Under the patronage of His Excellency
Lieutenant General Dr Shaikh Mohammed Bin Abdulla Al Khalifa
Chairman of the Supreme Council of Health

RCSI Bahrain
2023 Annual Research Conference

Welcome Note

I am delighted to welcome you all to this research conference at RCSI Bahrain.

I would like to extend my sincere appreciation and gratitude to His Excellency Lieutenant General Dr Shaikh Mohammed bin Abdulla Al Khalifa, Chairman of the Supreme Council of Health, for his patronage of this event.

I am also grateful to our eminent speakers and the researchers who have submitted over 60 abstracts, which will enrich our learning experience today. I hope that this conference will provide a forum for new ideas and new collaborations, and act as inspiration for future projects.

Ms May Maher, Head of Student Services and Events, and Ms Aneesa Rafia, Student Services Coordinator, have my sincere thanks for their outstanding organisation of the conference, which we are sure will be a great success.

I am confident that this event will facilitate and encourage greater collaboration between us, and in turn, will foster greater science and learning in Bahrain.

Best wishes,
Professor Stephen Atkin
Head of Postgraduate Studies and Research
RCSI Bahrain

Programme

08:45-08:50 **Introduction to the Day**

Professor Stephen Atkin, Head of School of Postgraduate Studies and Research, RCSI Bahrain

08:50-09:00 **Opening Address**

Professor Sameer Otoom, President, RCSI Bahrain

09:00-09:10 **Break**

09:10-09:30 **'Spatial phenotyping identifies pathogenic mechanisms in the tissues of patients with severe COVID-19'**

Professor Paul Murray, Professor and Head of Department of Pathology, RCSI Bahrain

09:30-09:50 **'Clinical Trials in Diabetes and Obesity'**

Professor Naji Alamuddin, Deputy Head of School of Medicine, RCSI Bahrain

09:50-10:10 **'Gene-activated biomaterials to improve DFU chronic wound healing'**

Professor Michael Keogh, Associate Professor in Human Biology, Director of Research Laboratories, RCSI Bahrain

10:10-10:30 **'Prevalence of Overweight and Obesity among Nurses in Bahrain'**

Dr Husain Nasaif, Director of BSc Nursing Programme and Senior Lecturer in Nursing, RCSI Bahrain

10:30-10:50 **Question and Answer Session**

10:50-11:00 **Break**

11:00-11:10 **'Empowering Your Research Capabilities with Advanced Laboratory Technologies'**

Mr Kadhem Alkhenaizi, General Manager, ExpressMed Laboratories, Bahrain

11:10-12:10   **Research Abstracts Oral Presentations**

11:10-11:20   **Perceptions of Students on a Patient Care Assistant Program about effective characteristics of Nursing Preceptors: A cross-sectional study'**

Aysha Sanad Albuarki, Nurse Educator, KHUH

11:20-11:30   **'Prevalence of Computed Tomography Overuse for Mild Head Injury in Adults: A Single Center Experience'**

Prianna Menezes, School of Medicine, RCSI Bahrain

11:30-11:40   **'Effect Of Bovine Serum Albumin Decorated Silver Nanoparticles On Breast Cancer Cells'**

Renad Hesham AlAnsari, School of Medicine, RCSI Bahrain

11:40-11:50   **'Pain assessment and management after sleeve gastrectomy: A Comparison Study of Robotic Versus Laparoscopic Approaches'**

Mohamed ElHennawi, School of Medicine, RCSI Bahrain

11:50-12:00   **'Expression of Amyloid-Related Proteins Associated With Dementia in Polycystic Ovary Syndrome'**

Dr Alexandra Butler, Senior Research Fellow, RCSI Bahrain

12:00-12:10   **'Evaluation of the Association between Single Nucleotide Polymorphisms of Metabolizing Enzymes with the Serum Concentration of Paracetamol and its Metabolites.'**

Mustafa Hammad, RCSI Bahrain Alumni

12:10-12:20   **Closing Remarks**

Professor Stephen Atkin, Head of School of Postgraduate Studies and Research, RCSI Bahrain

12.20-14.00   **Prayer Break, lunch, and open poster session**

Poster printing sponsored by ExpressMed Laboratories, Bahrain

Biographies of the Keynote Speakers

Prof Paul Murray

Paul Murray is Professor of Pathology and Head of the Department of Pathology at RCSI Bahrain. Paul began his career in clinical laboratory medicine before obtaining Masters and PhD degrees working in Lawrence Young's lab' at the University of Birmingham where he began to study how the Epstein-Barr virus (EBV) contributes to the pathogenesis of Hodgkin lymphoma and other EBV-associated malignancies. He was awarded a prestigious Louise Buchanan Fulbright Fellowship to continue his work on EBV in the Ambinder lab' at the Johns Hopkins University before setting up his own laboratory in the University of Birmingham. He was subsequently appointed Professor of Molecular Pathology in the University of Birmingham and held Cancer Research UK and Leukaemia Research Fund Programme grants as well numerous project grants, including Medical Research Council awards. More recently, he has also worked at the University of Limerick establishing the Limerick Cancer Research Centre as its founding director. He has >200 papers with an H-index of 68. His major interests are in understanding the contribution of oncogenic viruses to cancer development. More recently he has been working on the immunopathology of COVID-19. Paul's work has contributed important discoveries in the field, including: the first description of the c-FLIP-mediated anti-apoptotic phenotype in lymphoma (Dutton et al., PNAS 2003); the discovery of aberrant mTOR kinase activation in Hodgkin lymphoma leading to clinical trials of mTOR inhibitors.

Prof Naji Alamuddin

Dr. Naji Alamuddin is a consultant endocrinologist, diabetologist, and obesity specialist at King Hamad University Hospital, Associate Professor in Medicine and Deputy Head of School of Medicine at RCSI Bahrain, and Adjunct at the Perelman School of Medicine at the University of Pennsylvania. He received his medical degree from the Royal College of Surgeons in Ireland, and Masters in Translational Research from the University of Pennsylvania. He completed an internal medicine residency at Pennsylvania Hospital, and fellowship in diabetes, endocrinology, and metabolism at the Hospital of the University of Pennsylvania. He then joined the faculty of the Perelman School of Medicine at the University of Pennsylvania as an assistant professor in medicine. He is board certified in internal medicine, endocrinology, diabetes, and metabolism, and is a Diplomate of the American Board of Obesity Medicine. He is on the maintenance of certification committee for the American Board of Obesity Medicine. He is currently enrolled in a Master of Education for Health Professionals at Johns Hopkins University. Dr. Alamuddin's research focuses on the treatment of obesity, involving behavioural, pharmacological, and surgical approaches. He is primarily interested in understanding metabolic changes associated with weight loss and bariatric surgery. He has worked on complex mechanistic human studies from conception to implementation, and has extensive research experience in the fields of lipid metabolism and obesity. Dr. Alamuddin was previously awarded an NIH K12 Mentored Clinical Scientist Development Program award. He has published in high impact journals including Journal of Clinical Oncology, Journal of Clinical Investigation, Obesity, and Obesity Surgery.

Prof Michael Keogh

Michael B. Keogh is Associate Professor in Human Biology in the School of Medicine and the Director of the Research Laboratories at the RCSI Bahrain.

Prof. Michael leads a regenerative medicine research group (TERG Bahrain) with focuses on developing gene activated biomaterials to treat soft tissue wound healing. His research group is an affiliation with the well-established TERG group at RCSI Dublin but focuses more specifically on developing collagen-based biomaterials with pro-angiogenic, pro-neurogenic and rejuvenating properties to stimulate primary and stem cells for the treatment of chronic wounds such as diabetic foot ulcerations.

Dr Husain Ali Nasaif

Husain Nasaif is a fellow of the Faculty of Nursing & Midwifery RCSI Dublin, a member of Sigma the Tua International, and a Certified Adult Nurse Practitioner in the USA. He is a Senior Nursing Lecturer and director of the undergraduate nursing programme at RCSI Bahrain. and Bahrain Nursing & Midwifery Society. He is a member of the editorial board of several international journals. In his capacity, he serves as an internal and external assessor for Ph.D. students' progress reports and final Viva. He also supervises Ph.D. and MSc nursing student theses. Currently, he is the principle of investigator and co-investigator for a couple of primary research and systematic review projects at the national, regional, and international levels.

Research Committee

We are grateful to the following colleagues for scoring the abstracts for Oral Presentation selection.

Prof Stephen Atkin – Head of School of Post Graduate Studies

Prof Steve Safrany – Associate Professor of Pharmacology

Dr Bindhu Nair – Manager – Library and Learning Resource Centre

Dr Maryam Alaradi – Senior Lecturer in Nursing

Dr Edwina Brennan - Senior Lecturer & Director of Medical Commencement Program

Dr Maikki Cullen - Academic Director of Undergraduate Research

Abstracts

Oral Presentations

Perceptions of Students on a Patient Care Assistant Program about effective characteristics of Nursing Preceptors: A cross-sectional study

Aysha Albuarki[1] 1. King Hamad University Hospital, Bahrain

Introduction/Background: Patient Care Assistant (PCA) Programme developed in a tertiary hospital in Bahrain, consists of theory classes and clinical placement. Preceptorship is the model used during clinical placement, and the preceptor is a nurse paired with the student for training. Variation in preference of preceptors' characteristics existed. Knowle's Adult Learning Theory (1985) guided the study. The aim is to assess PCA students' perceptions about effective characteristics of preceptors. Methods: A quantitative, descriptive, cross-sectional design used through Nursing Clinical Teacher Effectiveness Inventory (NCTEI) developed by Knox and Mogan (1985). Fifty-one students were asked to rate the characteristics' perceived importance on a 7-point Likert scale. Data analysed by descriptive and comparative tests. Results: Students were 87.8% female and 12.2% male, and the age range was 18- 29. The response rate was 96%. The highest importance category was Interpersonal Relations (6.05±1.25), followed by Teaching Ability (5.61±1.16), Evaluation (5.59±1.30), Nursing Competence (5.58±1.25) and Personality (5.39±1.28). Both male (6.91±0.13) and female (5.93±1.28) students rated Interpersonal Relations the highest, while the lowest was Evaluation (6.20±0.95) for males and Personality (5.25±1.30) for females. Age groups 18-22 years and 23-29 years old rated Interpersonal Relations the highest. A negative correlation between age and the categories noticed. Conclusion/summary: This study guides nurse preceptors regarding their role and practice. It leads to an emphasis on preceptors' acquisition of skills and their enhancement. Preceptors must improve their interpersonal relations skills. Preceptors should take note of the gender and age of their students and act accordingly. Education Department to improve preceptors' programmes and orientation. Limitations were small sample size and done in one sitting. Analysing data to gender and age groups, duplicating the study on other programmes, and conducting studies on preceptorship in Bahrain are recommendations for future research.

Prevalence of Computed Tomography Overuse for Mild Head Injury in Adults: A Single Center Experience

Bedoor Al Omran[1], Jayaditya Devpal Patil[2], Prianna Menezes[3], Alekya Anala[3] 1.Department of Radiology, Bahrain Defense Force Hospital, Bahrain 2.University Hospital of Leicester NHS Trust, UK 3.School of Medicine, RCSI- MUB, Bahrain

Introduction: The Canadian CT Head Rule is one of many established guidelines for assessing the need for CT imaging in patients with minor head injuries. Adhering to such criteria would promote appropriate use of CT imaging, lower healthcare expenses, and prevent harmful radiation exposure. There is no current literature assessing the overuse of CT imaging for minor head injuries in the Kingdom of Bahrain. This study aims to evaluate CT overuse in adult patients with minor head trauma. Methods: The study was conducted at the Bahrain Defense Force hospital over 12-months from January to December 2021. All adult patients (>14 years) sustaining minor head injury and

referred from the emergency department for CT brain imaging were included. Patients presenting for other reasons or suffering moderate to severe head injuries were excluded. CT reports were retrieved for analysis. The Canadian CT Head Rule was used as a reference. Results: A total of 486 CT scans were performed. Loss of consciousness was the commonest symptom on presentation (n=74 cases). Only 12.1% of CT scans reported positive findings. Prevalence of CT overuse was highest in patients aged 21-30 years. Patients presenting with loss of consciousness showed a high overuse of CT imaging, accounting for 20.3% of all cases. Only 77.4% of cases met the Canadian CT Head Rule criteria with 22.6% defined as overuse, 95% confidence interval (0.189, 0.266). Conclusion: When referring to the Canadian CT Head Rule, CT imaging for a minor head injury in adults was overused in 22.6% of cases. Further research will be required to reveal the underlying reasons for these findings along with interventions to reduce future overuse.

Effect of Bovine Serum Albumin Decorated Silver Nanoparticles on Breast Cancer Cells

Renad Hesham Alansari1, Bushra Hasan1, Ali Zayer1, Sara Hasan1, Jude AlHaddad1, Fryad Henari1, Sultan Akhtar2, Uwe Torsten1 & G. Roshan Deen1* 1Materials for Medicine Research Group, School of Medicine, Royal College of Surgeons in Ireland (RCSI), Medical University of Bahrain, Kingdom of Bahrain. 2Department of Biophysics, Institute for Research and Medical Consultations (IRMC), Imam Abdulrahman Bin Faisal University, Dammam 31441, Saudi Arabia

Introduction: Development of nanoparticles by green methods have gained considerable research attention in medical applications such as cancer therapy, tissue engineering, and target-specific drug delivery due to non-toxicity, surface functionality, and stability. Among the green methods, protein-assisted synthesis is beneficial owing to surface functionality of nanoparticles by the proteins that act as receptors for cancer cells. In this project, we have successfully synthesized stable silver nanoparticles in the size range 15-16 nm capped with the protein, bovine serum albumin (BSA) for potential applications in cancer diagnostics and therapy. Methods:

The silver nanoparticles were synthesized by in-situ reduction of silver salt (silver nitrate) by BSA in basic pH media followed by incubation for 72 h. The protein stabilised silver nanoparticles were characterized by various advanced characterization tools such as UV-Vis spectroscopy, Fourier Transform Infra-red spectroscopy (FTIR), Transmission electron microscopy (TEM), and Energy dispersive x-ray diffraction (EDAX). The anti-cancer effect was studied using triple-negative breast cancer cell line (MDA-MB-231) and MTS assay was performed. Results:

The surface plasmon resonance peak (SPR) at 480 nm from absorption spectroscopy confirmed the formation of silver nanoparticles. The average size of the protein-coated silver nanoparticles were 16 nm and exhibited spherical morphology as shown in Figure 1 (A, B). The dark contrast on the nanoparticles is due to surface decoration by the protein and this was confirmed by FTIR. The concentration dependent activity of nanoparticles on breast cancer cells is shown in Figure 1 (C-D). Conclusion: Stable and protein-capped silver nanoparticles with low polydispersity index were successfully synthesized using BSA as the reducing and stabilising agent. The nanoparticles exhibited dose dependent activity on breast cancer cells through membrane blebbing and apoptosis. Highest activity was observed at a nanoparticle concentration of 50%. An effect on breast cancer cells was observed in all concentrations in varying degrees; starting at 10%, within one day of treatment,. The study will be extended to ovarian and liver cancer cells in the future.

PAIN ASSESSMENT AND MANAGEMENT AFTER SLEEVE GASTRECTOMY: A Comparison Study of Robotic Versus Laparoscopic Approaches

Mohamed ElHennawi[1], Dr Juan Barajas[2] 1.School of Medicine, RCSI Bahrain, 2.Cleveland Clinic Abu Dhabi

Background: Sleeve Gastrectomy (SG) is the most common bariatric procedure worldwide. As a minimally invasive procedure, SG is performed both laparoscopic and robotic-assisted techniques.A Potential advantage of the robotic-assisted is reduced postoperative pain. Studies evaluating pain assessment in robotic SG are limited and comparison between laparoscopic SG has not been reported. Evidence about pain management and its effects on pain scores in SG remains unknown. The aim of this study was to evaluate the pain scores after robotic SG compared to laparoscopic SG and to determine its correlation with the pain management. Methods: This retrospective study was conducted between September 2015 and November 2020. Patients undergoing robotic and laparoscopic SG were included (Table 1). Pain scores (Numeric Rating Scale) and pain medication use data were collected from immediate postoperative to 48-hours after surgery. Linear-mixed-effects model were used to compared pain ratings across laparoscopic and robotic groups after accounting for time and pain management. Results484 patients were included, 49 robotic SG and 435 laparoscopic SG. Patients in the robotic SG rated their pain ~0.43 points lower than laparoscopic SG (p = .035). The magnitude of this group difference is moderate (~0.5 standard deviation). During the first 48-hours postoperative, parallel time-trends were found across groups: pain scores do not significantly differ from immediate postoperative through 8-hours postoperative, then significantly drop and remain constant during 12-48 hours, favoring robotic SG (Figure 1). Conclusions: Our results suggested that robotic SG resulted in lower pain scores compared to laparoscopic SG after 12-hours postoperative.

Expression of Amyloid-Related Proteins Associated With Dementia in Polycystic Ovary Syndrome

Abu Saleh Md Moin[1], Thozhukat Sathyapalan[2], Alexandra E Butler[1] 1 Royal College of Surgeons in Ireland Bahrain, Adliya, Kingdom of Bahrain 2Academic Endocrinology, Diabetes and Metabolism, Hull York Medical School, Hull, United Kingdom

Introduction: Several risk factors in polycystic ovary syndrome (PCOS), such as obesity, hypertension and insulin resistance with a predisposition to type 2 diabetes (T2D) development, are also associated with increased risk for Alzheimer's disease (AD). We hypothesized that circulatory levels of amyloid-related proteins would be elevated in PCOS but that these dysregulated proteins would potentially be mitigated by elevated levels of proteins associated with protection from AD. Methods: Plasma levels of amyloid-related proteins were measured using Somascan proteomic analysis in a well validated PCOS database of 143 women with PCOS and 97 control women. Results: Amyloid-precursor protein (APP) (p<0.05), amyloid P-component (APCS) (p<0.001), apolipoprotein E (apoE) (p<0.01) and apoE3 (p<0.05) were elevated in PCOS, whilst alpha-synuclein (SNCA) (p<0.05) was reduced in PCOS, all features associated with increased AD risk. Correlation analyses of the AD-related proteins with protective heat shock proteins (HSPs) showed that SNCA positively correlated with HSP90 (HSP90AA1, p<0.01) and with HSP60 (HSPD1, p<0.0001). Correlations with markers of inflammation showed APCS positively correlated with interleukin-6 (IL6) (p<0.05) whilst ApoE and ApoE3 correlated positively with tumor necrosis factor-alpha (TNF-alpha) (p<0.05). Conclusion: The AD-associated protein pattern found in PCOS, with elevated APP and reduced SNCA, parallels what has been reported in patients with type 2 diabetes. This dysregulated AD-related protein expression

in PCOS is likely exacerbated by obesity and insulin resistance-related inflammation and may be modulated by protective HSP mechanisms.

Evaluation of the Association between Single Nucleotide Polymorphisms of Metabolizing Enzymes with the Serum Concentration of Paracetamol and Its Metabolites.

Mustafa Hammad[1] Kannan Sridharan[2] Ali Mohamed Qader[3] Anfal Jassim[4] Diab Eltayeb Diab[4] Betsy Abraham[5] Hasan M. S. N. Hasan[5] Sheikh Abdul Azeez Pasha[5] Shamik Shah[6] 1.Royal College of Surgeons in Ireland - Bahrain & Salmaniya Medical Complex 2. Department of Pharmacology & Therapeutics, College of Medicine and Medical Sciences, Arabian Gulf University 3. Salmaniya Medical Complex 4. Department of Molecular Medicine, College of Medicine and Medical Sciences, Al-Jawhara Center, Arabian Gulf University 5. Intensive Care Unit, Salmaniya Medical Complex 6. Department of Nephrology, Salmaniya Medical Complex

Introduction: Intravenous paracetamol is a commonly administered analgesic and antipyretic in inpatient settings. Paracetamol is metabolized by cytochrome P450 (CYP) enzymes followed by conjugating enzymes to mainly glucuronide but to a lesser extent, sulphate metabolites, and oxidative metabo-lites. Single nucleotide polymorphisms (SNPs) in the CYP enzymes result in modified enzymatic activity. The present study was carried out to evaluate the prevalence of SNPs related to paracetamol metabolism and principal metabolites in critically ill patients, and those with chronic kidney disease.The present study is a cross-sectional study carried out in adults (>21 years) requiring intravenous paracetamol as part of their standard of care. Methods: Details regarding their demographics, and renal andliver function tests were collected. Blood was withdrawn for the analysis of paracetamol and their metabolites, and the SNPs of key CYP enzymes. Paracetamol/paracetamol glucuronide (P/PG),paracetamol/paracetamol sulphate (P/PS) and PG/PS were estimated. Acute liver injury (ALI) and renal dysfunction were defined using standard definitions. Results: We observed a significant prevalence of SNPs in CYP1A2*1C, CYP3A4*3, CYP1A2*1K, CYP1A2*6, CYP2D6*10, and CYP2E1*2 amongst the 150 study participants. Those with CYP1A2*6 (CC genotype) were observed with significantly lower PG and PS concentrations, and a higher P/PS ratio; CYP2D6*10 (1/1 genotype) with a significantly lower PG concentration and a higher P/PG ratio; and CYP1A2*1K (CC genotype) was observed with a significantly higher PG/PS ratio. Good predictive accuracies were observed for determining the SNPs with the cut-off concentration of 0.29µM for PS in determining CYP1A2*1K, 0.39µM forPG and 0.32µM for PS in determining CYP1A2*6 genotype, and 0.29µM for PG in determining the CYP2D6*10 genotype. Patients with renal dysfunction were observed with significantly greater concentrations of paracetamol, PG and P/PS, and PG/PS ratios, with a lower concentration of PS. No significant differences were observed in any of the metabolites or metabolite ratios in patients with ALI. Conclusion: We have elucidated the prevalence of key CYP enzymes involved in acetaminophen metabolismin our population. Alterations in the metabolite concentrations and metabolic ratios were observed with SNPs, and in patients with renal dysfunction. Population toxicokinetic studies elucidating the dose-response relationship are essential to understand the optimized dose in this sub-population.

Poster Presentations

Assessment of Self-confidence and Body-Image Satisfaction amongst Women with Polycystic Ovarian Syndrome: A Cross-Sectional Study

Zainab I. Alkheyr[1], Anas Emteyaz[1], Simon Whitebridge[1], John Flood[1], Stephen L. Atkin[1], Khawla F. Ali[1] 1.Royal College of Surgeons in Ireland, Bahrain

Background: Polycystic ovarian syndrome (PCOS) is the most common endocrine condition of reproductive females with a prevalence reported to be up to 20% in the Arabian Gulf region[1]. PCOS can have a debilitating impact on young women's self-confidence and body-image satisfaction[2]. The aim of this study was to explore levels of self-confidence and body-image satisfaction amongst women in the Arabian Gulf region with PCOS. Methods: In a cross-sectional design, a survey web link was shared and snowballed through social media platforms. Main outcomes measures were frequency of self-reported PCOS diagnosis with related symptoms, and participants' reported levels of self-confidence and body-image satisfaction. Results: A total of 12,199 female subjects completed the survey. Mean age (SD) was 31.0 years old (7.8 years old). Of all subjects, 3,334 participants (27.3%) self-reported a diagnosis of PCOS. Mean (SD) body mass index (BMI) for the PCOS population was 28.3 kg/m2 (7.1 kg/m2) versus 26.7 kg/m2 (6.9 kg/m2) in non-PCOS participants. Amongst the PCOS population, 51.6% (n=1,720) reported symptoms of acne, 55.3% (n=1,843) acanthosis nigricans, 70.1% (n=2,338) hirsutism, 59.4% (n=1,981) male-pattern hair loss, and 58.4% (n=1,945) irregular menstruation. A total of 1,421 (42.6%) reported trying to conceive, with 46.5% (n=760) of those reporting having trouble conceiving. The majority of PCOS participants: 75.1% (n=2,505) reported wanting to lose weight. Overall, lower levels of self-confidence and satisfaction were reported amongst PCOS compared to non-PCOS participants: 61.4% (n=2,046) of PCOS participants admitted to being dissatisfied with their appearance in comparison to 49.3% (n=4,368) of non-PCOS participants. Additionally, when asked if they avoid social interactions due to body weight or appearance, 32.3% (n=1,077) answered "yes" compared to 22.3% (n=1,974) for the non-PCOS population. Moreover, when asked if they "felt attractive", 80.3% (n=7,138) in the non-PCOS population answered with "yes", compared to 73.9% (n=2,465) in the PCOS population. Conclusions: Overall, lower levels of self-confidence and body-image satisfaction were reported amongst PCOS participants compared to non-PCOS participants.

A clinical audit on the application of cardiotocography: comparison of current national practice to international guidelines.

Kawthar Nemrish[1], Khadeja Alrefaei[1], Hager Mesrati[2], Jules Coles[1], Nawal Dayoub[3]
1.Royal College of Surgeons in Ireland, Bahrain 2. Tees, Esk and Wear Valleys NHS Foundation Trust 3. NHS Foundation trust

Background/objective: To assess the current clinical intrapartum application of cardiotocography (CTG) in 4 major hospitals in Bahrain. Compliance with international evidence-based recommendations set by the NHS, NICE, ACOG, RANZCOG and FIGO guidelines was analysed. It is hypothesised the hospitals are meeting international standards for evidence-based, patient-centred CTG application. Design: A prospective design was adopted. The audit was segmented into three stages: stage 1 (pre-intervention) stage 2 (intervention and education) and stage 3 (post-intervention). A referenced audit tool adapted from international recommendations was created

to assess standards of CTG application in the four criteria of: risk factor assessment, trace interpretation, documentation, and standardised communication. Random collected CTG samples target hospitals were analysed to ensure data validity. Following Stage 1, target hospitals will be given customised recommendations with an implementation period of 3-6 months and compliance re-audited (Stage 3). Method: Convenience sampling was used, and intrapartum CTG application to 230 cases was assessed. Inclusion criteria was restricted to clinicians who directly manage and interpret CTG tracings and communicate findings with patients, family and staff. Midwives were trained to objectively observe blinded subject doctors during routine practice and complete the audit-tool. Data was analysed and results were compared to international standards of care for CTG use in intrapartum foetal monitoring. 100% compliance indicates satisfactory adherence to reference guidelines.

Results: Average compliance to guidelines for risk factor assessment ranged from (57%-93.33%) with highest variation in case-based identification of risk-factors to indicate CTG application. Hospitals were (44%-71.88%) compliant with recommendations on CTG interpretation and response escalations. Application of the "fresh-eyes" approach for interpretation varied from 28% to 90% across target hospitals. Case-based documentation was achieved (46%-77.28%) of the time. 65.38% of the time, the patient's refusal of CTG monitoring was not recorded in one target hospital. Recommendations for standardised communication achieved (41%-81.67%) compliance. Conclusions: Areas of improvement were discussed and action plans advised, followed by a final re-audit to assess post-intervention clinical application of CTG in Bahrain compared to set international guidelines. National-based guidelines to standardise practice and follow international standards are recommended.

Persistent symptoms following recovery from COVID-19: A prospective case-control study.

Halabi M[1]*, Duvuru R[2]*, AlAwadhi A[2]*, HajiJama S, Elsheikh A, AlZaabi S, Suresh S, Akram S, Iqbal A, Safi AM, Narayanan NN, Aleabova S, Elsheikh AM, Balila M, Malik Z, Khamis AH, Ho SB[2], and Patkar S. 1.Royal College of Surgeons Ireland – Bahrain 2.Mediclinic City Hospital and Mohammed Bin Rashid University of Medicine and Health Sciences, Dubai, UAE.
*Contributed equally

Background: Persisting symptoms greater than 3 months following COVID-19 infection have been widely reported. Most studies to date include follow up less than one year, no control group, and from a limited number of countries. Objective: To determine the long-term symptoms following COVID vs non-COVID respiratory infections in Dubai, UAE. Methods: Cross-sectional case control study of patients diagnosed with COVID and non-COVID respiratory infections at Mediclinic City Hospital from January 2020 to June 2021. Patient data and index infection severity obtained from medical records and patients completed a symptom questionnaire. Results: 66 patients with COVID and 55 non-COVID patients completed the survey an average of 14.9 months following the index infection. COVID vs non-COVID were similar in age (mean 47.30 vs 47.75 years), gender (65% male vs 57% male) and mean number comorbidities (1.2 vs 1.18). Severity of initial infection in COVID vs non-COVID was mild-moderate (42.9% vs 55.3%) and severe (hospitalized) (57.1% vs 44.7%). Persisting symptoms at the time of the survey were present in 17 (25.7%) COVID and in 12 (21.8%) non-COVID patients. COVID patients reported 52 different symptoms (3.0/patient) and non-COVID patients reported 29 different symptoms (2.41/patient). These symptoms were considered severe in 29.4% COVID and 16.6% non-COVID patients. The most common symptoms were

cardiorespiratory (52.9%), cognitive (35.3%), and headache (17.6%) in COVID patients and cardiorespiratory (58.3%), headache (25.0%) and fatigue (16.6%) in non-COVID patients. Patients with prior severe index infections tended to be more likely to have persisting symptoms in both groups. Conclusion: Long-term (over one year) persisting symptoms are reported following both COVID and non-COVID respiratory infections, with a trend for more frequent symptoms and particularly cognitive symptoms following COVID.

Investigating the effect of dietary gum based macromolecular crowding on age related wound healing.

Sara Abdulhadi Ebrahim Ali Hasan[1], Noof Sulaiman[1], Ashang L. Laiva[1], Michael B. Keogh[1] 1.Royal College of Surgeons in Ireland, Bahrain

Introduction: Aging decreases the ability of cells to repair and heal [1]. Recent studies have shown that the tissues' wound-healing properties can be enhanced by accelerating extracellular matrix ECM deposition using macromolecular crowding (MMC). In this study, we investigate the effect of aging on the macromolecular crowding ability of dietary gums (DGs) polysaccharides including Xanthan gum (XG), Guar Gum (GG), and Gum Arabic (GA). Methods: Human adipose-derived stem cells (hADSCs) passage number (P) 4 and 6 were treated with media containing various concentrations of (XG, GG, and GA). Normal media group was included as a control. On day 1, cell viability was evaluated using MTS assay. Immunostaining was conducted to investigate the expression of collagen I and α-SMA as well as nuclei count using DAPI staining 72h post-treatment. Results: Cell viability was concentration-dependent, reaching its maximum value with the greatest concentration. As presented in figure1, immunofluorescence images revealed that the aging cells (P6) have higher expression of the fibrosis marker α-SMA. Meanwhile, the expression of ECM protein Col I was the highest in dietary gum P4 group. Conclusion: Dietary gums have the potential to be used in cell culture as molecular crowders. However, Cellular Aging restricts their favorable effects to only healthy young cells (P4). This is demonstrated by the overall reduction of Col I expression in P6. Further studies to counteract the aging impact may focus on the adjuvant protein anti-aging addition to dietary gums. It may be possible to conduct additional research utilizing bioengineered scaffolds to evaluate their efficiency in a 3D model. References: Thanapaul RJRS, Shvedova M, Shin GH, Roh DS. An Insight into Aging, Senescence, and Their Impacts on Wound Healing. Advances in Geriatric Medicine and Research [Internet]. 2021; 3(3):[e210017 p.].

Cables2 Role in Corpus Luteum

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Introduction: Members of Cables family, Cables1 and Cables2, have similar C-terminal and PXXP motifs. They both interact with kinase enzymes. While Cables1 has been extensively studied, Cables2, which is ubiquitously expressed in mouse tissues at the RNA level, has not been investigated deeply, and its role in vivo is still unknown. In a previous published study, we created a novel knock-in mouse, referred to as *Cables2^{Tom}*, to help us gain a better understanding of *Cables2* role *in vivo*. This mouse was tagged with fluorescent reporter tdTomato, and it overexpresses *Cables2*. Studying the fluorescent signal revealed an interesting strong signal in the ovary, particularly in the corpus luteum, which is responsible for maintaining the pregnancy. Thus, this current unpublished study aims to understand this unique expression pattern of *Cables2* in the corpus luteum during pregnancy. 2 Methods: Pregnant wild-type and *Cables2$^{Tom/Tom}$* mice at gestation day 15.5 were obtained. Gestation day 0 was detected by observing a vaginal plug every morning. Litter size (embryos) was counted from both genotypes (n=4) at gestation day 15.5. Body weight was measured before anesthesia. Ovaries were collected from both genotypes (n=4), and the ovary weight adjusted by body weight was calculated by dividing the body weight by the weight of the two ovaries. Blood was collected from the inferior vena cava in anesthetized mice and progesterone hormone concentration in the serum was measured by ELISA. Results: We observed a significant reduction in the number of embryos in pregnant *Cables2$^{Tom/Tom}$* mice comparing to pregnant wild-type mice. Surprisingly, despite the lower ovary weight in pregnant *Cables2$^{Tom/Tom}$* mice, their serum progesterone concentrations were significantly higher. Conclusion: Collectively, our findings suggest that *Cables2* plays a critical role in hormone biosynthesis and/or regulation, which may affect the number of embryos and ovaries weight. Further studies are needed to elucidate its molecular mechanism.

A study into effectiveness of pre-operative CBT in reducing post-operative pain in patients with mild to severe anxiety.

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Introduction: A growing body of literature suggests that patients who are highly anxious prior to surgery typically experience greater levels of post-operative pain1, making them more susceptible to opioid addiction2. Such a dilemma challenges clinicians to manage acute post-operative pain, whilst also minimizing the risk of addiction, withdrawal, and/or CVD. Several authors have called upon researchers to investigate methods of reducing pre-operative anxiety in hopes of reducing post-operative pain. Cognitive Behavioral Therapy (CBT) is a reliable intervention for reducing anxiety, and its use prior to surgery may lessen the pain experienced by post-operative
patients. If this holds true, it allows clinicians to administer lower doses of analgesics after surgery, in turn minimizing the risks stated above. Method: 100 patients aged between 20-40 years are randomly allocated to either an experimental or control group (between-groups design). The former receives CBT, whereas the latter doesn't. The Hamilton Anxiety Scale3 measures anxiety before surgery, and only those who score between 18-30 are included in the final sample. Following surgery, post-operative pain is measured using the Numeric Rating Scale4 (longitudinal study). As different operations cause different levels of post-operative pain, only patients undergoing an appendectomy were recruited, as it is a frequently performed procedure5. Figure 1 – A diagram showing how the use of CBT prior to surgery may reduce pre-operative anxiety which in turn may reduce post-operative pain and lessen the likelihood of negative health outcomes such as addiction, withdrawal and/or CVD. Results: The results follow the Null Hypothesis if there is no statistically significant difference in postoperative pain between the experimental and control groups.

Otherwise, the results follow the Alternative Hypothesis, meaning there is a statistically significant difference between the two groups. The results may not be generalizable beyond the studied sample and surgical procedure, unless supported by additional empirical evidence. Conclusion: Medical advancement is not only contingent on the development of revolutionary pharmaceuticals, but it's also about understanding when and where pharmaceutical and psychological therapies can be used in conjunction to minimize the risks associated with certain medications.

Prevalence and Resistance Patterns of Pediatric Urinary Tract Infections in Bahrain

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Background: Urinary tract infections (UTI) are a commonly encountered infection in the pediatric age group. Knowledge of the causative pathogens and their antimicrobial resistance patterns in specific geographical locations is important to provide optimum care. The aim of this study is to describe the prevalence and the antimicrobial resistance patterns of the pathogens causing UTI in the pediatric age group in one tertiary inpatient Pediatric unit in Bahrain. Methods: This is a retrospective cross-sectional study, conducted at King Hamad University Hospital (KHUH), Bahrain. The inclusion criteria consisted of patients ≤ 14 years of age admitted to the Pediatrics department at KHUH with bacteriologically proven UTI between the months of January 2018 and May 2021. Patients who were identified to have chronic urinary tract conditions or neurodevelopmental problems involving the urinary tract were excluded from the study. Electronic medical records were used to collect data regarding the isolated pathogens and sensitivity testing results. Results: A total of 242 cases with positive culture were included. The most common bacteria causing UTI in this sample were successively Escherichia coli (68.60%), Klebsiella pneumoniae (10.30%), Proteus mirabilis (4.69%) and Pseudomonas aeruginosa (3.31%) ($p<0.01$). E. coli was most resistant to cefazolin (94%), followed by ampicillin (62.68%), whilst it was most sensitive to nitrofurantoin (98.96%) followed by amikacin (98.43%) ($p<0.01$). K. pneumoniae showed the highest rate of resistance to ampicillin (95.24%) followed by cefazolin (83.33%), meanwhile having the highest sensitivity rate to amikacin (95.24%), followed by ciprofloxacin (90.48%). P. mirabilis had the highest resistance to cefazolin (100%) followed by nitrofurantoin (87.50%), while having the highest sensitivity to piperacillin/tazobactam (100%). Conclusion: E. coli is the most common cause of UTI in the pediatric population and it was found to be most sensitive to nitrofurantoin and amikacin whilst being relatively resistant to cefazolin and ampicillin. Similarities between our study and previous studies around the world were found when comparing the antibiotics resistance patterns. Nevertheless, it is our recommendation that empirical antibiotic selection should be tailored to the local data collected from the region.

Brain abscess in cyanotic congenital heart disease – A case report

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We report a case of 5-year-old boy, known case of unoperated CHD (ventricular septal defect, atrial septal defect, patent ductus arteriosus, transposition of great arteries, and mitral valve atresia). The patient presented with fever and vomiting as the first manifestation of brain abscess. Intravenous antibiotics were started, and urgent craniotomy was done. Repeated CT scan showed no residual abscess, and the patient is doing well 5 months after surgery. The aim of this report is to highlight the importance of suspecting brain abscess in patients with uncorrected cyanotic CHD as early detection, and intervention will lead to better outcome.

Assessing Public Awareness and Current Practices for Diabetic Foot Syndrome in the MENA Region

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Background: Diabetes mellitus is a chronic multifactorial metabolic disorder, with Diabetic Foot Syndrome (DFS) being a concerning potential complication that can lead to increased morbidity and mortality which can affect the quality of life of patients. Objective: To evaluate the MENA region's prevalence of DFS, and the public knowledge of the consequences of DFS, its contributing risk factors, and their utilization of foot screening programs. Methods: This was a cross-sectional study conducted as an online self-administered survey in three languages (English, Arabic, French). The survey was distributed to patients with diabetes mellitus in MENA member countries of the International Diabetes Federation (IDF) from July 2022 to November 2022, which gathered 307 responses from 17 countries. Results: 206 out of 307 responses were included in the analysis. The mean age of respondents was 50.2, with the majority reported having Type 2 diabetes (55.3%), whereas the remainder had Type 1, or did not know (29.1% and 15.5%, respectively). 15.8% reported past diabetic foot complications, and 26.1% responded "No" to whether they have good diabetes control. Hypertension was the most common comorbidity present among respondents (54.1%). 21.2% of respondents believed that foot screening should only be done in the presence of symptoms. The majority were able to identify risk factors for DFS, particularly high blood glucose (87.0%), however, fewer patients were able to identify other significant risk factors, such as callus formation (33.3%). 12.6% of patients reported foot evaluations every 2 years, whereas the remainder had evaluations every year or less. 85.3% of respondents agreed or strongly agreed that they need more education regarding DFS. Conclusion: The prevalence of self-reported diabetic foot complications was high amongst respondents, with a majority believing that they are undereducated about DFS. Appropriate communication and educational strategies are necessary for involved healthcare providers to implement in the region.

Does creatine monohydrate supplementation accelerate androgenetic alopecia?

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Introduction/Background: Creatine monohydrate (CM), an extremely well-researched fitness supplement in terms of its ergogenic aids in fitness and exercise, taken by many to gain an edge in how they perform, comes to a standstill when questioned about its potential involvement in androgenetic alopecia (AGA). Through the findings of one paper that found an increase in dihydrotestosterone (DHT), the link between CM supplementation and the potential acceleration of AGA found its way into fitness forums plaguing the minds of the many who take this supplement day in and day out. Methods: Online database searches using PubMed, CINAHLUltimate, and Cochrane Library regarding CM supplementation and DHT levels were conducted. The only limit placed was a randomized-controlled study. This search only yielded only 1 result that fit our criteria. Results: Through the analysis of many studies regarding topics relating to CM supplementation, as well as the theoretical link between the pathogenesis of AGA and marked increases in DHT, a clear-cut answer on whether CM supplementation could pose a risk to those with AGA is yet to be seen. Conclusion: More randomized-controlled studies need to be concluded to decipher the unanswered question of whether such a popular fitness supplement, CM, could accelerate the onset and severity of AGA. No studies to date have directly assessed the relationship between CM supplementation and its potential influence on AGA.

Assessment of Healthcare Professionals' Knowledge of Radiological Procedures Performed on Lactating Mothers in Kingdom of Bahrain

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Introduction: Breastfeeding has been shown to have many physical and emotional benefits for the mother and baby. However, not many studies have addressed the health care workers' knowledge of handling radiological investigations on breastfeeding mothers. To our knowledge, this is the first study to be conducted in the Middle East. Methods: A questionnaire was formulated and distributed to healthcare workers in both the private and public sectors. The survey was made using Google Forms and consisted of 25 questions about breastfeeding practices where the respondent could answer true or false. The respondents in the study included doctors, nurses, radiology technicians, and other allied healthcare professionals. Results: The results analysis was conducted through the SPSS software. The majority of respondents answered the general questions about breastfeeding correctly, while the more specific questions about radiological contrast and imaging had varying answer trends. There was a high response rate more among the nurses, followed by doctors, then radiology technicians, and other healthcare professionals. Conclusion: Overall, there is a large variation regarding the knowledge of healthcare workers' implementation of radiological imaging on breastfeeding mothers.

A Retrospective Study on the Prognostic Patterns of Colorectal Cancer Patients: A Single Center Experience

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Introduction- The prognosis of colorectal cancer varies according to anatomical site, mutation type and tumor stage. With increasing incidence in the Kingdom of Bahrain, there is need for a better descriptive understanding of these factors to improve overall management. The primary aim of this study is to investigate anatomical, histopathological and molecular prognostic factors amongst colorectal cancer patients presenting to the Salmaniya Medical Complex, one of the largest hospitals in Bahrain. The secondary outcomes will investigate demographic data. Methods- This retrospective study was conducted over two years, from January 2019 to December 2020. A total of 101 patients with primary colorectal cancer registered on the hospital database were used for this study. The sample size was further stratified based on available data for measuring primary and secondary outcomes. Results- Approximately 65% of colorectal cancer patients had a tumor in the left side of the colon, 27.7% in the right side and 7% in the transverse colon. Overall, 25.7% of all patients had rectal involvement. The most commonly diagnosed tumor stage is pT3N0M0 (22.8%). There were 10 metastatic cases (ten to the liver, of which three had concomitant lung involvement and two had concomitant brain metastases). Majority of the mutations involved the TP53 (27.7%) and the KRAS (29%) genes. The average tumor diameter was 46.2mm, where 63% ranged between 30mm-69mm. Conclusion- The study found that majority of colorectal cancer patients at Salmaniya Medical Complex in Bahrain had relatively good overall anatomical, grade and stage prognosis but somewhat poorer molecular and tumor size prognosis.

A drug utilization and drug interaction study in renal transplant patients: Implications for an urgent need for drug deprescribing

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Background: Renal transplant patients receive several drugs concomitantly. Objective: Limited literature exists evaluating the drug use in this population that is at high risk for drug-induced acute kidney injury and complications due to under-or over-dosage of immunosuppressant drugs due to drug-drug interactions. Methods: A retrospective observational study was carried out in 269 renal transplant patients in whom either oral or parenteral drugs were evaluated. World Health Organization (WHO) indicators of drug utilization such as the average number of drugs prescribed, daily defined dose, and proportion of drugs listed as WHO essential drugs were evaluated. Details on the drugs with nephrotoxic potential were obtained. Drug-drug interactions were assessed concerning the severity (major, moderate, and minor) as well as type (pharmacokinetic, pharmacodynamic, and toxicity). Results: One-hundred and ninety-eight drugs were administered to the study participants. The median (range) total number of drugs received by the study participants was 23 (6-55). The proportion of drugs listed in the WHO essential drug database was

57.1 (16.7-100)%. Forty-six drugs with potential nephrotoxicity and seven drugs that were contra-indicated in patients with chronic renal disease/end-stage renal disease were administered to the study participants. The mean (SD) numbers of drug interactions observed amongst the study participants were 18.4 (10.1). Age (β: 0.2, 95% CI: 0.1, 0.3) and duration of renal transplantation (β: -0.3, 95% CI: -0.5, -0.1) were the significant predictors of drug burden. A total of 645 drug interactions were identified amongst the study participants (major - 240; moderate - 270; and minor - 135) of which the majority were pharmacokinetic followed by toxicity risk. Age was significantly associated with the risk of potential drug interaction (OR: 2.6, 95% CI: 1.8, 12.4; p = 0.001). Conclusion: Drug treatment in renal transplant patients poses a significant burden in terms of nephrotoxicity potential and drug-drug interactions. A dedicated ambulatory clinical pharmacy service monitoring the drug use coupled with drug deprescribing strategies are the need of the hour in this population.

A Case Report of Lifesaving Intravenous Bolus Epinephrine Administration in a Case of Severe Refractory Anaphylactic Shock

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Introduction: A potentially fatal reaction to various allergies is anaphylaxis. Reducing mortality requires early detection and management. Case Presentation: In this case study, a 31-year-old man with a history of hypertension is profiled. He visited the emergency room with headache, nausea, vomiting, discomfort in his right flank, and an elevated blood pressure (BP) of 212/134 mmHg. The patient was started on stat captopril 12.5 mg tablet and stat amlodipine 5 mg tablet for his high BP and stat diclofenac 75 mg (1 mg/kg) intramuscular (IM) for his flank pain. The patient's mucosal membranes began swelling two minutes later, but there was no urticaria or rash. Additionally, his BP abruptly fell and became unrecordable. First-line treatment was started right away, and two typical adult IM epinephrine dosages were given five minutes apart. The BP remained undetectable and a third IM epinephrine dose of 500 mcg was administered along with an intravenous (IV) epinephrine drip initiated at a rate of 4 mcg/min. The BP reached 60/40 mmHg but kept falling, thus an IV epinephrine bolus of 300 mcg (4 mcg/kg) was given and the IV epinephrine drip continued. BP risen to 126/75 mmHg and then dropped to 88/59 mmHg; a second IV epinephrine bolus of 200 mcg (2.6 mcg/kg) was administered, and BP was restored to 140/90 mmHg. Conclusion: Emergency situations demand quick identification and action. IM epinephrine is currently the main course of treatment for anaphylaxis. Multiple IM epinephrine injections might be required depending on the patient's response. By describing a case where IV bolus epinephrine was successfully administered to avert impending cardiovascular collapse, we hope our case report adds to the body of knowledge on severe refractory anaphylaxis. Highlighting the need for appropriate escalation of management given the availability of physicians with expertise.

A double blinded, randomized controlled pilot trial of intradermal solution of 0.25% finasteride and 5% minoxidil versus 5% minoxidil for the treatment of male androgenic alopecia

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Background: Oral finasteride is the standard pharmacological treatment for male androgenic alopecia. It is a 5-alpha-reductase inhibitor, which inhibits the conversion of testosterone to dihydrotestosterone, reducing serum levels. Adverse events related to sexual function have been reported with use. The combined use of topical finasteride with topical minoxidil has been studied as an efficacious treatment in male androgenic alopecia without systemic adverse events or reduction in serum DHT. This study looked at an alternative mode of delivery of finasteride with minoxidil, by intradermal injections, and its effect on serum DHT. Methods: Seventeen men with a clinical diagnosis of androgenic alopecia were randomized to 14 days of intradermal treatment of either 0.25% finasteride and 5% minoxidil or 5% minoxidil daily. The serum DHT levels were measured at baseline and at day 14, and adverse events questionnaires were self-administered. Results: The mean difference of serum DHT from baseline showed no statistical difference for both the finasteride and minoxidil group and the minoxidil group ($p > 0.05$). The independent t-test showed no statistical difference between the mean difference of serum DHT for the finasteride and minoxidil group compared to the minoxidil group. There were no adverse events reported from the participants of both groups. Conclusion: The results of this study showed that serum DHT of participants treated with 0.25% finasteride and 5% minoxidil compared to 5% minoxidil were similar, did not significantly change and no adverse events were reported.

The combative ability of Phoenix dactylifera ripening stage on Escherichia coli as an antibacterial

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Introduction / Background *Phoenix dactylifera* also known as palm date is mostly used as a traditional medicine due to its rich content in antioxidants. But the stage of ripening may dictate its ablility to combat against infectious bacteria such as *E. coli*. Methods Effect of *Phoenix dactylifera* on the inhibition of bacterial growth in Escherica coli was conducted by involving the following techniques: a) Sterilizing and setup b) Maceration: 1. Place 10grams of the date types in labelled beakers 2. Pour 15cm^3 of diethyl ether, acetone and water into the beakers 3. For each of the labelled beakers use a mortar and pestle to macerate the mixture for 4min 4. Let the beakers rest for 16hours at room temperature(23℃) 5. Then using a burette stand and clamp filter mixture into new beakers 6. Place the new beakers in a water bath set to 38°C for 20min 7. Pipette to measure 1cm^3 of the solution and centrifuge them for 10min c) Steak plate isolation method: 1. Label 4 fresh agar plates 2. Using a disposable inoculating loop gently run the loop in a zig zag pattern away from you to take a layer of the bacteria 3. Incubate the plates at 26°C for 24 hours 4. Place sterilized paper disc and place it in the date solution for 10seconds, once completed place disk in the center of the agar plate Results The experiment was repeated 10 times for each ripening stage of date. The following table was produced after processing the data by measuring the zone of inhibition(mm) via a vernier caliper: Conclusion Throughout the repetitions of the experiment the reoccurring

trends displayed an increase in *E. coli* inhibition throughout the maturation process: Rushdi<Sakayi madina<Barhi madina<Kudri madina; suggesting that dates from the Kudri stage could inhibit *E. coli* growth the best.

The Association between Stress, Emotional States and Tinnitus

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Extensive literature supporting the view of tinnitus induced stress in patients is available. However, limited evidence has been produced studying the opposite, that is, does stress cause tinnitus? The hypothalamus pituitary adrenal axis, one of the main neuroendocrine systems involved in stress response, is commonly disturbed in tinnitus patients. Patients with chronic tinnitus have been shown to develop abnormal responses to psycho-social stress, where the hypothalamus pituitary adrenal axis response is weaker and delayed, suggesting chronic stress contributes to the development of chronic tinnitus. The sympathetic branch of the autonomic nervous system also plays a major role in stress response and its chronic hyperactivity seems to be involved in developing tinnitus. Psycho-social stress has been shown to share the same probability of developing tinnitus as occupational noise and contributes to worsening tinnitus. Additionally, exposure to high stress levels and occupational noise doubles the likelihood of developing tinnitus. Interestingly, short-term stress has been shown to protect the cochlea in animals, but chronic stress exposure has negative consequences. Emotional stress also worsens pre-existing tinnitus and is identified as an important indicator of tinnitus severity. Although there is limited body of literature, stress does seem to play a vital role in the development of tinnitus. This review aims to highlight the association between stress, emotional states and the development of tinnitus while also addressing the neural and hormonal pathways involved.

Wilms tumor and Consanguinity: is there a link

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Wilms tumor, the second most common malignancy in childhood, is associated with hypertension in nearly half the cases, but associated consanguinity is rarely come across and no direct association between the incidence of nephroblastoma and consanguinity has been noted in current literature. We present a rare case of Wilms tumor in a patient with consanguineous parents. The patient is a 4-year-old female that presented with colicky abdominal pain associated with an abdominal mass, fever over one month and hypertension. There were no congenital anomalies or urinary symptoms. Both parents were first degree relatives. Radiological imaging confirmed a large right renal mass. The patient underwent surgery and histopathology confirmed a diagnosis of Wilms tumor. Post operative course was uneventful and chemotherapeutic treatment was initiated. The findings in our case highlight a potential relationship between Wilms tumor and consanguinity that warrants further research.

Impact of De-escalation training on nurses perceived self-efficacy in dealing with aggressive patients in the Emergency Department: Interventional study.

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Background: Emergency departments (EDs) are high-risk environments for the most acute patient-related violence. Patient-related aggression toward ED nurses might cause enduring physical and psychological impacts as well as negatively affect nurses' self-efficacy. The literature indicates that DE training can enhance knowledge, and self-efficacy. However, there is unclarity about elements that should be included in DE training in EDs since most studies were conducted in mental health settings. Thus, highlights the need for further research to identify additional elements to be regarded in DE training programs for nurses in EDs. Aim: This study aims to assess the impact of DE training on the perceived self-efficacy of ED nurses in dealing with aggressive patients. Methodology: A quasi-interventional one-group pre- and post-test design was utilized to recruit a convenient sample of 23 nurses from two EDs in a medical centre in the eastern province of Saudi Arabia. The study conducted a one-day DE training course with simulation scenarios. The study's primary outcomes were self-efficacy in risk assessment, management and coping with patient-related aggression. All outcomes were measured before and immediately after the DE training course using; the Risk Assessment and Management Self-Efficacy Scale (RAMSES) and Confidence in Coping with Patient Aggression Instrument (CCPAI). Results: Most participants were less than 30 years old (n=12, 52.2 %), held a bachelor's degree in nursing (n=21, 91.3 %), and had 1-5 years of experience (39 %). Following the training, the results showed that the DE training course has a large and statistically significant impact on ED nurses' perceived self-efficacy in dealing with patient-related aggression (r=0.9, P<0.001). Participants' age and years of working experience were associated with their perceived self-efficacy with patient-related aggression.

Conclusion: The findings from this study showed that the DE training course improved the perceived self-efficacy in dealing with patient-related aggression. The gained baseline findings show low perceived self-efficacy in dealing with patient-related aggression among ED nurses, especially junior nurses. The DE should be included as an essential part of EDs training programs, especially in basic orientation programs. Furthermore, a follow-up study assessing the benefits of the current training is warranted to assess study outcomes in clinical practice.

The Quality of Care Transition from Hospital to Home: The Older Patients' Perception

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Aging is connected to radical increases in healthcare costs which may cause more frequent hospital re-admissions. Care transition of older patients may place them at risk for unfortunate complications resulting from organizational inefficiency. It is thus an important care aspect that is associated with healthcare systems' efficiencies. This study aimed to evaluate the older patients' perception of their care as they transit from hospital to home. The objectives were to: Identify the gaps in transition of care, Identify the priorities of care needs as perceived by older patients in transition and Identify areas for improvement. This cross sectional quantitative study involved a

telephone survey using the 'Partners at Care Transitions Measure (PACT-M)'. A convenience sampling approach was employed to select in-patients over 65 years who were discharged from the medical/surgical wards in a University Hospital in Bahrain. 114 participants were involved where data collected at two phases and analysis performed using chi-square test, Wilcoxon signed rank test, Monte Carlo simulated Kruskal-Wallis test and Content Analysis approach. Participants reported a significant improvement in the care quality a month after discharge compared to the care quality one week after discharge. Interestingly, participants with no comorbidities reported higher care quality when compared to their counterparts, and those without family support reported better discharge quality and poorer self-care compared to those having family support. Health care leaders should support further studies and identify strategies to improve older patients' experience of care transition through promoting family and community support and self-care motivation.

The Interplay Between Androgens and the Immune Response in Polycystic Ovary Syndrome

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Introduction/Background: Polycystic ovary syndrome (PCOS) is characterized by a wide range of features, including ovarian disease and infertility, insulin resistance, and hyperandrogenism. The Rotterdam criteria state that two conditions must be present to diagnose PCOS: hyperandrogenism, polycystic ovaries, and/or oligo/anovulation. This literature review explores various aspects of the pathophysiology of PCOS. Methods: We conducted a literature search in databases including PubMed, NCBI, and ScienceDirect; we then examined and discussed relevant articles published in English. Results: Women with PCOS often exhibit symptoms of hyperandrogenemia, insulin resistance, and obesity. The steroidogenic pathway in PCOS women is dysfunctional, resulting in an increased amount of androstenedione and testosterone in women. The genes CYP11, CYP17, CYP19, and cytokine IFN-γ also contribute to hyperandrogenemia. Our research confirms that hyperinsulinemia and insulin resistance in women with PCOS is caused by serine phosphorylation of the cytochrome p450 17α-hydroxylase enzyme involved in androgen synthesis. It also demonstrates that women with PCOS have unutilized lipid stores contributing to obesity and type 2 diabetes mellitus (T2DM). Additionally, the JNK pathway increases P450c17 activity, which increases androgens activating the AKT/PI3K pathway, resulting in insulin resistance and obesity. Furthermore, it was found that hyperandrogenism in PCOS stimulates certain immune cells, such as monocytes and neutrophils, which results in increased production of cytokines, including TNF-α (impairs the insulin receptor), IL-1 (disrupts follicular growth and ovulation), and IL-6 (promotes the multiplication of adipocytes and obesity). Women with PCOS also secrete increased adipocytes such as leptin and resistin and less adiponectin, compromising immune function. Conclusion/summary: There is a complex network of interactions between androgen and metabolic pathways, immune cells, cytokines, signaling pathways, obesity, and insulin resistance. Therefore, the pathogenesis of PCOS remains convoluted, and future research should focus on the finer details of immunopathogenesis.

Is Gynecology Ready for Robotics? The Current Status of Robotic Surgery in Gynecology.

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Robotic surgery is the use of computer technology in conjunction with robot systems to perform medical procedures. Upon approval for use in gynaecologic surgery in 2005, robotic assisted (RA) surgery has been on an uprise for various uses within the field of gynaecology. As such, companies have seized this opportunity to enter such an expanding field which has led to the emergence of many robotic systems with the most prominent being the Da Vinci, Hugo RAS and Senhance surgical systems. Several studies have put the conventional laparoscopic and open surgical techniques under question by demonstrating the efficacy and feasibility of RA surgery. The aim of this review is to evaluate the influence of RA surgery on gynaecology and its implications on shaping the future of surgery. This study will further discuss the impact of RA surgery on benign and malignant gynaecological conditions in order to appreciate its significance in the field.

Fatty Acid Methyl Ester composition comparison of prominent animal milks consumed within the Middle East

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Introduction/background: Cow, Sheep, Camel and Goat animal milk products are commonly consumed within the Middle East. While all have proven to aid in overall health and growth, the natural fat composition is thought to vary between each animal type. Hence the natural fat constituents of different animal milks had been assessed and compared. Method: Fat Separation and Derivatization: 1. Mix 100mL of the test sample with 80mL of 96% ethanol and 20mL ammonia solution(14mol/l) in a separating funnel. 2. Add 100mL of diethyl ether 3. Add 100 mL of n-pentane 4. Separation of fat in 100 milliliters of raw milk samples by centrifuging at 17800×g at 4°C for 30min in a Beckman J2-MC centrifuge 5. The fat layer was moved to a microtube and left at room temperature for 30min before being microcentrifuged for 20mins at room temperature at 19,300×g. 6. Top layer removed for analysis after the second centrifugation. Gas Chromatography: The PerkinElmer chromatograph was used with a flame-ionization detector and autosampler to analyze fatty acid methyl esters. Results: The composition of fatty acids, measured via Area % varied greatly between goat, cow and sheep milk. Oleic Acid, Palmitic Acid and Mystric Acid were seen to portray the greatest composition and variation within these animal milks. However, Camel milk portrayed a completely different fatty acid composition pattern, where most were not found within other animal milks. Conclusion: Using retention time from the gas chromatograph, specific types of fatty acids in the cow, sheep and goat milk found that the three most abundant methyl esters in the sample were: Oleic acid, Palmitic acid, and Myristic acid – all of which varied in abundancy. In retrospect, camel milk portrayed a vastly different fatty acid composition. The fatty acid that make up camel milk were not found in any other animal milk types.

Assessing Oncology Nurses' Knowledge about Physical Exercise for Cancer Patients under Treatment: A Cross sectional study.

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Background: Cancer is a major health crisis worldwide. Advanced cancer treatment improves patients' survival rate; however, the quality of life (QOL) is compromised due to treatment side effects. Cancer-related-fatigue (CRF) is frequently experienced by cancer patients(80-90%).Physical exercise (PE) reduces CRF considerably. At the study site, quality department audit report shows frequent interruption during cancer treatment due to high CRF levels. In 2021, a total of 188 patients withheld their radiation treatment due to CRF. No published study found sufficiently addressing oncology nurses' knowledge level on the benefits of PE for cancer patients during treatment in Kingdom of Bahrain. Study aimed to assess the current knowledge level of oncology nurses regarding the PE for cancer patients undergoing treatment. Methodology: An online questionnaire, adopted from Roberta Anderson (2018), was administered to assess oncology nurses' knowledge. The questionnaire was modified to fit the current study aim. All oncology nurses (324 nurses), was chosen through convenience sampling for the descriptive cross- sectional study. However, 185 responses out of the 244 recorded were effectively completed and analyzed. Data was analyzed using SPSS version25; descriptive analyses were utilized to describe the demographic characteristics and level of knowledge, and parametric inferential statistics was used to measure the association between variables. The Results: Overall, participants demonstrated low level of knowledge regarding PE for oncology patients (42.2% answered the knowledge items correctly). The score expressed that the participants' demographic characteristics were not associated with their level of knowledge. Statistical analysis showed a weak correlation between participants' level of knowledge in terms of PE and their clinical experience length (p<0.0001). while their oncology clinical experience length and knowledge about PE indicated weak correlation(p=0.006). Finally, participants stated to have previous training on PE for cancer patients scored significantly higher than others on the knowledge scale (p=0.020). Establishing a baseline information on the current oncology nurse's knowledge level may improve nursing practice. Results will be used to launch and implement a strategy such as training educational program. Conclusion and Recommendations: The study has successfully assessed the current knowledge level of oncology nurses in terms of incorporating PE for cancer patients undergoing treatment. The statistical treatment of data has demonstrated the correlations between the dimensions explored. The current study recommends educational initiatives to be implemented to enhance nurses' knowledge and ensure their capability to educate cancer patients about PE to avoid treatment interruption due to high CRF level.

The role of Community Nurses in educating the families of fully dependent patients regarding Pressure Ulcer Care in Bahrain: A reflective practice case study.

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Background: Community home visits are integral parts of the primary healthcare services in Bahrain, where Community Health Nurses ensure proper home and family circumstances assessment is in place to increase patient outcomes and targeted treatment modalities, tailored to the patient's needs. As evidenced by the literature, fully dependent patients in community are more susceptible

to develop Pressure-Ulcer. A well-developed care program led by Community-Nurses will significantly improve, manage, and benefit cases to fully comprehend the needs and education required for caregivers on Pressure-Ulcer care including prevention, proper assessment and treatment. Objectives: To explore and discuss the issues emerging from the living experience, critique and validate the practice of Community Nursing Care for dependent patients with Pressure-Ulcer. Methods: The case study was guided by the Gibbs' Reflective Cycle Model. This model discusses the living experience, thoughts and feelings, evaluation and analysis of the case to draw a conclusion on the desired action plans regarding the managements of Pressure-Ulcer of patients in the community. Findings: Findings proved that Pressure-Ulcer development could be avoidable if appropriate strategies and action plans were used. Also, caregivers can experience burden which result in negligence. Therefore, operating Community Nurses health services and multidisciplinary team approaches encompassing a full riskassessments and providing education to the family was pivotal to increase patient's outcome and prevention of Pressure-Ulcer in community setting. Conclusion: Healthcare providers are at a unique position to educate the community. Therefore, a well-developed program consisting of a detailed assessment and tailored education ensure significant benefits in care.

The effectiveness of BLS training on nursing students' confidence in performing CPR.

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Background: Cardiopulmonary arrest (CA) is a medical emergency that requires immediate cardiopulmonary resuscitation (CPR) by a bystander to improve the patient's survival rate and health outcomes. Nurses are usually the first responders to a CA, initiating basic life support (BLS) until the advanced cardiac life support team arrives. Likewise, nursing students frequently work in clinical placements, spending most of their time at the patients' bedsides. Students who lack adequate skills in BLS may experience anxiety and low self-esteem, preventing them from delivering successful CPR or, performing it at all. Students' knowledge, skills, and confidence during CPR improves through periodic repetition and updating of both theoretical and applied training on BLS. Methods: To facilitate the search for articles in various databases, the research question was divided into the following keywords: BLS, CA, knowledge, attitude, nursing students, CPR. The inclusion criteria were peer-reviewed English articles that were published within the past 10 years which included the keywords. The exclusion criteria were non-English studies and studies that did not focus on undergraduate nursing students. The six main articles were retrieved from PubMed and Proquest databases as they met the research criteria. A critical appraisal tool was used to analyze and critique the articles derived from the databases based on the research question, which were broken down into the data extraction sheet. Results: A statistically significant positive correlation between BLS education satisfaction and CPR self-efficacy was found in the studies. Delivering BLS clinical simulation courses to undergraduate nursing students with high-fidelity manikins, and other devices that provide corrective feedback during their BLS training improved their resuscitation skills, compression rate, and confidence in their abilities to deliver accurate, high-quality CPR to those who did not. All studies found that after BLS training, the level of confidence, knowledge, and practical skill scores among nursing students were higher compared to pre-training

scores. Conclusion: The reviewed studies indicated that CPR proficiency in nursing students can dramatically improve through ongoing, up-to-date theoretical and practical BLS training.

Hydroflotation to Relieve Shoulder Pain After Minimally Invasive Surgery. Fact or Fiction?

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Background: Minimally invasive surgery (MIS) has become the gold standard in surgical practice, offering unparalleled benefits such as decreased intraoperative blood loss, shorter hospital stays, and faster recovery time. With that being said, it's important to note that MIS is not flawless. A notable drawback of MIS is post laparoscopic shoulder pain which affects 35% - 80% of patients. Methods: Patient data were collected from February 2022 to July 2022. Patients that had undergone any laparoscopic surgical procedure for benign disease above the age of 18 were included in this study. The patients in the experiment group were compared to the control group, with the primary outcome being the amount of pain. Results: A total of 27 patients that underwent hydroflotation were matched to 28 controls. The hydroflotation group was found to experience significantly (P>0.05) less pain postoperatively. Conclusion: This pilot study suggests that hydroflotation may be a useful technique in preventing post laparoscopic pain and ultimately promoting faster recovery times after MIS. With that being said, further larger studies are needed to validate our results.

Prostate Cancer – An Emerging Danger to the Healthcare System and its Awareness in the South Asian Population: A Cross Sectional Analysis.

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Introduction:Prostate cancer (PC) is the second most frequent malignancy in males and the sixth most common cause of cancer-related deaths globally. It has been found to affect 99.9% of men over 50, although it can be devastating for men in their third and fourth decades of life. In Asia, 9.4 men out of every 100,000 are diagnosed with prostate cancer, making it the most common form of cancer in males there. Methodology: This was a cross sectional study conducted from August to October 2022 in a tertiary care hospital. The overall determined sample size was n=350, which was calculated at 50% of the total population, and the participants were chosen using a non-probability convenient sampling procedure. Quantitative assessment of knowledge was performed by a self-developed questionnaire and qualitative assessment was performed by the direct interviews from the participants. Results: There were n=378 total (57.6% male, 42.3% female) participants in the study. Amongst the participants 81.7% knew about prostate gland, 55.6% were aware of screening methods. Amongst the males 92.6% reported that they have not been advised for PC screening. The depth of information amongst both the genders was comparable (pvalue= >0.05). Qualitative analysis highlighted that population needs awareness regarding screening, symptoms and treatment of PC. Conclusion: There is a serious dearth of reliable information on prostate cancer, its screening methods and treatment modalities amongst the population. Hence, government and

healthcare professionals must contribute and spread the awareness regarding the prostate cancer, its screening methods to reduce the prevalence in the developing

Abdominal Wall Hernia: Have Aetiological Factors Changed?

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Comprehensive studies have suggested that up to twenty-seven percent (27%) of males and three percent (3%) of females will develop an abdominal-wall hernia during their lifetime. Most textbooks attribute abdominal wall hernia to traditionally-established risk-factors such as lifting, chronic cough, chronic constipation, prostatic outflow obstruction, and obesity. The last decade, however, has seen changes in occupational, leisure, and healthcare practices that may have resulted in a change in prevalence of some of these risk factors, and the surfacing of others. The sample population of this study contains 277 patients, with a confirmed diagnosis of abdominal-wall hernia for over 18-month. All patients filled a questionnaire on relevant medical, social and family history, including their gym activity and occupational level of physical activity. All data collected prospectively was retained in an MS-excel database. Data were later transferred to SPSS for statistical analysis. The aim of this study is to report the risk-factors of abdominal-wall hernia that our sample patients have cited as the most probable precipitant to their hernia, taking particular note of their Gym activity, among other occupational and health-related risk factors. Among the 277 patients with body wall hernias (85.6% males), lifting (whether occupational or at home) was the top-most cited risk-factor of abdominal-wall hernia to have been reportedly precipitated hernia in 120 patients (43.3%). Gym activity came on second place having been cited to be the most-likely cause of hernia in 71 patients (25.6%). In conclusion, we identified an apparent association between the use (or abuse) of gym equipment and the development of abdominal wall hernia. We suggest that while fitness activities are encouraged, we would also encourage greater compliance with guidelines and more supervised use of gym equipment and exercise regimens. A prospective study featuring people signing up for gym membership would make for an interesting further study.

Green synthesis of gold nanoparticles using Gum Arabic extract, characterization, and fluorescence activity in Au/ Coumarin 153 Dye

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Introduction/Background: Nanoparticles have wide-range applications in many fields like medicine, physics, and electronics. Many physical, biological, and chemical methods have been used to synthesize gold nanoparticles (AuNPs). Green-synthesis of AuNPs using plants is advantageous to conventional methods due to its simplicity, cost-effectiveness, and environmentally friendly. This study reports the green synthesis of AuNPs using Gum Arabic extract. Methods: Gum Arabic extract (GE) was made by adding 0.375g Gum Arabic powder to 25ml of distilled water. A 0.1mM HAuCL4 solution was made by adding 0.023g of gold (III) chloride trihydrate powder (HAuCl4) to 60ml of double deionized water. To prepare AuNPs, Different volumes of GE were added to fixed volumes of HAuCl4(III) solution, and then microwave heated for 15 seconds. Coumarin solution of concentration 0.5g/L and BSA solution of concentration of 25g/L were prepared. Results: After adding GE to gold solution and heating, change of the solutions' colour from light-yellow to

purplered was observed, indicating the formation of AuNPs. UV-vis further confirmed the presence of AuNPs with the presence of surface-plasmon-resonance (SPR) peak at around 523-532nm. TEM reveals the average size of GAAuNPs is 15nm. he AuNP's quenching ability was confirmed as the intensity of the Couramin-153 fluorescence decreased with added AuNPs. Upon adding Albumin to the Couramin-153-AuNP mixture, the fluorescence of Couramin-153 recovered. This process of (turn-on fluorescence) is potentially useful for detection/identification of proteins in buffer and/or serum. Conclusion/Summary: Gold-nanoparticles were synthesized using an eco-friendly technique. The ability of the synthesized AuNP as a quencher of couramin-153 dye was investigated, and found that in the presence of AuNP, the fluorescence intensity peak of Couramin-153 is quenched. The fluorescence of the mixture of couramin-153- AuNP was recovered in the presence of bovine albumin protein. This process of (turn-on fluorescence) is potentially useful for the detection/identification of proteins in buffer/serum.

Green Synthesis of Metallic Nanoparticles using Cinnamomum based extracts and their Applications – Review

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Introduction/Background: Nanotechnology is the science that deals with matter with sizes of (1-100nm). It involves the design, synthesis, characterization and application of these nanoscale materials. MNPs are known for their high surface-area to volume-ratio, pore size, surface charge density, low melting point, and distinguishably good optical/electrical properties. MNPs exhibit an excellent drug delivery system, effective contrast agent for extensive body tissue imaging, and an effective antimicrobial activity. Biological synthesis is a simple, cost-effective and an environment-friendly technique in synthesizing MNPs. It is a bottom-up technique that utilizes organisms' enzymes/bio-compounds as capping and reducing agents. Cinnamomum species are known for their intrinsic antimicrobial, antidiabetic, antioxidant, anti-inflammatory, anticance,and neuroprotective properties. This literature review briefly describes and summaries the lab articles that greenly synthesized MNPs using Cinnamomum species' extracts. It describes, the methodology of the synthesis, characterization of the nanoparticles and the results of their application. Methods: A literature search have been conducted on databases Pubmed, ScienceDirect, and Frontier on the topic of green-synthesis of metal nanoparticles using Cinnamomum based extracts. Various articles have been collected reporting the methodology of utilizing Cinnamomum species' extracts as reducing and capping agents. Only original lab articles were considered. Results: Various types of metallic nanoparticles have been successfully synthesized (Table.1) Most common Cinnamomum species that have been utilized as extracts are Cinnamomum tamala. Most common applications tested were the MNPs' antibacterial, antiviral, antifungal, antidiabetic and anticancerous activity, in order. Other notable applications were the NPs role in the treatment of mice induced polycystic ovarian syndrome and Parkinson-like neurodegenerative disease. Conclusion/Summary: Cinnamomum species have been successfully utilized in the green-synthesis of MNPs. These MNPs have proven their efficacy in various fields of medicine and biology, especially their antibacterial activity. Notably, the newly synthesized NPs have shown promising results in treating polycystic ovarian syndrome in rats.

Intestinal Stomas: Current Practice and Challenges; An Institutional Review

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Introduction: A stoma is an artificial anastomosis of the gastrointestinal tract to the abdominal wall skin to diverge the fecal stream.1 Common indications for stomas are fecal diversion, protecting anastomosis and bowel decompression.2 3Stomas have a high complication rate compared to other surgical procedures, with a rate averaging 40 percent and ranging from 14 to 79 percent. 6 Peristomal skin irritation was the most common early complication.7 While parastomal hernias were the most common late complication. Methods: This research was conducted at King Hamad University Hospital (KHUH) in the Kingdom of Bahrain. Our study included patients who underwent ileostomies and colostomies. The inclusion criteria included adult patients who are 15 years and older, whether it were emergency or elective cases and with ASA 0-4. The excluded patients were those who had their stoma done outside KHUH and those patients who were not following up in the hyperbaric department in our hospital. The study was done using retrospective study design. There was a sample size of 98 which included the patients with stomas that are following up with the hyperbaric team between January 2018 and February 2021. Results: The breakdown of our indications for stoma formation and the breakdown of all our documented complications is shown in the above figure. Conclusion: Within our institutional study, 63.3% of stoma complications, majority consisted of skin problems. The creation of a stoma care unit would offer continuity of care to patients and aid them in returning to optimal quality of life. The goal will be met through pre-operative and postoperative education regarding the surgery and stoma formation. This includes pre-operative stoma marking and siting, as well as improved recovery through instruction from knowledgeable stoma care specialists regarding hands-on stoma care. Finally, patients will be assisted through specialized stoma clinics.

Outcomes of primary hypospadias repair: a single center experience

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Introduction- Hypospadias is a congenital malformation which involves the displacement of the urethral orifice on the underside of the penis. The mainstay treatment of hypospadias is surgery. Currently, there is no literature assessing hypospadias repair outcomes in the Kingdom of Bahrain. This study aims to provide descriptive data on surgical, function and cosmetic outcomes of hypospadias repair at the King Hamad University Hospital, Bahrain. Method- Data on patients who underwent hypospadias repair from Jan 2012 to Dec 2020 were reviewed. Patients' parents were contacted over a 2-week period for an outpatient assessment of functional and cosmetic outcome using an original questionnaire and the Pediatric Penile Perception Score (PPPS) respectively. All responses were recorded using the four-point Likert scale. Surgical outcomes were assessed using post operative notes. All data was anonymized. The study was approved by the KHUH IRB. Results- Of the 29 patients who underwent surgical intervention for hypospadias, 15 patients consented to be interviewed. The mean age of the study population was 2.466 (SD 0.496). Majority (53.30%) had their urethra located coronally. Both parent and doctor PPPS reports had similar results with majority of patients being very satisfied with all parameters. In regards to functional outcomes, no

patients reported any straining on initiation post-operatively. Conclusion- Our study noted overall high satisfaction in terms of surgical, cosmetic and functional outcomes of hypospadias repair. However, further analysis with a larger sample size will be required to better assess post repair outcomes.

The Role of Heat Shock Proteins in the Pathogenesis of Polycystic Ovarian Syndrome: A Review of the Literature

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Polycystic ovarian syndrome (PCOS) is the most common endocrine disorder in women of reproductive age and post-menopausal women. PCOS is a multifactorial heterogeneous disorder associated with a variety of etiologies, outcomes, and clinical manifestations. However, the pathophysiology of PCOS is still unclear. Heat shock proteins (HSPs) have recently been investigated for their role in the pathogenesis of PCOS. HSPs are a class of proteins that act as molecular chaperones and maintain cellular proteostasis. More recently, their actions beyond that of molecular chaperones have highlighted their pathogenic role in several diseases. In PCOS, different HSP family members show abnormal expression that affects the proliferation and apoptotic rates of ovarian cells as well as immunological processes. HSP dysregulation in the ovaries of PCOS subjects leads to a proliferation/apoptosis imbalance that mechanistically impacts follicle stage development, resulting in polycystic ovaries. Moreover, HSPs may play a role in the pathogenesis of PCOS-associated conditions. Recent studies on HSP activity during therapeutic interventions for PCOS suggest that modulating HSP activity may lead to novel treatment strategies. In this review, we summarize what is currently known regarding the role of HSPs in the pathogenesis of PCOS and their potential role in the treatment of PCOS, and we outline areas for future research.

Introducing a Networking Platform in X University in Bahrain

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Background Transitioning to clinical years is a problem often reported in undergraduate medical schools. Problem situation Students and Clinical Lecturers (CLs) at hospital sites find difficulty in communication and in locating information related to clinical rotations. This limitation negatively impacts student's clinical learning experiences. Aim To introduce an online Collegiate Networking Platform (CNP), providing a mechanism for direct communication between hospital staff and students and disseminating information between students and their CLs at clinical sites. The app is accessible on multiple electronic devices. Methods The Senior and Swailes model for implementation and the CIPP framework for evaluation were utilised. An exploratory survey identified students' concerns about transitioning to clinical sites, which assisted the development of the CNP. Following the CNP launch, usage data reports were extracted. An evaluation survey compared student perceptions and the impact of the CNP on students learning experiences. Intervention The CNP, an internal web-based application, was developed. This collated information

about CLs, clinical sites, and clinical rotations to provide to students prior to joining clinical programmes. 20 CLs from 3 hospitals and 161 students were invited to enrol and input information about themselves onto individual profile pages. Results and Conclusion The CNP went live on schedule, 15 CLs and 49 students successfully registered. Preliminary results showed improvement in student perceptions of clinical rotations when using the CNP, but only when their CLs were enrolled in the app. All participants agreed that introducing a networking platform would benefit students' clinical learning experience. We suggest conducting this project on a broader scale, with greater CL enrolment.

Scoping Review of Autologous Fat Transfer and its Emerging Efficacy in Various Clinical Contexts: Scars, Craniomaxillofacial Reconstruction, and Hand Deformities

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Autologous fat transfer (AFT) aims to restore the subdermal layer and its functions, functions which are lost in the formation of scar tissue. It is a surgical procedure in which adipose tissue is harvested from the subcutaneous layer of a donor area, usually from the thigh or abdomen by liposuction, and injected into the scar tissue's subdermal layer. In the present day, AFT finds a multitude of clinical applications, ranging from cosmetic procedures to life-saving procedures and sinister pathologies. While there is mounting fervor surrounding its efficacy and clinical utility, data regarding its application in scar-related pathologies remains scarce. The aim of the present review is to elucidate the utility of AFT in scarring pathologies, particularly those that exert a significant impact on a patient's psychological well-being.

The Role of Platelets in Hypoglycemia-Induced Cardiovascular Disease: A Review of the Literature

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Cardiovascular diseases (CVDs) are the leading cause of death globally as well as the leading cause of mortality and morbidity in type 2 diabetes (T2D) patients. Results from large interventional studies have suggested hyperglycemia and poor glycemic control to be largely responsible for the development of CVDs. However, the association between hypoglycemia and cardiovascular events is also a key pathophysiological factor in the development of CVDs. Hypoglycemia is especially prevalent in T2D patients treated with oral sulfonylurea agents or exogenous insulin, increasing the susceptibility of this population to cardiovascular events. The adverse cardiovascular risk of hypoglycemia can persist even after the blood glucose levels have been normalized. Hypoglycemia may lead to vascular disease through mechanisms such as enhanced coagulation, oxidative stress, vascular inflammation, endothelial dysfunction, and platelet activation. In the following review, we summarize the evidence for the role of hypoglycemia in platelet activation and the subsequent effects this may have on the development of CVD. In addition, we review current evidence for the effectiveness of therapies in reducing the risk of CVDs.

β-Amyloid Inhibition by Synthetic Heparan Sulfate in Alzheimer's Disease

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Alzheimer's disease (AD) is the most common neurodegenerative disorder and the leading cause of dementia worldwide. In the late stages of Alzheimer's disease, the primary abnormality is the proteolysis of transmembrane amyloid precursor protein (APP) into amyloid-β (Aβ) peptides, resulting in the accumulation of aggregated Aβ peptides in the brain as insoluble plaques. APP is cleaved by the β-amyloid converting enzyme (BACE-1), also known as β-secretase, which is regulated by heparan sulfate (HS) to generate pathological Aβ peptides. Our objective is to investigate different synthetic HS dendrimers in vitro in order to find dendrimers that inhibit BACE-1 and prevent the formation of Aβ peptides.We used 16 HS dendrimers to test HS inhibitory effect on BACE-1 using a modified fluorescence resonance energy transfer assay, where active BACE-1 cleaves a substrate to increase fluorescence. Our findings show that dendrimers 5 (octaS IdoA tetramer), 7 (octaS tetramer GlcA w tetrasacch), and 8 (hexadecaS GlcA tetramer w tetrasacch) of HS have the strongest inhibitory effect on BACE-1 activity, suggesting they would be effective in preventing the synthesis of neurotoxic Aβ peptides and, as a result, Alzheimer's disease. In vitro anti-toxicity and anticoagulation trials will be conducted in the future to determine the off-target of synthetic HS in preclinical trials. Our findings have the potential to lead to the development of AD therapeutics.

From Waste-to-Wealth Approach: Garden Fresh Silver Nanoparticles for Advanced Biomedical Applications

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1. Introduction Development of nanoparticles by green methods have gained considerable research attention in medical applications such as cancer therapy, tissue engineering, and target-specific drug delivery due to non-toxicity, surface functionality, and stability. The use of vegetable waste in the development of nanomaterials for advanced biomedical applications is a new and novel approach. This approach reduces environmental pollution and provides benign materials with desired properties (antibacterial, antifungal, antibiofilm, antimalarial, and anticancer) for advanced biomedical applications. 2. Methods Stable silver nanoparticles were synthesized by in-situ reduction of silver salt (silver nitrate) by using a variety of common vegetables such as cauliflower, avocado, garlic, cabbage, tomato, mint, broccoli, and ginger in basic pH media. The silver nanoparticles were characterized for size and morphology by various advanced characterization tools such as UV-Vis spectroscopy, Transmission electron microscopy (TEM), and Scanning electron microscopy (SEM). The time dependent growth of nanoparticles was monitored using UV-Vis absorption spectroscopy. The antibacterial properties of the silver nanoparticles on three different types of bacteria was studied using the Hinton-Broth method. 3. Results The time-dependent UV-Vis spectra of silver nanoparticles synthesized using extract of tomatoes and local palm leaves are shown in Figure 1 (A, B). The surface plasmon resonance peak (SPR) at 480 nm indicates the formation of silver nanoparticles. Figure 1. Time-dependent growth of silver nanoparticles. A: Using

extract of Tomato; B: Using extract of Palm Leaf. 4. Conclusion Spherical and well defined silver nanoparticles were synthesized using various vegetables. The nanoparticles exhibited antimicrobial properties. Their activity against colon cancer cell is currently in progress.

Noise levels in Elective Orthopaedic Surgeries and their Effects on Stress Levels: A Prospective Observational Study in the Kingdom of Bahrain

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Introduction: Noise levels in operating theatres (OT) have been shown to exceed WHO recommended limits, potentially causing stress in staff and poor patient outcomes. This study aimed to assess noise levels in elective orthopaedic surgeries at King Hamad University Hospital (KHUH) and to assess for a relationship with staff stress. Methods: Over 2 weeks, 22 surgeries were studied. Noise levels were recorded using a sound meter. After each surgery, the State-Trait Anxiety Inventory Form Y-1 questionnaire was administered to the lead surgeon, anaesthetist, and scrub nurse. SPSS was used to establish correlation between noise levels and anxiety scores. Results: The mean of all noise level readings was 63.1 ± 5.7dB. The data was further classified based on surgery type. For surgeons, there was a weakly negative correlation between noise levels and stress (r = -0.081, p=0.728), whereas for scrub nurses it was weakly positive (r=0.238, p=0.286). The correlation for anaesthetists was moderately negative (r=-0.515, p=0.024) and statistically significant. The confidence interval for this study was set at 95%. Summary & Conclusion: The mean noise level readings for TKRs, Shoulder Arthroscopy, Knee Arthroscopy, and Miscellaneous surgeries were 63.4 ± 6.2 dB, 62.5 ± 4.9 dB, 63.7 ± 5.2 dB, and 62.8 ± 6.1 dB, respectively. The highest reading was 98.8 dB in the TKR category, and the lowest reading was 47.5 dB in the Miscellaneous category (Figure 1). Noise levels were higher than the WHO guidelines. This was correlated with significant negative correlation in stress levels among anaesthetists. Study limitations included a small sample size, Hawthorne effect and response bias. Further study with larger sample sizes and more types of procedures is warranted to examine the relation between noise levels and stress in OT staff.

Xanthan Gum-assisted Synthesis of Silver Nanoparticles: New Materials for Biomedical and Catalytic Applications

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Introduction Development of nanoparticles by green methods have gained considerable research attention in medical applications such as antimicrobial agents, cancer therapy, tissue engineering, and target-specific drug delivery due to non-toxicity, surface functionality, and stability. Among the green methods, polysaccharide-assisted synthesis is beneficial owing to the presence of many hydroxyl groups, allowing the polysaccharide to act as a reducing agent and stabilizer for the silver nanoparticles (AgNP). In this project, we have successfully synthesized stable silver nanoparticles capped with the polysaccharide, xanthan gum (XG) for potential antibacterial and anti-cancer applications. Methods Stable AgNP's were synthesized by in-situ reduction of silver salt (silver

nitrate) in a 1mM solution with a 0.1%w/v solution of XG at different volumes of each of the solutions respectively, The AgNP's were characterized for size and morphology by various advanced characterization tools such as UV-Vis spectroscopy, Transmission electron microscopy (TEM), and Scanning electron microscopy (SEM). The time-dependent growth of nanoparticles was monitored using UV-Vis absorption spectroscopy. The antibacterial properties of the AgNPs were tested on different types of bacteria using the Hinton-Broth method. Results The time-dependent formation xanthan gum-assisted silver nanoparticles was measured using UV-Vis absorption spectroscopy. The time-dependent spectra for composition containing 1:1 ratio of xanthan gum and silver nitrate is shown as a representative example in Figure 1. A distinct surface plasmon resonance peak (SPR) at 408 nm confirms the formation of silver nanoparticles. Conclusion Well-defined silver nanoparticles capped with xanthan gum was successfully synthesized. The gum acted as template, and the many hydroxyl groups of the gum acted both as reducing and stabilising agent. The material has potential for antibacterial and anti-cancer applications.

A Meta-summary and Bioinformatic Analysis Identified Interleukin 6 as a Master Regulator of COVID-19 Severity Biomarkers

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Introduction With the rising demand for improved COVID-19 disease monitoring and prognostic markers, studies have aimed to identify biomarkers using a range of screening methods. However, the selection of biomarkers for validation from large datasets may result in potentially important biomarkers being overlooked when datasets are considered in isolation. Methods Here, we have utilized a meta-summary approach to investigate COVID-19 biomarker datasets to identify conserved biomarkers of COVID-19 severity. This approach identified a panel of 17 proteins that showed a consistent direction of change across two or more datasets. Furthermore, bioinformatics analysis of these proteins highlighted a range of enriched biological processes that include inflammatory responses and compromised integrity of physiological systems including cardiovascular, neurological, and metabolic. Results A panel of upstream regulators of the COVID-19 severity biomarkers were identified, including chemical compounds currently under investigation for COVID-19 treatment. One of the upstream regulators, interleukin 6 (IL6), was identified as a "master regulator" of the severity biomarkers. COVID-19 disease severity is intensified due to the extreme viral immunological reaction that results in increased inflammatory biomarkers and cytokine storm. Since IL6 is the primary stimulator of cytokines, it could be used independently as a biomarker in determining COVID-19 disease progression, in addition to a potential therapeutic approach targeting IL6. Conclusion The array of up- stream regulators of the severity biomarkers identified here serve as attractive candidates for the development of new therapeutic approaches to treating COVID-19. In addition, the findings from this study highlight COVID-19 severity biomarkers which represent promising, robust biomarkers for future validation studies for their use in defining and monitoring disease severity and patient prognosis.

One-Pot Synthesis and Characterisation of Superabsorbent Hydrogel-Silver Nanocomposite for Diabetic Foot Ulcer Dressing

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Introduction Diabetes mellitus is one of the most common chronic diseases which is characterised by high glucose levels. In 2019, it was estimated that approximately 463 million people worldwide were affected this disease. The multiple complications associated with diabetes mellitus are cardiovascular diseases, renal failure, blindness, and foot ulcers. These complications pose a great economic burden on the health care system. Diabetic foot ulcers (DFU) are a severe condition that frequently carries an increased risk of morbidity and early death. Hydrogels are 3D crosslinked polymeric materials that have shown promise for the fabrication of DFU dressing. These materials have the ability to retain oxygen, absorb wound exudate, and maintain moisture. In this project, a new superabsorbent hydrogel containing silver nanoparticles was developed through a singles-step method. Methods A new one-pot synthesis method was developed to produce superabsorbent hydrogel-silver nanocomposite. Polymerization of monomers (sodium acrylate) and chemical reduction of silver ions to silver nanoparticles were combined in a single-step without the use of chemical reducing agents. The formation of silver nanoparticles was confirmed using UV-Vis absorption spectroscopy. The swelling capacity and equilibrium water content of the material were determined gravimetrically. The swelling kinetics, penetration velocity of water into the material, diffusion coefficient etc. were determined using the appropriate mathematical models. Results The as-prepared dry superabsorbent hydrogel-silver nanocomposite and swelling capacity are shown in Figure 1 (A, B), respectively. The formation of silver nanoparticles was confirmed by UV-Vis absorption spectroscopy. The swelling capacity is more than 5000% with an equilibrium water content of 99%. Conclusion A superabsorbent hydrogel-silver nanocomposite was successfully prepared by one-pot synthesis. The potential application of this material as DFU wound dressing material will be investigated.

Metacognitive Accuracy Post-IPE Simulation. An Interprofessional Perspective

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BACKGROUND AND OBJECTIVES Introduction of a novel instrument for validation of interprofessional simulation sessions, conducted pre and post simulation, focusing on accuracy of responses to questions related to the case, confidence in responses and calibration (which matches confidence with accuracy). METHODOLOGY A set of questions related to a case, in an interprofessional context, conducted pre-and post-simulation. Questions were prepared by specialists in one of four professions, medicine, nursing, occupational therapy, and pharmacy. Participants were required to answer questions related to all professions and to report their level of confidence in their response for each question. Subsequently, students participated in a case simulation. Immediately post-simulation, students again answered an identical question set and recorded their confidence in responses. RESULTS Students from nursing, occupational therapy, and pharmacy provided more accurate responses to questions in the second run (post-simulation). Confidence measures preand post-simulation were significantly increased for nursing, occupational therapy, and pharmacy students. Calibration improved in the post simulation session for nursing,

occupational therapy, and pharmacy students. Medical student performance and metacognitive data are inconclusive. Students were also required to complete a scope of practice evaluation scale. Data are currently being analysed. CONCLUSIONS These intriguing data seem to indicate that students from nursing, occupational therapy, and pharmacy programmes significantly benefit from interprofessional simulation sessions, in both knowledge accuracy and in their metacognitive monitoring ability. Further study and more intricate data analysis is in progress.

Phytosynthesis of Core-Shell Nanoparticles of Selenium and Silver for Biomedical and Environmental Applications

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Introduction: Development of nanoparticles by green methods has gained considerable research attention in medical applications such as cancer therapy, tissue engineering, and target-specific drug delivery due to non-toxicity, surface functionality, and stability. Amongst green methods, synthesis using plant extracts of medicinal value like cinnamon, hibiscus and curcumin has proven successful. In this project, we successfully synthesized stable core-shell particles consisting of silver and selenium for potential applications in cancer diagnostics/therapy,drug delivery, antimicrobials etc. Methods: Core-shell nanoparticles of silver core-selenium shell, and selenium core-silver shell were synthesized by a two-step method using extracts of plant products (Cinnamon, Curcumin and Hibiscus flowers). Nanoparticles were characterized for size and morphology by various advanced characterization tools such as UV-Vis spectroscopy, Transmission electron microscopy (TEM), Scanning electron microscopy (SEM), and Fourier Transform Infra-red spectroscopy. The antibacterial/catalytic properties of the nanoparticles were evaluated. Results: The UV-Vis absorption spectra of silver and selenium core-shell nanoparticles obtained using cinnamon extract is shown as a representative example in Figure 1. The surface plasmon resonance peaks indicate formation of core-shell particles. Photographs of cinnamon extract and the core-shell particles are shown as insert. Conclusion: Stable core-shell particles based on selenium and silver were successfully prepared using various plant extracts. The phytochemicals present in plants acted both as chemical reducing and stabilising agents. The potential application of these materials as antimicrobials, in cancer therapy/diagnosis, environmental remediation is currently under investigation.

Are Antibiotics The New Appendectomy? A Literature Review

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Introduction/Background: Open appendectomy has been the standard of care for most appendicitis cases since the 19th century until the evolution of laparoscopic techniques. Recently, studies have debated the possibility of using antibiotics as a first-line treatment in uncomplicated appendicitis cases. The definition of uncomplicated appendicitis is not always clear-cut, however with the large-scale accessibility of radiologic techniques, it is becoming increasingly easier to classify patient groups. This has raised the speculation of considering antibiotic therapy as the sole treatment

modality in uncomplicated appendicitis cases, as suggested by clinical and radiological patient data. We aim to compare the options of surgery and antibiotics-only as to financial cost, complications, and efficacy. Methods: Various databases including PubMed, ScienceDirect, Google Scholar and JAMA were used. Collectively, 30 studies were reviewed but only 18 were included. Studies comparing antibiotic treatment with appendicectomy for uncomplicated appendicitis in adults, with well-defined protocols, were included. Conversely, studies on pediatric populations, complicated appendicitis and review papers were excluded. Results: Higher financial costs were observed in surgically treated patients compared to the antibiotics-only group despite several years of follow up and disease recurrences. Efficacy rates were higher in the appendectomy group. Nevertheless, the antibiotics-only group maintained an efficacy rate of greater than 70% at one-year follow up. Risk factors which decreased the efficacy in medical management included the presence of appendicolith, neoplasm, appendiceal dilatation, peri-appendiceal fluid collection, higher mean temperature, CRP, and bilirubin. Complications were more frequent and major in the surgery group. These included complications related to anesthesia, surgical site infections, damage to nearby structures and pulmonary embolism. Conclusion/Summary: Antibiotics-only therapy for uncomplicated appendicitis is cost-effective with fewer complications than surgery. However, appendectomies have higher efficacy. Thus, surgical treatment prevails as the standard of care. Future literature should yield larger sample sizes and explore the numbers of emergency appendectomies mandated following antibiotics-only therapy.

Prevalence, mortality, and disability-adjusted-life-years resulting from aortic aneurysm burden and its association with the socio-demographic index in Asia, 1990-2019: conclusions from the Global Burden of Disease Study 2019

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Introduction Aortic aneurysms(AA) represent a substantial public health burden even nowadays. Despite global efforts undertaken to alleviate outcomes in this patient cohort, massive regional disparities among populations accentuate the link between the socio-economic status featured by the SocioDemographic Index (SDI) and AA consequence trends. Nevertheless, regional differences are present in the strategies targeting the reduction of AA burden in Asia. Therefore, this study aims to describe the trends in prevalence, death, and disability-adjusted life-years (DALYs) resulting from AA in Asia between 1990-2019 and examine the relation of trends to SDI. Methods Data on prevalence, SDI, DALYs and death attributable to AA on the Asian continent were obtained from the Global Burden of Disease Study (GBD) 2019. AA outcome trend changes were compared in the investigation time frame (1990-2019); including age-standardized DALYs rates and death caused by AA in Asian countries according to their national SDI categories (low-, lowmiddle-, middle-, high-middle-, high SDI) using appropriate non-parametric testing methods. Results In 2019, 4,389,629,873 (95% UI [4,373,217,915-4,406,612,607]) AA cases were registered in Asia, representing a slight decrease in prevalence (96,791.6 to 96,384.5 per 100,000; 0.4%) and a 1.5% reduction in age-standardised prevalence (97,254.7 to 95,836.8 per 100,000) compared to 1990. In the last analysed year, AA accounted for 75,140.54 (95% UI [67,023.11-81,679.65]) deaths in Asia, revealing a 191% increase (25,814.97 to 75,140.5 per 100,000) in fatal outcomes in contrast to 1990. Furthermore, the age-standardised death rate increased by 13% (1.6 to 1.8 per 100,000) between

1990-2019. In 2019, DALYs in the cohort were 1,463,157 (95% UI [1,310,618- 1,602,006]) years, corresponding to 71.7% increase in DALYs rate (18.7 to 32.1 per 100,000) and a 5% growth in age-standardised DALYs rate (29.9 to 31.5 years per 100,000). Over-the-time alteration in age-standardised DALYs rate and AA-related death varied significantly according to national SDI categories (Figure 1). The cohort's median age-standardised DALYs and death changes were +18.5%, and +21.1% in the low-SDI group, respectively; in contrast to -7.4% and +3.3% in the high SDI group (P=0.02 and 0.04, respectively). Conclusions Albeit the AA burden is still expanding in Asia, the increasing trends are less pronounced in high SDI nations. Therefore, it is worthwhile to consider SDI as a relevant risk factor that should be addressed for improved AA patient care in the future.

Targeting the Sigma-1 receptor enhances the anti-proliferative effects of chemotherapeutic drugs and reduces motility in a triple-negative breast cancer in vitro model

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Background: The management of triple-negative breast cancer (TNBC) lacks targeted therapy options and remains largely dependent on chemotherapy. The sigma-1 receptor (Sig1R), a versatile stress-activated chaperone, is frequently upregulated in breast cancer but its potential as a druggable target in TNBC has not been explored. Here, we use the metastatic TNBC cell line MDA-MB-231 to investigate the effects of Sig1R antagonists alone and in combination with standard chemotherapeutics. Methods: MDA-MB-231 cells were pre-treated with the Sig1R antagonists BD1047 or IPAG for 24 hours followed by treatment with paclitaxel or doxorubicin for 72 hours. The half maximal inhibitory concentrations (IC50) of the chemotherapeutics with and without pre-treatment were determined by MTS assay. MDA-MB-231 cells were treated with IPAG or BD1047 for up to 48 hours. The migratory capacity of treated cells was evaluated by scratch assays. Results: Compared to vehicle pre-treated cells, IPAG pre-treatment significantly lowered the IC50 of doxorubicin (0.99 ± 0.25 μM vs 0.51 ± 0.25 μM, p-value ≤ 0.05, n=6) as well as paclitaxel (3.98 ± 0.91 nM vs 2.47 ± 1.46 nM, p-value ≤ 0.05, n=7). The migratory capacity of treated cells, as estimated by average scratch width after 48 hours, was significantly reduced by BD1047 (0.06 ± 0.11 μm vs 0.44 ± 0.24 μm, p-value ≤ 0.001, n=3). Summary: The chemotherapy agents used in this study are a mainstay of TNBC management but are known to cause dose-limiting toxicity. Sig1R antagonists could potentially reduce the dosage requirement of these drugs which would achieve greater tolerance and fewer adverse effects. Sig1R antagonists exerted an inhibitory effect on the motility of TNBC cells in vitro which indicates a role for Sig1R in cancer cell migration and metastasis. Further work would expand our understanding of cellular processes in TNBC and enhance Sig1R's development as a therapeutic target.

A Retrospective Study Investigating the Potential Relationship Between Obesity and Thyroid Cancer

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Thyroid cancer is the most common endocrine malignancy, and accounts for between 5-10% of thyroid nodules biopsied in endocrine services. As per the Global Cancer Observatory, the incidence of thyroid cancer in Bahrain is 2.12 cases per 100,000 people, which is less than the neighbouring countries of Saudi Arabia and Kuwait. The purpose of the study is to investigate the relationship between thyroid cancer and obesity in Bahrain, where 28.9% of males and 38.2% of females are classified as obese. Other risk factors such as radiation exposure and genetics will not be explored from lack of data, but height and iodine concentration in the water will be explored. The study will also include the mode of presentation, histological subtypes, and management of thyroid cancer. The study is a retrospective cohort study of 179 patients who have been diagnosed with thyroid cancer and discussed in the National Tumour Board from the years 2019 to 2021. Access to their E-Files was granted by the Bahrain Oncology Centre. The population consistent mostly of Bahraini females with an age range of 18-88. Most of the study population (41%) presented with an asymptomatic neck swelling which was then investigated and diagnosed as thyroid cancer. The most common histological type of thyroid cancer in our study was papillary thyroid carcinoma (88%). The TNM staging showed that most of our patients had a T1 score, with 60 having N1 score and 9 having M1. Our results show that most of the patients with thyroid cancer (n=33) had a body mass index (BMI) of 25-29.9 and only 25 patients had a BMI of 30-34.9. In previous studies obesity has been thought to contribute as a causative agent in 20% of cancers such as breast and colon. But in our study, we did not find a strong relationship between BMI and the tumour size. However, we were able to show a relationship between increasing age and metastatic disease. And finally, the vast majority of the patients in our study had BMI of overweight rather than morbid obesity. Currently, we are investigating a potential relationship between height and thyroid cancer, as well as low iodine levels in the water supply in Bahrain as possible etiological factors. Unfortunately, genetic studies are not available from our oncology service as part of the work up for thyroid cancer in Bahrain.

Microbial etiology and antibiotic resistance patterns of urinary tract pathogens in hospitalized infants in Bahrain: A tertiary care center experience.

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Background: Urinary tract infections (UTIs) are commonly encountered among children. Early diagnosis and prompt treatment is crucial to avoid complications. However, providing appropriate treatment has become increasingly challenging with the growing antimicrobial resistance. Antibiotic resistance against common UTI-causing organisms is widely reported by several studies worldwide. Nevertheless, no documentation of resistance patterns was previously done among

infants with UTI in Bahrain. This study aims to investigate the local resistance patterns of uropathogens causing UTIs in hospitalized infants in Bahrain and to provide guidance for the preferred choice of empirical antibiotic treatment. Methods: A retrospective analysis of the medical records for infants admitted with UTIs in Salmaniya Medical Complex between June 2015 and June 2017 was conducted. Results: Data were obtained from 117 infants, eighty (68.4%) were males. 106 (90.6%) of patients were less than six months of age. The most frequently isolated organisms were Escherichia coli (E. Coli) found in 66 (49.6%), followed by Klebsiella in 43 (32.3%). 48 (36%) were extended spectrum beta-lactamase (ESBL) producing organisms (31 and 17 of E. Coli and Klebsiella, respectively). The highest antibiotic resistance of E. Coli was found to cephalosporin (55.5%), while penicillin resistance was only (19.4%) and co-trimoxazole (14.4%). Resistance rates of non-Escherichia coli organisms were highest to cephalosporin (44.6%) followed by nitrofurantoin (19.1%) and penicillin (18.5%). Aminoglycosides and Nitrofurantoin demonstrated the lowest resistance rates by all cultured uropathogens. Zero resistance to carbapenem by ESBL-producing Escherichia coli organisms, (1.9%) resistance by Non-Escherichia coli ESBL-producing organisms. Conclusion: E. coli is the predominant uropathogens causing UTI in infants with high rates of ESBL organisms in our community. Nitrofurantoin is the preferred empirical oral antibiotic treatment for UTI. However, with the observed increasing number of UTIs caused by ESBL-producing organisms, Aminoglycosides and carbapenem antibiotics represent a good treatment option for children admitted with UTI.

Content, social network and sentiment analysis of front-of-pack nutrition labelling in the European Union on Twitter

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Introduction: Healthy food consumption and quality of diet have been recently at the heart of legislation in the European Union (EU) in attempts to improve quality of life, lessen the disease burden of preventable noncommunicable diseases (NCDs). In line with such effort, several EU member states have introduced different forms of front-of-pack nutrition labelling (FOPL). By 2023, the European Commission (EC) sets to adopt a proposal to implement unified mandatory FOPL system across EU member states. The aim of this research is to understand the public opinions on FOPL in the EU by analyzing content of tweets, sentiment and network analysis. Methods: Tweets were collected from 27 EU member states and the United Kingdom (UK) by using Twitter application programming interface; with no time or language restrictions. Tweets were coded based on their content and analyzed by themes, then automatic sentiment analysis was carried out by QSR Nvivo. Network analysis was conducted using Gephi 0.9.2. Results: 4073 tweets were retrieved with a total of 3,202 tweets that were considered relevant, mainly from the UK. The most mentioned FOPL system was Nutri-Score. Themes included food labelling types, food industry, healthy food vs. unhealthy food in the context of food labelling, EU regulation, political conflict, and science and education. The sentiment analysis results revealed that the tweets have negative sentiment. However, food industry received more positive sentiments, and political conflicts received negative sentiment. The network analysis showed that tweets were mainly limited within countries, and only few connections were made between countries (Figure 1). Conclusion: FOPL discussion via Twitter is considered limited. Therefore, regardless the FOPL system that would be implemented, further education on FOPL should be emphasized to empower consumers to choose and maintain healthy diet and highlight its role in the fight against NCDs.

Technology Integration in Higher Education: Examining the Self-Assessed Content, Pedagogy, and Technology Knowledge Levels among Higher Education Faculty in Bahrain

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Background: Integrating technology affordances into teaching and learning, is a crucial yet a delicate step. The process requires the educator to have the content knowledge of the subject matter, technological skills to use digital tools, and pedagogic skills. Recently, education programmes have adopted Mishra and Koehler (2006) Technological, Pedagogical, and Content Knowledge (TPaCK) conceptual framework as a mean to address technology integration in the education system. The framework provides a valuable insight and an understating of the teacher self-assessed knowledge domains and considered an important facet of motivation, and a predictor of educators use and adoption of technology. Only few studies have examined the relative influence of TPaCK domains, and the iterative relationship of TPaCK based on other variables. Aim: To measure the extent of the self-assessed TPaCK among higher education educators in Bahrain and explore its relationship between the participants' demographic and professional characteristics. The study will also examine the instrument psychometric properties in the Bahraini population using confirmatory factor analysis and structural equation modelling. Methods: A descriptive, correlational, cross-sectional, exploratory, non-experimental quantitative research design using structural equation modelling approach was implemented. Data was obtained online using the Higher Education Teacher Technological Pedagogical Content Knowledge (HE-TPaCK) instrument developed by Garrett (2014) to report self-assessment data. All higher education institutions in Bahrain including public, private, and regional sectors were approached to recruit full-time and part-time in-service teachers who are directly involved in teaching. Data analysis will be carried in the IBM SPSS V.26. Practical Implications The study will provide an understanding of in-service teachers' self-perception of knowledge and competency about technology use. This could help to identify the type of support, professional development, and resources that are important to assist in technology integration and use in the classroom. This study is the first to be conducted in Bahrain. References Garrett, K. N. (2014). *A Quantitative study of higher education faculty self-assessments of technological, pedagogical, and content knowledge (TPACK) and technology training*. University of Alabama.

Dietary supplement use among medical and nursing university students in Bahrain: Study Protocol

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Introduction: Dietary supplement (DS) use, especially after COVID-19, has drastically increased in many parts of the globe. To date, there is a lack of information about supplement use in Bahrain, especially among students in healthcare-associated fields. We will investigate the prevalence, beliefs, attitudes, and cost of supplement usage among healthcare university students at RCSI in Bahrain. Methods: A cross-sectional survey of n=1,600 students will be administered to all undergraduate medicine and nursing students at RCSI-Bahrain. We expect 1,440 to respond. It will be conducted by administering the DSQ-A Arabic and English questionnaire3 through Zoho Survey. The survey will remain open and run for three months. The data will be interpreted using SPSS. The

descriptive statistic measurements will include frequency, mean, median, range, and standard deviation which will all be reported using numbers and percentages. Prevalence will be reported using a 95% confidence interval as well as percentages. Inferential statistics, such as regressional analysis, Chi-Square ($\chi2$) test, and Spearman rank correlations (ρ) will also be conducted. The survey consists of 20 questions ranging from demographical information, supplement usage, cost, side effects, beliefs, and reasoning regarding supplement use. The study will seek approval from the Research Ethics Committee, and the Quality Enhancement Office prior to commencing. Significance: This study aims to shed light on the potential association that healthcare education has on students' beliefs and habits of taking DS, which was highlighted in previous studies, where healthcare students used supplements more often than their counterparts. This could reflect in their future decisions regarding supplement usage, recommendation, and understanding as a healthcare provider. This can enhance the current lacking body of research on DS use in Bahrain among healthcare students. This can pave the way for future research in Bahrain to compare the differences between other non-healthcare-associated student populations.

Evaluating the Effectiveness of Intra articular Plasma Rich Platelet Injections for the treatment of Knee Osteoarthritis: A Systematic Review

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Introduction- Osteoarthritis is the most frequently presented joint disorder, and its treatment is often challenging. Current literature has controversial results regarding the efficacy of Platelet Rich Plasma therapy (PRP) when compared to placebo injections. This systematic review investigates the role of intra-articular PRP injections as a recommended treatment option for knee osteoarthritis with the potential to establish appropriate guidelines for treating physicians. Method- This review used PUBMED, Cochrane and CINHAL database. A thorough review of literature examining PRP injections as treatment options for knee osteoarthritis was performed. Two independent reviewers evaluated the studies against inclusion and exclusion criterias. The WOMAC stiffness score, VAS score, and KOOS score were used to assess efficacy of PRP treatment with regards to stiffness, pain and functionality. Twelve articles met the criteria for inclusion and were analyzed in this study. Results- PRP injections caused a significantly better improvement in WOMAC stiffness score (25.5%), VAS Score (31.7%), and KOOS score (6.2%) after six months of treatment. Conclusion- This review demonstrated significant improvement in pain relief and stiffness levels in patients suffering with knee osteoarthritis receiving intra-articular PPR when compared to placebo. Further research is warranted to establish the optimum dose and duration of treatment with PRP injections for knee osteoarthritis.

Current use of Nano Drug Delivery Systems and Nanoparticles in the Treatment of Skin Conditions

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Introduction: Nano-drug-delivery systems, particularly nanoparticles, have been employed for the treatment of different skin conditions. Due to the prevention of drug degradation, sustenance of drug release, and nanoparticles' increased drug-tissue contact area, it enhances drug therapeutic efficacy and skin penetration compared to traditional mechanisms. Method: A review of publicly available information was conducted using electronic search engines including Pubmed, Cochrane, Medline, Web of Science, SCOPUS, Google Scholar, and Researchgate. Individual journals and manuals were also searched. Results: For vitiligo, a-Melanocyte-stimulating-hormone (a-MSH), a tridecanoic peptide derived from pro-opiomelanocortin (POMC), paired with transdermal delivery systems, improves efficiency in promoting melanin regeneration. For acne vulgaris, a 1.2% mangostin nanoparticle gel application was found to treat acne with a 50% improvement in inflammatory lesion counts. For atopic dermatitis, polymeric chitosan nanoparticles (CSNPs) have been used due to their ability to electrostatically interact with negatively charged skin. In an experiment, hydroxytyrosol and hydrocortisone-loaded CSNPs were found to be safe to apply as a cream- they alleviated symptoms of skin dryness, burning, and itching. For pityriasis versicolor, a study looked at developing a topical gel of fluconazole-loaded solid lipid nanoparticles, where FLZ-loaded SLNs topical gels were more effective than the current Candistan cream. This is due to the high particle surface area and film formation in the produced FLZ-SLNs gel allowing better interactions between FLZ and skin. For psoriasis, Jain et al., 2017 used TQ encapsulated in lipospheres, and in 2019, Ali et al. developed TQ lipid nanoparticles and used the Box-Behnken design to optimize them. Comparing plain TQ to TQ-loaded ethosomal gel, it was found that the antipsoriatic pharmacological action was noticeably improved. Conclusion: Nano-drug-delivery system is the way forward for enhancing the therapeutic efficacy of medications for skin conditions such as vitiligo, acne vulgaris, atopic dermatitis, pityriasis versicolor, and psoriasis.

Pattern of Renal Neoplasms with Immunohistochemical Study and our Experience in the BDF Hospital from 2009-2019

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Background: The incidence of renal neoplasms has been increasing globally and has a multifactorial etiology. Immunohistochemistry can be useful in differentiating the various types of renal malignancies. Objective: To identify clinical, histopathological, immunohistochemical, and frequency patterns of renal neoplasms at BDF Hospital from 2009-2019. Methodology: A retrospective chart review was conducted at BDF Hospital on patients diagnosed with renal neoplasms from 2009-2019 using the hospital's electronic healthcare system, where 75 patients were identified. Inclusion criteria were all patients aged 18 or older diagnosed with renal neoplasms and exclusion criteria were patients who continued treatment elsewhere. 71 out of 75 patients were included in the final analysis. Demographics, frequency per year, immunohistochemistry, stage/grade, clinical presentations, and surgical management were collected and analysed using

SPSS. Results: 88.7% had malignant neoplasms, and 11.3% had benign neoplasms. The mean age of patients with a malignant renal neoplasm was 56.38, with 81.0% being male. The most common presentation is an incidental finding (66.7% for malignant, 100% for benign). Clear cell renal cell carcinoma (ccRCC) was the most common malignant lesion (77.1%), and the most common stage of diagnosis was stage 1 (69.8%). Fuhrman grade 2 was the most common renal malignant grade (33.3%). CD10 and vimentin were 100% sensitive for ccRCC. A renal oncocytoma was the most common benign lesion, comprising 50%. Conclusion: The frequency of renal neoplasms in the BDF Hospital has increased between 2009-2019, with middle-aged males being most affected. CD10 and vimentin were the most sensitive markers for ccRCC. One implication would be targeted screening and educational programs. However, results are specific to the BDF Hospital and may not be generalizable to the wider population. Hence, one recommendation would be to establish population-based epidemiological data using the Bahrain National Cancer Registry, with subsequent investigations for potential underlying causes of increasing cases.

Synthesis of Iron-Cobalt Nanoparticles Inside Carbon Nanotubes at Low Temperature

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Abstract: Here, we present a simple, an efficient synthesis of iron-cobalt nanoparticles inside carbon nanotubes (MWNTs). In this protocol, it involves the encapsulation of cobalt inside channel of MWNTs nanomaterial occurs at relatively under low temperatures (70 degree) in an open air via two steps by wet chemistry. So formed Fe-Co nanomaterial does not show any an external oxide layer due to the presence of insulating nanotube layers. This product of CNTs have been carefully analyzed by using state-of-the-art high-resolution transmission electron microscopy (HRTEM), energy-dispersive X-ray analysis (EDX), HREELS-STM elemental mapping. This compound expected that these Fe-Co nanoparticle inside CNTs nanomaterial might be used in the drug targeting, heterogeneous catalysis, magnetic composites, fabrication of high-density magnetic storage devices. Keys words: Multiwalled carbon nanotubes, Cobalt chloride, Transmission electron microscopy, Drug Targeting, Magnetic properties

Effect of Date Fruit Consumption on the Glycemic Control of Patients with Type 2 Diabetes: A Randomized Clinical Trial

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Objective: Date fruit has been reported to have benefits in type 2 diabetes (T2D), though there is a concern, given the high sugar content, about its effects on glycemic control. Design and setting: Prospective, interventional, randomized, parallel study. Participants: In total, 79 patients with T2D (39 male and 40 female). Intervention: Participants were randomly allocated to either 60 g date fruit or 60 g raisins daily of the equivalent glycemic index (amount split, given as midmorning and midafternoon snack) for 12 weeks. Main outcome measures: The primary outcome was to investigate the effect of date fruit on HbA1c and fasting blood glucose, and their variability, in patients with T2D in comparison to the same glycemic load of raisins. The secondary outcomes were to determine whether date fruit affected cardiovascular risk by measuring fasting lipids, C-reactive

protein (CRP), blood pressure, and insulin resistance (IR) as measured by Homeostatic Model Assessment (HOMA-IR). Results**:** In total, 61 (27 female and 34 male) of 79 patients completed the study. There was no difference between or within groups for HbA1c or HbA1c variability, fasting glucose or glucose variability, insulin resistance (HOMA-IR), insulin sensitivity (HOMA-S), beta cell function (HOMA-B), the disposition index, lipids, systolic (SBP) or diastolic blood pressure (DBP), or C-reactive protein (CRP) (*p* > 0.05). Conclusion: No improvement in glycemic indices was seen following supplementation of 60 g daily date fruit or raisins, though neither had a deleterious effect on glycemic control over a 12-week period, indicating their safety when consumed in T2D. Additionally, no beneficial therapeutic effects of date fruit on other cardiovascular indices in T2D were seen.

Protective Effect of Emodin against Gut Microbiota-induced Oxidative Stress Pathogenesis in Rats

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Background: Oxidative stress has been shown to be involved in the pathogenesis of colon cancer, and Emodin has a protective effect against oxidative stress. Proteolytic microbes in the colon are associated with increased production of Para-cresol, a potential contributor to the colonic genotoxic with implications for cancer risk Objective: This study aimed to assess the *in-vivo* antioxidant effect of Emodin against Para-cresol induced oxidative stress and colon carcinogenesis in rats. Methods: Forty adult Sprague Dawley rats, weighting 250-300 grams, were allocated as into 4 groups (10 rats/group): control group that received chow diet; Para-cresol group that received chow diet plus injection dose of Para-cresol drug, 60 gm/kg body weight; Para-cresol plus Emodin group that received oral feeding of Emodin extract and Para-cresol injection. At the end of the experimental trial, after 4 weeks, all rats were fasted overnight and sacrificed; Colonic tissues were dissected and homogenized for oxidative stress markers (glutathione, total antioxidant capacity and DNA damage) measurements. Histopathological examination of the colonic tissues were examined. Results: Rat group treated with Emodin extract had shown a significant protective effect against Para-cresol induced oxidative stress as compared with the control group. Microscopic examination of Para-cresol injected and Emodin treated groups showed no histopathological changes indicating that Emodin extract has a protective effect on the colonic tissues. Conclusion: This study demonstrated that Emodin extract combated the Para-cresol mediated oxidative stress. Histopathological examination revealed that there was no observed effect on the cellular colonic moiety, indicating the safety of the used Emodin plant extract. Key Words: Emodin Extract, Oxidative Stress, Para-cresol, Colon Cancer

A rare case of Membranous Nephropathy possibly caused by Hashimoto's thyroiditis

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Introduction/Background: Membranous nephropathy is a type of Nephrotic syndrome caused by the thickening of a part of the glomerular basement membrane. As a result, large amounts of protein are lost in the urine. The loss of protein in the urine is usually non-selective leading to hyperalbuminuria, hypoalbuminemia, hypercoagulability, and hyperlipidemia. Membranous nephropathy can either be primary i.e., caused by Phospholipase A 2 receptor Antibody (PLA2R) or it could be secondary to systemic disease. Hashimoto's thyroiditis is generally associated with hypothyroidism. It affects ~2% of the female population and 0.2% of the male population. The most common renal disease observed in Hashimoto's thyroiditis are membranous nephropathy. Case Presentation: A 51-year-old male known case of hypothyroidism presented to the King Hamad University Hospital with two weeks history of dizziness, generalized body fatigue, shortness of breath, and lower limb swelling since 2021. His investigations revealed normocytic normochromic anemia with Hemoglobin of 7g/dL, Urea-10mmol/L, Creatinine-133mmol/L, corrected calcium of 1.3mmol/L, 24hr Urine protein-17.25 and Serum Albumin-23.5. Urine analysis was positive for proteinuria 3+. The patient also had Hashimoto's thyroiditis causing his hypothyroidism and had positive anti-thyroid peroxidase antibodies. Renal biopsy was taken and was negative for p-ANCA, c-ANCA, C3 and C4, Congo Red Stain, PLA2R. HIV and hepatitis profile were negative and so were Urinary Bence Jones protein and sickling test. Electron microscopy showed thickened glomerular basement membrane and subepithelial deposits with rare mesangial deposit. The patient was started on potassium supplement, IV Calcium infusion, Sodium Bicarbonate tablets, Spironolactone 25mg, Perindopril 2.5mg in addition to high dose corticosteroids; Prednisolone 60mg. Repeat 24hr urine protein after couple of months showed improvement from 17 to 5.08 Conclusion: Thyroid abnormalities can cause nephrotic syndrome. In our case, the patient responded well to Prednisolone 60mg and is following in the clinic. Specimen results to detect anti-TPO (Thyroid Peroxidase antibodies) which is very sensitive for Hashimoto's thyroiditis is still pending in the renal biopsy. A similar case was reported in IAIM journal where they came up with conclusion of having high index of suspicion of membranous nephropathy in patient with hypothyroidism caused by antithyroid antibodies.

Is CTPA over-utilized to investigate for PE? An evaluation of the current practice in Salmaniya Medical Complex

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Despite the staggeringly high mortality rate of acute untreated PE (30%), appropriate clinical diagnosis of PE can be challenging due to its wide symptomatology and silent PE's, which has led to it being an over-investigated. As a result, the prevalence of PE has been reduced the last 15 years, but the over-using of CTPA remains an issue, subjecting patients to unnecessary risks of radiation, and unwisely allocating resources for medical institutions. Exact figures on the number of CTPA requests and the positive yield of PE on CTPA

seem to vary across regions but published guidelines in the past few years have suggested standardized recommendation for the diagnostic approach of PE. The National Institute for Health and Care Excellence (NICE) provides a validated guideline on the diagnostic workup plan, using Wells' score as a clinical assessment test. The Royal College of Radiologists (RCR) recommends a positive yield of 15.4%-37% for the CTPA tests. The aim of this study is to assess the positive yield of PE on 200 CTPA, and diagnostic work-up plan done for PE-suspected patients, with reference to the NICE guidelines. The retrospective study took place in SMC, using the patient database "i-Seha" to collect the patients' demographic information, and relevant variables. All CTPA's requested for non-PE diagnostic reasons were excluded from the study. The study included 200 PE-suspected patients who undertook CTPA from September 1st, 2019, to December 20th, 2019. 15 patients (7.5%) were diagnosed with PE, which is lower than the positive yield recommended by RCR. Wells score was not utilized in the diagnostic workup of PE for any of the patients. The guidelines regarding pre-test (CTPA)diagnostic workup were not well-followed, specifically for the PE-unlikely patients. The Audit concludes that CTPA is over-utilized in SMC. We advise that NICE guidelines are incorporated into "i-Seha" in the future.

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