. However, CT tends to be thicker in emmetropic and hyperopic eyes compared to myopic eyes. **Conclusions:** EDI-OCT is useful in measurement of CT. In this study, CT was the thickest in the sub-foveal area. There was no significant relationship between CT and gender, axial length, and refractive status of the eye. Establishing normative data

of CT serves as a reference in the clinical setting and is of value for future research studies. Including a broader range of participants, particularly the pediatric age group, may add more meaningful results.

### Anterior and Posterior Corneal Changes Post Customized Cross Linking in Progressive Keratoconus

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#### ABSTRACT

**Objectives:** To study the anterior and posterior corneal changes following topography-guided crosslinking (CXL) in progressive keratoconus. We hypothesised that topography-guided CXL will stabilize both anterior and posterior curvatures improving corrected distance visual acuity. **Methods:** This prospective, descriptive cohort study was conducted between January 2018 and February 2020. We included 50 eyes from 49 patients. The study was conducted in the Ophthalmology Center, Ministry of Defense Hospital. Patients with progressive keratoconus (an increase of  $\geq 1$  D in 1 year) with a thinnest corneal pachymeter of  $\geq 400$   $\mu\text{m}$  in phakic or pseudophakic patients with ultraviolet light blocking intraocular lens, were recruited. Patients with corneal scarring, previous corneal surgery, concurrent eye infection, and pregnancy were excluded. Topography was performed with the Scheimpflug imaging device (Oculus GmbH, Wetzlar, Germany). The Avedro Mosaic KXL II System was employed for CXL. Formal institutional research and ethical approval were obtained from the Ministry of Defence Hospital, Oman. Patients were included after receiving informed consent. **Results:** All the 50 eyes were included, and no missing data was encountered. The mean age of our sample was 21 years old (range = 13–33 years). Confidence interval of below results is 95%. Anterior and posterior keratometry and elevation were both stable over 12 months. Anterior K1 from 45.20 D preCXL to 44.41 D at 12 months ( $p < 0.001$ ). Anterior K2 from 48.56 D to 47.89 D ( $p < 0.001$ ). Posterior K1 from -6.43 D to -6.64 D ( $p = 0.064$ ). Posterior K2 from -7.19 D to -7.18 D ( $p = 0.980$ ). Anterior elevation from 26.96  $\mu\text{m}$  to 24.47  $\mu\text{m}$  ( $p = 0.001$ ). Posterior elevation from 56.46  $\mu\text{m}$  to 59.82  $\mu\text{m}$  ( $p < 0.001$ ). The above values are statistically significant, but not clinically significant (K reading  $< 1$  D). K-max improved by 1.34 D over a year. Significant improvement of K-max noted starting by six months follow up. It was flattened from 55.11 D preCXL to 53.77 D at 12 months (SD 6.47–6.27,  $p < 0.001$ ). The thinnest cornea has a minimal decrease in thickness with a mean difference of 5  $\mu\text{m}$  from 454  $\mu\text{m}$  preCXL to 449  $\mu\text{m}$  at 12 months (SD 35.2–36.84,  $p = 0.034$ ). CDVA

was stabilized (minor improvement of 0.09 logMAR) from 0.38 to 0.29 in logMAR ( $p < 0.001$ ). No side effects were recorded. **Conclusions:** To our knowledge, this is the largest study conducted to date using topography-guided CXL and the first and only study from Oman. Patients undergoing customized CXL were followed up for 12 months. The procedure stabilized the anterior and posterior keratometry and elevation. The steepest curvature (K-max) and the corrected distance visual acuity improved (1.34 D and 1 line improvement, respectively). The thinnest corneal area was stabilized.

### Comparing Optical Coherence Tomography Angiography and Fundus Fluorescein Angiography in the Evaluation of Diabetic Macular Ischemia

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#### ABSTRACT

**Objectives:** Diabetic macular ischemia (DMI) is an important cause of visual loss in diabetic retinopathy. Clinically, it is defined as an enlargement of the foveal avascular zone (FAZ) and paramacular areas of capillary non-perfusion. Fundus fluorescein angiography (FFA) is the gold standard for diagnosis. Optical coherence tomography angiography (OCTA) is a non-invasive imaging technique that generates angiography images in seconds. This study aimed to evaluate the diagnostic accuracy of OCTA as compared to FFA in diagnosing DMI. **Methods:** This cross-sectional study was conducted in the Ophthalmology Center, Armed Forces Hospital, from January 2019 to July 2020. Adult patients diagnosed with diabetic retinopathy were included. Patients with other causes of macular ischemia or having significant ocular media opacity were excluded. All patients underwent FFA and OCTA on the same day. The central macular non-perfusion area, FAZ boundaries, and the maximum vertical and horizontal diameters were delineated. Two independent masked retina specialists reviewed the images. DMI was graded using Early Treatment of Diabetic Retinopathy Study standard photographs form. Ethical approval was obtained from the institutional research committee. An interclass correlation (ICC) was used to assess agreement between the two tests. Kappa coefficient was used to determine the inter-rater agreement. **Results:** Thirty-one eyes (16 patients) were included in the analysis. The mean patient age was 49.4 years (range = 34–65). The male to female ratio was 10:6. Diabetic retinopathy was nonproliferative in 21 eyes (67.7%). Proliferative diabetic retinopathy was evident in 10 eyes (32.3%). ICC for FAZ area ( $\text{mm}^2$ ) showed strong agreement between FFA and OCTA (0.97, 0.93–0.98)

with excellent inter-rater agreement (0.98, 0.96–0.99). The ICC showed strong agreement between FFA and OCTA for vertical (0.852, 0.694–0.929) and horizontal FAZ diameters (0.943, 0.882–0.973). The inter-rater agreement was excellent for vertical (0.921, 0.835–0.962) and horizontal (0.797, 0.573–0.903) FAZ. The grade of DMI was moderate in most cases, regardless of the imaging technique. A strong degree of agreement of DMI grading between FFA and OCTA was found (0.70, 95% CI: 0.56–0.85). **Conclusions:** OCTA represents a valid, reliable, and easy-to-use imaging technique in assessing macular perfusion in patients with diabetes particularly to FAZ analysis. The agreement with traditional FFA is excellent in all quantitative measurements and ischemia grading. This is the first study to perform both tests for all patients on the same day, thereby avoiding any time gap during which the diabetic retinopathy could progress, affecting the accuracy of comparing the two devices. The small sample size limits the statistical significance of our findings. Large, prospective studies are needed to confirm our encouraging results.

## ORTHOPEDICS

### Epidemiology of Developmental Dysplasia of The Hip at a Tertiary Hospital in Oman

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#### ABSTRACT

**Objectives:** To estimate the incidence rate of developmental dysplasia of the hip (DDH) in Omani population managed at Khoula hospital (KH) and included the mean age of diagnosis, characteristic features, the geographical distribution, and the hotspot areas of DDH. **Methods:** We conducted a retrospective cross-sectional study at KH targeting all Omani paediatric patients, who have been officially diagnosed with DDH between January 2009 and December 2019. The data were collected in excel sheet form from the Al-Shifaa Medical Record System at KH and phone interviews. All gathered data were transferred into the statistical package for social sciences (SPSS) for cleaning, coding, and descriptive analysis. **Results:** A total of 795 DDH diagnosed patients were studied; 652 (82.0%) of them were female and 143 (18.0%) were male with ratio of 4.5:1.0. There were 307 (38.6%) of patients diagnosed with left DDH, 188 (23.6%) with right DDH, and 300 (37.7%) with bilateral DDH. At least 50% of the DDH cases were  $\leq$  6 months old at first visit to the hospital.

Furthermore, 267 (33.6%) of cases were born in Muscat Region. The estimated incidence rate of DDH in Oman 1-2 per 1000 live births. The prevalence of risk factors among the population were: first child (n = 262, 33.0%), consanguinity (n = 373, 46.9%), family history (n = 182, 22.9%), oligohydramnios (n = 87, 10.9%), breech (n = 170, 21.4%), and sibling history (n = 103, 13.0%). **Conclusions:** This is the first study has conducted in Oman to study the epidemiology of DDH and to form a foundation for future bigger studies. The results were found to be consistent with the international findings with the local incidence rate between 0.91 - 1.3, which is congruent to 1 in 1000 live births as reported in literature. However, these current findings cannot be generalized to a national level due to its single center limitation. We recommend to conduct multicenter prospective studies to accurately identify DDH incidence in Oman. National guidelines and screening programs must be created and implemented for early detection, documentation, and treatment.

### Post-debridement Culture Swabs of Open Fractures: A Report of 166 Cases and Literature Review

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#### ABSTRACT

**Objectives:** The incidence of infection following open fractures fixation can reach as high as 30%. It has a huge burden on the health economy. Predicting which wound will develop an infection is a subject of intense debate. There is lack of evidence on the usefulness of wound swabs as there is heterogeneity in the literature. Thus, we sought to understand the role of post-debridement swabs in the managements of infection after open fracture fixation. **Methods:** This is a retrospective cohort study was conducted in Sultan Qaboos University Hospital, between 2010 and 2019. By using predetermined inclusion and exclusion criteria, data on all open fractures was gathered from the electronic health system. PubMed and Embase electronic databases were also searched for relevant articles relating to post-surgical debridement swab culture and its correlation with future infection. **Results:** We collected 926 open fracture cases from our retrospective cohort study (166 cases) and literature review (760 cases). From our retrospective study, five (3.0%) cases grew pathogenic organisms from their post-debridement culture swabs. However, none of them developed an infection during their follow up periods. During this study, the developed infections were found in 158 cases. Out of those infections, 52 (32.9%) were positive cultures post-debridement, and the rest either had negative cultures (60.0%) or no swabs taken (7.1%). Moreover, it was noted that cases with an infection grew organisms other than the organism in their



post-debridement culture swabs cultures. Attributing to the fact that targeted treatment was initiated and risk of nosocomial growth in prolonged wound closure. **Conclusions:** This study shows that post-debridement culture swabs may be used as a screening tool to prevent infection. Moreover, the results need to be interpreted carefully in the context of modern technological and genetic developments which may have a role in enhancing the value of post-debridement sampling.

## Epidemiology of Hand Occupational Injury in a Growing Industrial Area

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### ABSTRACT

**Objectives:** Occupational hand injuries constitute a major proportion of trauma emergencies in countries with emerging economies. Given the violent impact of work injuries on a person's health and quality of life. The aim of this study is to document the causes of hand injuries in a growing industrial area in Oman with a view to developing prevention strategies. **Methods:** A retrospective cross-sectional study was conducted at tertiary care hospital, between 2009 and 2018. All acute hand injury due to acute insult were included in the study. Patient information were obtained from hospital health information system. **Results:** A total of 1511 subjects were identified as having sustained an acute hand injury during the study period. Workplace injuries made up 17.6% (267 cases), and were more common among inexperienced young migrant workers (68%). Injuries related to operating machinery accounted for 67% of all occupational injuries. **Conclusions:** We recommend that policy measures should be put in place at the area of occupational health and safety, and the employers must focus their efforts more on educating their workers.

## PEDIATRICS

### Safety and Effectiveness of Prolonged Magnesium Sulfate Infusion for Asthma Exacerbation in Children

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### ABSTRACT

**Objectives:** To assess the safety of magnesium sulfate ( $MgSO_4$ ) when it is given as continuous infusion for  $\geq 24$  hours in children with asthma exacerbation. Moreover, we aimed to describe the treatment details and the outcome of patients treated with prolonged  $MgSO_4$  infusion. **Methods:** This retrospective cross-sectional study included children  $<13$  years old who admitted at the Royal hospital between 2013 and 2019 with asthma exacerbation and received at least 24 hours of  $MgSO_4$  infusion. Patients with chronic respiratory illnesses such as cystic fibrosis and bronchopulmonary dysplasia were excluded. Data were collected from patient record system including: patient demographics,  $MgSO_4$  dosage (boluses and infusion rate), magnesium concentrations, adverse events or complications, respiratory supports, and other asthma managements including intravenous bronchodilators. **Results:** A total of 100 children were included with a median age of 24 months. No patient developed serious adverse events. One patient developed burning sensation at the infusion site. The mean loading dose was 50.0 mg/kg and the maximum infusion rate was 30 mg/kg/hr with mean infusion duration of 74.2 hours. Ninety-eight percent of patient were recovered with no other bronchodilator infusions, and 94.0% did not require respiratory support escalation. **Conclusions:** Prolonged  $MgSO_4$  is safe at a maximum dose of 30 mg/kg/hr and may be beneficial for children with asthma exacerbation. However, to assess the efficacy, a randomized controlled trial with active control is warranted.

## PSYCHIATRY

### Prevalence of Depression among Patients with Inflammatory Bowel Diseases Admitted to SQUH

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### ABSTRACT

**Objectives:** Many studies suggest that depression is prevalent among patients suffering from inflammatory bowel diseases (IBD), including Crohn's disease and ulcerative colitis (UC). These studies were mostly conducted among European and American populations; there is a paucity of these studies from Arabic countries. This study aimed to examine the prevalence and predictors of depression among IBD patients attending a tertiary care hospital in Muscat, Oman. **Methods:** This was a cross-sectional study. It was conducted among a random sample of patients aged  $\geq 18$  years who attended the gastroenterology clinic at Sultan Qaboos University Hospital, Muscat, Oman between June 2018 and January 2019. Participants were asked to complete the Patient Health Questionnaire-9 to assess depression, as well as a

sociodemographic survey. Logistic regression analysis was used to identify the independent predictors of depression among the study sample. **Results:** This study included 201 participants, with the average age of 36 years. Of this study, 51% were female. The mean duration of the patients' IBD diagnosis was 1.9 years (standard deviation = 0.3), the majority of the participants (87%) had UC ( $n = 174$ ), 80% of the participants had received steroids ( $n = 161$ ), and 5.5% of the sample had a history of surgical stoma. The medical comorbidities among the participants were cerebrovascular accidents (25%), hypertension (25%), and diabetes mellitus (24%). The prevalence of depression was 23%. The logistic regression analysis resulted in four independent predictors of depression: being female (odds ratio (OR) = 2.09,  $p = 0.047$ ), a history of surgical stoma (OR = 5.737,  $p < 0.001$ ), a comorbid diagnosis of hypertension (OR = 2.846,  $p = 0.007$ ), and a history of a cerebrovascular accident (OR = 2.651,  $p = 0.011$ ). **Conclusions:** The present study found that depression is prevalent among Omani patients with IBD. Certain clinical factors appeared to increase the risk of depression among this population. The findings of this study fill a gap in the existing literature and call for further work aiming to explore possible tailored interventions, aimed at screening and managing depression among IBD patients.

### Parental Attitude Towards the Prescription of Psychotropic Medications for Mental Disorders of Childhood in a Tertiary Care University Hospital

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#### ABSTRACT

**Objectives:** A limited number of controlled trials assessed the safety and efficacy of psychotropic medication use in children; this has resulted in the reluctance and hesitation of parents to administer such medications. Therefore, this study investigated the parental attitude towards the use of psychotropic drugs on children with mental disorders. **Methods:** A questionnaire, available in Arabic and English, was distributed to parents of children following-up at the Department of Behavioral Medicine at Sultan Qaboos University Hospital from December 2020 to March 2021. The questionnaire comprised of questions regarding parents' opinions, knowledge, and attitudes towards prescribing psychotropic medication to children. It also recorded the socio-demographic data concerning parents and children. In addition, the logistic regression model was used to identify risk factors associated with parents who prefer to consult a folk healer for children with mental disorders. **Results:** A total of 299 parents agreed to participate in the study. There

were 117 (39.1%) fathers, 156 (52.1%) mothers, and 26 (8.7%) other caregivers. The majority of them (81.6%,  $n = 244$ ) agreed to give their child psychotropic medications if necessary, but 25.4% of them ( $n = 76$ ) consulted a folk healer before consulting a psychiatrist if their child experienced psychiatric symptoms. Married parents were 14 times (odds ratio (OR) = 14.5,  $p = 0.011$ ) more likely to consult a folk healer than separated or divorced parents. Caregivers with a monthly income below 500 OMR and between 500-1000 OMR were two times (OR = 2.5,  $p = 0.016$ ) and three times (OR = 3.2,  $p < 0.001$ ), respectively, more likely to consult a folk healer than those with a monthly income more than 1000 OMR. Parents who disagreed with giving psychotropic medications to their children were three times (OR = 3.7,  $p < 0.001$ ) more likely to consult a folk healer than parents who agreed. **Conclusions:** Most parents agreed to give their children psychotropic medication if deemed necessary. However, a sizeable proportion of parents and caregivers preferred to consult a folk healer before accessing mental health services. Thus, concerted efforts and awareness are needed to address parents' concerns regarding psychotropic medication use in children.

### Impact of Sleep Habits and Sleep Problems on the Academic Performance of Students Attending College of Medicine and Health Science at Sultan Qaboos University

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#### ABSTRACT

**Objectives:** Sleep deprivation has tremendous effects on physiological and psychological function. Medical students worldwide are more likely to be affected by sleep deprivation due to academic load. This study assessed the sleep quality of Omani medical students and the impact of sleep deprivation on their academic performance. **Methods:** This cross-sectional study was conducted among students of the College of Medicine and Health Science, Sultan Qaboos University between the years 2019 and 2020. The Pittsburgh Quality of Sleep Index (PSQI) and the Epworth Daytime Sleepiness Scale (EDS) were used in this study. Details of academic performance of students, including Grade Point Average, history of probations, and remedial courses were obtained. Data was collected and analyzed. **Results:** A total of 146 students responded to the questionnaire and 62.3% were female. The average age was  $21.4 \pm 2.01$  years and 46.3% of students were in their final year of medical school. This study reported 72.2% of students scoring  $\geq 5$  in PSQI, which is indicative of poor sleep quality. While 47% ( $n = 71$ ) exhibited excessive daytime sleepiness with an EDS score of  $> 10$ .

Our findings showed a statistically significant association between EDS and PSQI ( $p = 0.046$ ) and the prevalence of poor sleep quality was very high among the excessive daytime sleepers (80.3%). The presence of medical or psychiatric illnesses was significantly affecting sleep quality ( $p = 0.001$ ), along with having a roommate ( $p = 0.037$ ). Excessive daytime sleepiness showed a significant association with gender ( $p = 0.026$ ) with females having a higher percentage of 54.9%. **Conclusions:** This study suggests poor sleep quality and daytime dysfunction are a common occurrence among medical students in tertiary medical education in Oman. This echoes international trends. Since sleep deprivation tends to adversely affect physiological and psychological function, enlightened mechanisms are needed to reduce sleep deprivation among medical trainees. Further studies are warranted in the future to ensure students' well-being.

## RADIOLOGY

### Prevalence and Associations of the Congenital lung malformations detected by chest Computed Tomography in Omani pediatric patients: A 10-year Single Institution Experience

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#### ABSTRACT

**Objectives:** Congenital lung anomalies are a spectrum of disorders that arise from aberrations of lung development. The most commonly encountered anomalies can be classified into three broad categories: bronchopulmonary (lung bud) anomalies, vascular anomalies, and combined lung and vascular anomalies. The main objective of this study is to know the prevalence and common types of

congenital lung malformations (CLM) as well as to assess the association with other anomalies. Moreover, we aimed to assess the correlation between radiological and pathological findings, the prevalence of hybrid common presentations, the age at diagnosis, and management plan. **Methods:** This was a retrospective cohort study of Omani pediatric patients aged < 13 years old diagnosed with CLM in Royal Hospital, Muscat, Oman from August 2010 to July 2020. We recorded the patients' information from the hospital information system. Demographic and clinical data were collected including age at presentation, antenatal history, family history, type of associated normally, surgical intervention, and histopathological reports. The total population of this group was 2165445. **Results:** There were 95 chests computed tomography (CT) done during the research period. Only 40 chest CT were enrolled in this study with prevalence rate of CLM was 2.08/100000. Among them, 19 (47.5%) patients diagnosed with congenial lobar over inflation and (13/19) patients (68.4%) with LUL affected. 10 (25.0%) of patients diagnosed with (C-PAM) and 11 (27.5%) patients diagnosed with others anomalies (e.g.; bronchopulmonary sequestration and scimitar anomaly). Three patients (7.5%) had C-PAM and bronchopulmonary sequestration. Ten patients (25.0%) showed cardiac disease association and four patients (10%) were diagnosed with asthma. In addition, family history of congenital disorders was found in seven patients and only seven patients (17.5%) were preterm. Moreover, 67.5 % of patients have been diagnosed at age < 3 months while 68.0% of them underwent surgery. Histopathological reports showed 100% consistency with CT reports. **Conclusions:** There is a difference in the prevalence rate of CLM in Oman compared with what have been documented in literature. The commonest CLM type in Oman was (CLO) not C-PAM. There is similar result of the commonest type of associated anomalies which is cardiac. Future studies are required to provide similar data for children referred to other institution. with extending the period of the study.