

26TH MEDICAL & HEALTH RESEARCH WEEK

**"COLLABORATIVE FRONTIERS IN MEDICAL RESEARCH:
UNITING MINDS FOR SCIENTIFIC BREAKTHROUGHS"**

Program & Abstract

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**LECTURER HALL 2, LEVEL 2, PRECLINICAL BLOCK
FACULTY OF MEDICINE
UNIVERSITI KERANGSAAN MALAYSIA**

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C1

A “Starter Pack” for Big Data Analytics in Preventive Medicine – A Systematic Review

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ABSTRACT

Big data has transformative potential in preventive medicine. However, clinicians often experience difficulties when performing big data analytics due to the requirement of multidisciplinary skill sets and vast knowledge on information technology. To overcome these challenges, the current review aimed to summarise the various data sources, algorithms, software, and statistical analyses used in big data analytics in disease prevention. Literature search was performed using PubMed, Scopus, Web of Science, and Institute of Electrical and Electronics Engineers databases. Studies were included if they included big data analytics, reported on primary, secondary or tertiary prevention of disease, published 2010-2024, as well as written in English language. Among the 31 included studies, authors had utilised data from electronic medical records (n = 11), nationwide census/registries (n = 7), and insurance databases (n = 4). Machine learning algorithms were mostly used, including random forest (n = 11), logistic regression (n = 10), and gradient boosting (n = 7). Big data analyses were mostly conducted using R software (n = 15), Python (n = 6), and SAS (n = 6). Area under the receiver operating characteristic curve (n = 11), sensitivity/recall (n = 10), positive predictive values (PPV)/precision (n = 8), specificity (n = 6), and F1-score (n = 6) were the commonly reported model outputs. In summary, clinicians who plan to conduct big data analytics shall have access to publicly available datasets, obtain basic knowledge on machine learning algorithms as well as to master the operating and interpretative skills using various big data software.

Keywords: Big data analytics; machine learning; preventive medicine

C2

Prevalence of Treatment Failure and its Associated Factors among Syphilis Patients in Hospital Canselor Tuanku Muhriz: A Retrospective Study

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ABSTRACT

The increasing prevalence of syphilis and its limited information in Malaysia is a public health concern. The objectives of this study is to determine the prevalence of treatment failure and its potential associated factors among syphilis patients in Hospital Canselor Tuanku Muhriz (HCTM), the clinical stages of syphilis during the first presentation in our hospital and if there was any difference in clinical presentation between human immunodeficiency virus (HIV) and non-HIV patients with syphilis. The study was conducted over 5 years period in HCTM in patients who were serologically confirmed to have syphilis by positive treponemal antibody test. Their data were retrieved to obtain information on socio-demographics, comorbidities, clinical characteristics, treatment received, and treatment outcome using a convenient sampling method. Logistic regression analysis was performed to determine the independent factors associated with treatment failure in syphilis patients. Total of 209 patients who were confirmed to have syphilis were screened but only 141 patients were analysed. Most of the syphilis patients were young adults, male, HIV positive, men-sex-men (MSM), asymptomatic and presented as latent syphilis. There was no difference in the clinical presentation of syphilis between HIV and non-HIV patients. 119 patients (84.4%) experienced treatment success, whereas 22 patients (15.6%) experienced treatment failure. Among patients with syphilis, females ($p < 0.001$), HIV status ($p = 0.018$), and asymptomatic patients on routine screening ($p = 0.020$) were the initial predictors of treatment failure. Females were 4.3 times more likely to have treatment failure ([95%CI: 1.08,16.8]; $p = 0.039$) as compared with male patients. In conclusion, female patients should be monitored closely for treatment failure after syphilis treatment. Further larger multicenter studies should be done to better describe those who have a higher risk of treatment failure and whether there are any long-term clinical implications.

Keywords: Syphilis; HIV; prevalence; treatment failure' retrospective study

C3

Prevalence and Effectiveness of Health Promotion Programs for Preventing *Opisthorchis viverrini* Infection in Nakhon Phanom Province, Thailand

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ABSTRACT

Opisthorchis viverrini is one of the endemic helminths in Thailand. Although several public health initiatives have been implemented to reduce opisthorchiasis, the prevalence remains high in endemic areas. This study aimed to determine the prevalence of *O. viverrini* infection and evaluate the effectiveness of health promotion programs in opisthorchiasis prevention among rural communities in Northeast Thailand. A cross-sectional study was conducted between May and December 2019 in Tha Uthen district in Nakhon Phanom Province, Thailand. Stool samples were collected from 310 individuals (≥ 18 years) and processed using the Kato-Katz technique to determine the presence of *O. viverrini* and other intestinal helminths. Health literacy programs were created to understand the knowledge, attitude, and practice (KAP) of *O. viverrini* among the experimental (30 participants) and control (30 participants) groups. Participants' KAP levels were assessed using questionnaires before and after the intervention program (12 weeks). The prevalence of intestinal helminths and *O. viverrini* was 17% and 11%, respectively. Individuals aged between 40-59 years (adjusted odds ratio [aOR] = 0.38, $p = 0.038$) and those with a previous history of opisthorchiasis (aOR = 1.97, $p = 0.033$) were positively associated with a higher risk of *O. viverrini* infection. Regarding the health promotion programs, the experimental group showed a significant increase in average scores in KAP and preventive measures of *O. viverrini* compared to the control group ($p < 0.05$). This finding suggests that although opisthorchiasis is still prevalent in Nakhon Phanom, health promotion programs were effective in improving communities' KAP regarding the infection.

Keywords: Opisthorchiasis; epidemiology; prevention; risk factor; Thailand

C4

A Pilot Study on Stature Estimation using the Sternum in a Malaysian Population

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ABSTRACT

Identification of deceased individuals is a critical aspect of examining unidentified human remains. Estimating stature aids forensic anthropologists in narrowing down potential matches among victims. This study aims to highlight the relationship between different measurements of the sternum and stature. It seeks to develop a specific linear regression formula for stature estimation in the Malaysian adult population using sternal lengths. This pilot study was conducted at the Forensic Unit, HCTM, where measurements of sternum and stature were collected from 15 males and 15 females during medicolegal autopsy. Initial findings revealed significant differences in various sternal lengths between males and females ($p < 0.05$). Median total sternal length (TSL) was notably longer in males, 205.400mm (IQR 30.540) compared to females, 177.950mm (IQR 18.890) ($p = 0.003$). Also, there were significant correlation between different sternal lengths and stature ($p < 0.001$). The highest observed correlation coefficient (r) was 0.79, which between stature, the length of the manubrium and sternal body (LMB), and TSL. Linear regression analysis demonstrated a significant linear relationship between sternal lengths and stature ($p < 0.001$). The highest observed regression coefficient of determination (R^2) was 0.61 when using TSL. This preliminary investigation suggests that various measurements of the sternum reliably predict stature and could be employed for stature estimation in the Malaysian adult population when long bones are not available for biological profiling of human skeletal remains. Further research with a larger sample size is necessary to confirm these findings and explore the potential use of sternal lengths for stature estimation in the identification of deceased individuals.

Keywords: Stature estimation; sternal lengths; Malaysian; anthropology; forensic

C5

Expression of PDL-1 by Immunohistochemistry in Mature T cell & T/NK Cell Lymphoma and its Correlation with the Prognostic Outcomes

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ABSTRACT

Introduction: Programmed cell death 1 (PD-1)/programmed cell death ligand 1 (PD-L1) is a cell surface protein involved in normal immune checkpoint function. By binding to PD-1, PD-L1 provides a suppressive signal to T-cells and an anti-apoptotic signal to tumour cells, leading to T-cell dysfunction and tumour survival.

Methodology: PDL-1 expression was evaluated in various types of T/NK cell NHLs using PDL-1 antibody clone 22C3 on formalin-fixed paraffin-embedded tissue sections. Tumour proportion score (TPS) of 1% or more is taken as positive.

Results: 71.4% of 42 cases of T-cell NHLs were PDL-1 positive. There is no significant association between PDL1 expression with age, gender, race, LDH level, positive B symptoms, Ann Arbor stage, ECOG score, extranodal involvement and IPI score. Nevertheless, Ann Arbor stage, ECOG score and IPI risk groups showed a significant impact towards the survival outcomes. PDL1-positive patients have demonstrated a poorer overall survival (OS) and progression-free survival (PFS), however, were not statistically significant.

Discussion: PDL-1 positive T cell lymphoma showed a worse survival outcomes, suggesting PDL-1 positivity is an adverse prognostic factor. The lack of significant survival impact suggests that PDL-1 alone may not be a robust prognostic marker in T-cell lymphomas. Further studies with larger cohorts are necessary to clarify the role of PD-L1 in these malignancies and to improve the prognostic and therapeutic strategies for patients with T cell NHLs.

Keywords: PDL-1; PD-1; T/NK cell lymphoma; Non-Hodgkin lymphoma

C6

The Dual Dilemma: Hypercalcaemia and Persistent PTH Elevation after Parathyroidectomy – Unmasking FHH as a Second Pathology

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ABSTRACT

Introduction: Primary hyperparathyroidism (PHPT) is one of the main causes of hypercalcaemia. In contrast, familial hypocalciuric hypercalcaemia (FHH) is a less common diagnosis for patients with asymptomatic hypercalcaemia who usually have a positive family history.

Case report: We present a case of a 53-year-old woman who presented with persistently elevated PTH levels and hypercalcaemia. She was diagnosed with PHPT and subsequently underwent parathyroidectomy. However, her serum calcium levels fluctuated between the upper half of the reference range and the range of hypercalcaemia post-surgery. Her PTH levels were persistently elevated despite normal total 25-hydroxyvitamin D levels, with overlapping calcium/creatinine clearance ratio (CCCR). Ultrasound of the neck and parathyroid gland was repeated twice post-surgery and showed no other parathyroid lesions. An alternative diagnosis of concurrent FHH was considered.

Discussion: CCCR is a screening test for both disorders, albeit with limited sensitivity and specificity and a prerequisite of a good 24-hour urine collection. In our case, the inconsistent CCCR did not help to indicate recurrent PHPT or newly diagnosed FHH. Further investigations with screening of family members and a mutation of the calcium-sensing receptor (CaSR) are necessary.

Conclusion: Dual pathology should be considered if the patient does not respond to conventional treatment. After screening the family members, mutation analysis of the CaSR gene will be an important test to differentiate between PHPT and FHH.

Keywords: Hypercalcaemia; hyperparathyroidism; CCC; CaSR gene

C7

Entomotoxicological Analysis using Third Instar Larvae in a Postmortem Case

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ABSTRACT

Entomotoxicology is a branch of forensic entomology that studies the effects of drugs and toxins on insects that feed on decomposing human tissues. This field plays a crucial role in forensic investigations, especially in cases where traditional toxicological methods are limited or unavailable. This study aims to report a case of chemical content detection using third instar larvae collected from corpses. The maggot samples were collected from a decomposed body during a postmortem examination. The sample was sent to the Institute of Medical Molecular Biotechnology, Universiti Teknologi MARA Sungai Buloh, for entomotoxicology analysis using the third instar larvae analyzed with the Gas Chromatography-Mass Spectrometry to rule out drug-related death. The analysis showed that some suspicious compounds were detected in the insect's evidence samples and not in the control samples. Based on the Scientific Working Group for the Analysis of Seized Drugs, the compounds found were classified as ketone functional group, ganglionic blocker, opioid analgesic, antihistamine, histamine antagonist, and neuroprotective agent. The findings of a variety of analytes in a toxicological analysis, including compounds with different functional groups and pharmacological effects, can be indicative of the use of designer drugs, potential polydrug use, and the complexity of drug adulteration. In conclusion, advanced analytical techniques are essential for accurately identifying these substances and detection of these compounds can have significant legal and criminal implications, potentially indicating illicit drug use or aiding in criminal investigations where poisoning or drug-related foul play is suspected.

Keywords: Entomotoxicology; forensic entomology; gas chromatography-mass spectrometry; designer drugs; toxicological analysis

C8

Perception of Teachers on Adaptive Skills among Preschoolers: A Qualitative Study

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ABSTRACT

Adaptive skills encompass social, self-care, and academic abilities crucial for children's daily functioning and overall development. While extensive research exists on adaptive skills in atypical children, studies on typical children in Malaysia are limited. Research exploring the link between teachers' perceptions and preschoolers' adaptive skills is scarce. Understanding these relationships is vital for coherent child development. This study aims to explore teachers' perceptions of adaptive skills in preschoolers. A phenomenological approach recruited six female teachers from the Klang Valley using purposive sampling. Inclusion criteria included a minimum of 3 years teaching experience, minimum of diploma qualification, and teaching typical children aged 3-6 years. Interviews were conducted online, and face-to-face, and thematic analysis was employed, ensuring validity through COREQ checklist criteria. The study identified three main themes regarding adaptive skills: exploring foundational aspects, key influences and strategies for nurturing them, as well as challenges faced in the process. It involved three private and three government preschools adhering to Ministry of Education standards. The participants highlighted the significance of self-care, socialization, and communication skills in child development, school readiness, and academic achievement. Challenges included inadequate facilities and diverse parent-teacher approaches. Effective teaching methods included interactive and play-based approaches. The study also noted that teachers often prioritized social and communication skills over holistic adaptive skill development. These findings underscore the importance of adaptive skill development from teachers' perspectives, addressing concepts, challenges, and experiences, that will guide practitioners in effectively supporting children's developmental milestones.

Keywords: Teacher's perception; adaptive skills; preschool children; communication skills; activities of daily living; social skill

C9

Effectiveness of Active Release Technique on Posture and Neck Range of Motion in College Students with Upper Cross Syndrome

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ABSTRACT

Upper cross syndrome (UCS) is a common postural dysfunction characterized by the imbalance of muscles around the neck and shoulder girdle. UCS is becoming increasingly prevalent among college students due to inactivity and prolonged periods of poor posture. However, studies on the physiotherapeutic strategies focusing on active release technique (ART) and ice pack therapy (IPT) for treating UCS especially among college students is still lacking. This study aimed to compare the effectiveness of ART and IPT on posture and neck range of motion (ROM) in college students with UCS. This experimental study involving 40 college students (mean age: 23.25 ± 1.68) using convenience sampling technique. Participants were randomly assigned into two groups: Group A as an intervention group received ART and Group B served as control group received IPT. Postural analysis and goniometer were used to assess posture and neck ROM. The data were analysed using paired t-test and independent t-test. There was a significant difference on posture and neck ROM for all variables in intervention group pre- and post-intervention of ART ($p < 0.05$). However, in control group, there was no significant difference on posture and some variables of neck ROM pre- and post-intervention of IPT ($p > 0.05$). The intervention group receiving ART showed statistically significant improvements in both posture and neck ROM compared to the control group receiving IPT ($p < 0.05$). This study proves that ART is more effective than IPT, suggesting that ART should be considered a preferred physiotherapeutic strategy for treating college students with UCS.

Keywords: Active Release Technique (ART); Ice Pack Therapy (IPT); posture analysis; Neck Range of Motion (ROM); Upper Cross Syndrome (UCS)

C11

Trans-anal Barotrauma in Children: A Rare Consequence of Playful Insufflation

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ABSTRACT

Trans-anal barotrauma resulting from high-pressure air insufflation through anal orifice is extremely rare and typically associated with prank behaviour among young male industrial workers. In children, fewer than ten cases have been reported in the past decade. We report a case of a 10-year-old boy who presented with abdominal pain, distension, and scrotal swelling after his granduncle playfully introduced a tire air inflator into his anal orifice through his pants. Upon assessment in the Emergency Department, his vital signs were stable. Physical examination revealed widespread subcutaneous emphysema, extending from lower chest wall to bilateral scrotum. Blood investigations were normal and his erect chest x-ray confirmed pneumoperitoneum. Anorectal examination under general anaesthesia showed erythema with superficial lacerations. Sigmoidoscopy showed intact mucosa without tears or ecchymosis up to 35 cm from the anal verge. Despite these injuries, the child remained hemodynamically stable and was treated non-surgically. Given the unusual nature of injury, the Suspected Child Abuse and Neglect Team was involved for comprehensive evaluation and intervention. He was later discharged well to his mother. Trans-anal barotrauma from high-pressured air can cause a spectrum of colorectal injuries, ranging from minor serosal tears to full-thickness perforations and intra-abdominal compartment syndrome. Severity depends on air pressure, flow velocity, anal resting pressure and distance from the source to anus. Obtaining detailed history from both the child and family is crucial for prompt diagnosis and intervention. Education on proper use of mechanical equipment is also essential, as most incidents are unintentional and result from lack of awareness.

Keywords: Barotrauma; child neglect; insufflation; pneumoperitoneum; trans-anal

C12

Diagonal Earlobe Crease: Preliminary Study for Its Significance in Cardiovascular-related Deaths

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ABSTRACT

Diagonal earlobe crease (DELC), also known as Frank's sign, is a skin manifestation associated with coronary artery disease. Previous autopsy studies have established a connection between DELC and cardiovascular (CV) deaths. This pilot study in Malaysia aimed to determine the prevalence of DELC in autopsy cases of CV deaths compared to non-CV deaths. A cross-sectional study was conducted with 10 autopsy cases of CV deaths and 10 cases of non-CV deaths at the Forensic Unit, Hospital Canselor Tuanku Muhriz. The presence of DELC was evaluated using ear photographs and categorized into mild, moderate, or severe grades for both ears. The study population had a median age of 46.5 years (IQR 28.0), with 85% males and 15% females. The ethnic distribution was 35% Malay, 50% Chinese, and 15% Indian. A significant difference in DELC prevalence was found between CV and non-CV deaths ($p=0.033$). Also, a significant difference in DELC prevalence was observed between cases with critical coronary artery stenosis and those without ($p=0.008$). CV deaths exhibited higher median DELC grades in both ears, with p -values of 0.05 and 0.023 for the right and left ears, respectively. These results suggest that DELC is a valuable marker for coronary artery stenosis and may aid in predicting CV deaths.

Keywords: Earlobe crease; cardiovascular death; coronary artery disease; Frank's sign

C13

Screen Time in Children with Autism Spectrum Disorder of School-Going Age

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ABSTRACT

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social communication and interaction and restrictive and repetitive behaviours, interest or activities. Children with ASD have been reported to be more interested in electronic forms of entertainment and communication compared to human interaction. In this cross-sectional study, we assessed the screentime habits in ASD children as well as the association between excessive screentime duration and sleep, physical activity, behaviour and obesity in school-aged children with ASD. We recruited 91 ASD children aged 6-12 years old attending Child Development Centre, Hospital Pakar Kanak-Kanak (HPKK) Universiti Kebangsaan Malaysia (UKM) over 16 months. Parents completed demographic questionnaire as well as validated Children's Sleep Habits Questionnaire (CHSQ) assessing sleep disturbance, Physical Activity Questionnaire (PAQ-C) assessing physical activity and ASD-Behaviour Problem for Children questionnaire (ASD-BPC), assessing challenging behaviours. BMI of the children were obtained. Chi-square testing was performed to determine association between excessive screentime and sleep disturbance, adequacy of physical activity and obesity. The mean duration of screentime per day was 2.96 hours (sd 1.61), with 28.6% having screentime of more than 4 hours per day ("excessive screentime"). Predictors of excessive screen time among our ASD patients included low paternal education level, personal ownership of gadgets, and lack of parental control. Longer screen time ($r = 0.225$, p -value = 0.015) and shorter sleeping hours ($r = -0.22$, p -value = 0.036) were correlated with more severe behavioural problems. In addition, higher levels of physical activity was associated with reduced sleep disturbances (p -value = 0.048). Understanding this may help paediatricians give suitable advice to parents in managing their children with ASD holistically.

Keywords: Autism; screen time; sleep habit; physical activity; behaviour

C14

Solid Pseudopapillary Neoplasm: A Rare Presentation

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ABSTRACT

Solid pseudopapillary neoplasm (SPN) is a rare tumour which accounts for about 1-3% of exocrine tumour. It has low malignant potential and high survival rate which occur in young women. We present a case of 18-year-old who presented with epigastric mass for one year associated with constitutional symptoms and abdominal pain. CT abdomen reported as large pancreatic cyst causing portal vein compression and patient underwent percutaneous drainage in which the content was haemorrhagic fluid. Ca 19-9 was 5.5 and fluid for amylase showed 806 and the cytology result is negative. The size of cystic mass appeared similar in the repeated CT and subsequently patient underwent open distal pancreateo-splenectomy and noted huge tumour measuring 15 x 15 cm at distal pancreas. Histopathology revealed features of solid pseudopapillary neoplasm. Patient responded well to the treatment and did not required chemotherapy. The overall prognosis of SPN is good however it is difficult to diagnose it as patient normally presented with non-specific symptoms. It is a case was initially thought to be pseudocyst, but the drainage fluid show differently. SPN of pancreas can be confused as pseudocysts hence young female who presented with any big pancreatic lesion should be considered as SPN.

Keywords: Solid pseudopapillary neoplasm; pancreatic pseudocyst

C15

The Venomous Sight Killer

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ABSTRACT

Bee sting toxic keratopathy is an uncommon ocular injury caused by the injection of venom to cornea. It can result in various complications with triad of penetrating, immunologic and toxic effects of the stinger and its injected venom. This is an ocular emergency. This is a case report of a 65 years old malay man, underlying dyslipidemia presented with history of trauma to his right eye from a bee. He presented 2 days after the trauma with complain of severe right eye pain and redness associated with reduced vision. His presenting visual acuity was right eye counting finger, left eye 6/9 without relative afferent pupillary defect. Anterior segment of the right eye showed injected conjunctiva with generalized corneal edema and descemet folds. There was a retained stinger embedded intrastromally located at periphery 6 o'clock with surrounding infiltrate. Anterior chamber appeared deep, unable to visualize cells due to hazy cornea, no hypopyon. Intraocular pressure was 22mmHg. Fundus details unable to visualize however B-scan showed retina was flat. Left eye examination was normal. He was started with intensive topical steroids, topical antibiotics and cycloplegics over his right eye. The retained stinger was removed surgically under local anesthesia together with corneal suturing. Post-operatively, his right eye vision improved to 6/18 (pinhole 6/9) with corneal scarring. His medications were tapered down gradually over a two-month period. Bee sting toxic keratopathy are of rare occurrence, but are associated with potential severe visual impairment. Early recognition and prompt treatment are crucial to prevent significant ocular morbidity.

Keywords: Bee sting; toxic keratopathy

C16

Health related quality of life and recovery following cardiac surgery via median sternotomy

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ABSTRACT

Recovery and health-related quality of life (HRQOL) is becoming increasingly recognized for determining surgical success from the perspectives of patients and healthcare providers. The aim of this study is to assess changes in HRQOL up to 6 months after cardiac surgery performed using a median sternotomy. This is a prospective cohort observational study. A total of 38 participants following median sternotomy completed the assessment of HRQOL using EQ-ED-5L at baseline (pre-operatively), prior to discharge, at 4-6 weeks, 3 and 6 months post-operatively. There was significant improvement in HRQOL after median sternotomy with an effect size of 0.38 ($P < 0.001$). The mean (SD) for the EQ-5L-5D was 61.9 (SD 21.7) at baseline; prior to discharge was 54.3 (SD 19.4), 65.8 (SD 24.5) at four weeks and 72.1 (SD 27.4) at three months and 75.4 (SD 28.3) 6 months respectively. All patients showed substantial improvement thereafter at the third month, crossed the baseline and steadily increased at the sixth month. Cardiac surgery via median sternotomy is associated with significant improvement as assessed via EQ-ED-5L. The majority of participants subjectively perceived low on HRQOL but tended to improve over time. This is the first prospective study on patient-reported outcomes in cardiac surgery patients in Malaysia. Our results may assist clinicians to interpret changes in HRQOL using EQ-5D-5L across time after median sternotomy. This result can be used to justify the impact of surgery, promotes shared decision-making, and facilitates patient-centered care at both clinical and policy levels, especially in light of an ageing population in Malaysia

Keywords: Health related quality of life; sternotomy; cardiac surgery

C17

Hand Grip Strength among Year 1 and Year 2 Undergraduate Students of Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS)

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ABSTRACT

Hand grip strength (HGS) is crucial as stronger HGS in healthcare trainees is linked to better performance of clinical skills requiring manual dexterity. However, there is limited research on HGS determinants among medical and nursing students in Malaysia. This study aims to investigate the associations between HGS and gender, little finger flexor digitorum superficialis (FDS) muscle functionality, body mass index (BMI), physical activity frequency, hand dominance, and ethnicity of preclinical students enrolled in the Doctor of Medicine (MD) and Nursing programmes at Faculty of Medicine and Health Science (FMHS), Universiti Malaysia Sarawak (UNIMAS). Data were gathered via Google forms for socio-demographic information, anthropometric measurements for BMI calculation, the Short International Physical Activity Questionnaire (IPAQ) for physical activity levels, and the Modified Baker's test for little finger FDS functionality. HGS was measured using a Camry electronic hand dynamometer following American Society of Hand Therapists (ASHT) guidelines. Statistical Package for Social Sciences (SPSS) version 29.0 was utilised for data analysis, employing descriptive statistics and inferential tests with significance set at $p < 0.05$. This study found that HGS was significantly higher in males, greater BMI groups, and higher physical activity levels. Right-handed individuals demonstrated significantly stronger HGS in their dominant hands, whereas left-handed individuals displayed more balanced strength between hands. Ethnicity and presence or absence of the little finger FDS had no significant effect on HGS. Overall, this study offers insights into the factors influencing HGS, highlighting the importance of gender, hand dominance, physical activity levels, and BMI.

Keywords: Hand grip strength (HGS) little finger flexor digitorum superficialis (FDS); hand dominance Body Mass Index (BMI)

C18

Prediction of Treatment Response in Brain Metastasis Patients treated with Gamma Knife Using Radiomics and Machine Learning from Pre-Treatment MRI Scans

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ABSTRACT

Predicting treatment outcome early after Gamma Knife radiosurgery (GKRS) is important and may improve patient outcome. Radiomics, which utilizes a quantitative approach in image analysis, has the potential to provide more powerful and accurate predictors for treatment response when combined with ML. This study aims to utilize MRI radiomics and ML to predict treatment response of brain metastases (BM) following GKRS. The study was approved by the ethical committee of UKM (UKM.FSK.PNI.800-2/27/9(JEP-2022-524)). Tumors were classified as good response when more than 25% reduction in size. Radiomics features were extracted from 108 tumors in 30 patients that meet the inclusion criteria from April 2019 to March 2024. The ROIs were segmented manually using the planning system, and the final outline was approved by an experienced neurosurgeon. The images were resampled to 1x1x1 mm³ as recommended by Image biomarker standardization initiative (IBSI), and radiomic features were extracted using 64 bin size with mean relative intensity \pm 3sd using LifeX software (v7.6.0). K-nearest neighbours (KNN) model was used with Synthetic Minority Oversampling Technique (SMOTE) to address data imbalance. A total of 16 features were selected using a 2-step feature selection (correlation matrix and LASSO) from the 179 features extracted, the accuracy, sensitivity, specificity, and AUC were 73%, 71%, 71% and 0.74 respectively. This implies that use of radiomics and ML can help to predict treatment response in brain metastasis using pretreatment MRI scan. Future studies

will focus on improving prediction accuracy through different radiomics filters and deep learning approaches.

Keywords: Radiomics; machine learning; treatment response; MRI; Gamma Knife

C19

Prediction of Local Recurrence in Head and Neck Cancer Following Chemotherapy Using Radiomic Features from Pre-Radiotherapy MRI

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ABSTRACT

Head and neck (H&N) cancer treatment is challenging due to critical functions and structures involved. Local recurrence (LC) cause of treatment failure and lead to advanced metastasis. To date, the value of MRI-based radiomics in predicting LC in H&N cancer patients treated with chemotherapy has not been extensively studied. The aim to predict LC in H&N cancer following chemotherapy at pre-RT. A retrospective study enrolled 39 H&N cancer patients treated with CCRT or RT from January 2014 to December 2023. Pre-treatment T1-weighted images, with 228 radiomic features were extracted. Cox proportional hazard model was applied to select radiomic features and clinical characteristics that predict local control (LC). Survival curves were generated using Kaplan-Meier method. The Cox proportional hazards model results indicate a significant relationship between various predictors of diagnosis (HR= 6.86×10^{-9} , 95% CI= 5.39×10^{-9} to 8.73×10^{-9} , $p < 0.01$), squamous cell carcinoma (SCC) types (HR= 38.15, 95% CI= 30.05 to 48.44, $p < 0.01$), tumour (T) (HR= 1.13×10^{-21} , 95% CI= 8.05×10^{-22} to 1.59×10^{-21} , $p < 0.01$), nodule (N) (HR= 2.40×10^{27} , 95% CI= 1.54×10^{27} to 3.72×10^{27} , $p < 0.01$), age (HR= 21.98, 95% CI= 21.05 to 22.95, $p < 0.01$), intensity based (HR= 3.58×10^{56} , 95% CI= 6.35×10^{54} to 2.01×10^{58} , $p < 0.01$), GLCM (HR= 1.88×10^{21} , 95% CI= 1.87×10^{21} to 1.90×10^{21} , $p < 0.01$)/

GLRLM (HR= 8.06×10^{260} , 95% CI= 2.89×10^{256} to 2.25×10^{265} , $p < 0.01$)/NGTDM (HR= 0.58, 95% CI= 0.58 to 0.59, $p < 0.01$)/GLSZM (HR= 4.4×10^{17} , 95% CI= 9.77×10^{14} to 1.98×10^{20} , $p < 0.01$) indicates significantly effects on hazard ratio in recurrence risk. Therefore, integrating radiomic features with clinical factors enhance treatment management and achieve better outcomes.

Keywords: Radiomic features; head and neck cancer; Magnetic Resonance Imaging (MRI); chemotherapy; p-radiotherapy

C20

Let's get personal! Molecular Testing for Targeted Therapies in Solid Tumours: HCTM experience

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ABSTRACT

Personalized medicine has revolutionized the treatment landscape for various cancers. Molecular testing plays a pivotal role in identifying patients who are likely to benefit from targeted therapies. Nevertheless, molecular tests are not readily available in public healthcare settings. This study explores the trends for requests for molecular testing in solid tumours at Hospital Canselor Tuanku Muhriz by analyzing retrospective data from 2020 until 2022. A total of 168 specimens; 124 from primary tumour sites and 44 metastatic sites, underwent molecular testing at external laboratories. There was an upward trend of test requests from 48 in 2020 to 72 in 2022. The most common solid tumours tested were lung (68.5%), colorectal (14.3%), melanoma (5.4%) and lymphoma (4.8%). Other tumours, each comprising less than 2% of the cohort, were gastric, brain, kidney, ovary and endometrium. Lung tumours and melanoma were tested for known driver mutations such as EGFR, ALK, ROS1, BRAF and PDL-1 which are targetable with established medications. Colorectal tumours were tested for KRAS, NRAS, BRAF and MSI status to establish their prognosis and predictive response towards treatment. Testing for PDL-1 expression is a key test often requested to guide treatment in some cancers like non-small cell lung cancer. The findings of this study highlight the increasing demand for various biomarker molecular testing in solid tumours. The transformative potential of biomarker molecular testing in patient care necessitates future efforts to integrate these tests into routine clinical workflows and ensure the affordability of targeted therapies in our setting.

Keywords: Personalized medicine; solid tumours; molecular test; driver mutation

C21

Necrotizing Soft Tissue Infection: Microbiological Distribution from District Region

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ABSTRACT

Necrotizing soft tissue infection (NSTI) is fulminant infection with severe systemic inflammatory response and high mortality. Early accurate diagnosis and proper antimicrobials and surgical management are the cornerstones of treatment. NSTI is frequently polymicrobial and the most common organisms are aerobic gram-positive cocci. The objective of this study is to determine microbiology distribution and its sensitivity of NSTIs cases from our district cluster center. A retrospective review of all patients (n=110) with documented diagnosis of NSTI together with microbiologic variables of laboratory cultures from August 2020- December 2023 medical records taken from district Hospital of Kuala Pilah and cluster Hospital Jempol and Hospital Tampin were conducted. The results show that the commonest culprit organism involved was group A Streptococcus(45%) followed by Klebsiella sp.(14%). Based on this data collection, it was proven that the commonest encountered organism of NSTI over Negeri Sembilan district was Group A Streptococcus. Treatment wise, recommended for early accurate diagnosis and proper empirical antimicrobials that are effective against aerobic gram-positive cocci and gram-negative rods prior to availability of growth cultures with proper surgical debridement are the cornerstones of treatment.

Keywords: Necrotizing soft tissue infection (NSTI); Negeri Sembilan district; Group A Streptococcus(GAS)

C22

Pre-Radiotherapy Balloon Dilatation of the Eustachian Tube: Reducing Radiation-Induced Dysfunction in Nasopharyngeal Carcinoma Patients

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ABSTRACT

Background: Eustachian tube dysfunction (ETD) frequently develops in patients with nasopharyngeal carcinoma (NPC) after radiotherapy, contributing refractory Otitis Media with Effusion (OME). Typically, this condition is dealt with reactively, potentially resulting in complications. Apart from the conventional approach with ventilation tube insertion, balloon dilatation of the Eustachian tube (BDET) offers a safe alternative for treating ETD.

Objective: To evaluate the benefits of BDET prior to radiotherapy in minimizing the risk of ETD among NPC patients.

Methodology: A prospective, randomized controlled trial was conducted among newly diagnosed NPC patients, randomly assigned to intervention group (had Eustachian tube balloon dilatation) or control group (receive no intervention). Assessments included Eustachian Tube Dysfunction Questionnaire-7 (ETDQ-7) scores, tympanometry results, hearing threshold based on pure tone audiometry, with a follow-up of 3 months post-radiotherapy.

Results: 35 patients (70 ears) were initially recruited. Follow-up data at 3 months post-treatment were available for 28 patients (56 ears). No complications observed in the intervention group who underwent BDET under local anesthesia. Post-radiotherapy, significant improvements were documented in ETDQ-7 scores ($p < 0.05$), with greater increases in the intervention group (mean score: 1.45 to 2.15) compared to controls (1.13 to 1.75). Tympanometry findings were similar across groups. In the intervention group, 53.8% showed improved tympanograms, and 73.1% experienced improved hearing thresholds. ABG significantly decreased post-dilatation (mean: 6.35 dB to 5.38 dB), whereas the control group shown an

increase of 5 dB.

Conclusion: Balloon Dilatation of the Eustachian Tube (BDET) shows promising effectiveness in reducing radiation-induced Eustachian Tube Dysfunction and related ear complications when performed before radiotherapy. It is suitable for office setting, can be safely integrated into the standard treatment protocol for NPC, ensuring timely commencement of radiotherapy without delays.

Keywords: Nasopharyngeal carcinoma; eustachian tube dysfunction; balloon dilatation of eustachian tube; radiotherapy; otitis media with effusion

C23

Perception of Parents on Adaptive Skills among Preschoolers: A Qualitative Study

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ABSTRACT

Adaptive skills are practical, everyday skills needed to function and meet the demands of one's environment. These skills are crucial for preschool children, especially during transition to school. While extensive research explores parental perceptions of children with special needs, limited data exists regarding parents' perception of typically developing preschoolers, not to mention their perception on adaptive skills. Therefore, this qualitative study explored the perception of parents on adaptive skills among preschool children between 3 to 6 years old. Fourteen parents of typical preschool children were chosen via purposive sampling and interviewed using a semi-structured layout. Thematic analysis revealed four themes: (i) parents' understanding of adaptive skills; (ii) factors influencing the development of adaptive skills; (iii) parenting styles and practices and (iv) roles and resources in supporting adaptive skills development. The findings showed that parents have a general understanding of their practical implications and emphasized their importance for independence, school readiness, and emotional well-being. They identified numerous factors influencing the development of adaptive skills such as parental roles, environmental factors, child-specific factors and socioeconomic status. Common challenges faced were time constraints, financial limitations, child-related challenges, emotional challenges and challenges in finding resources. These findings underscore the need to develop educational programs to enhance awareness of parents on adaptive skills besides providing support services in addressing specific challenges faced by parents and children. Future research may expand the literature by incorporating diverse cultural and socioeconomic perspectives. The association between parents' perception and child's adaptive skills may also be explored in the future.

Keywords: Parent perception; adaptive skills; preschool children; communication skills; activities of daily living skills; social skills

P1

Understanding Children's Play Perceptions and Play Preferences in Sarawak: A Qualitative Study

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ABSTRACT

Children engage in play as a form of occupation and as a means of acquiring knowledge about themselves and the world around them. Play can be characterized as a variety of activities independently chosen by children based on their own preferences, enjoyment, and subsequent satisfaction. Play is an essential developmental milestone that contributes in numerous ways to children's development. There are limited studies exploring children's play preferences and experiences. Therefore, this qualitative study aims to investigate the rationale of children's perception of play experiences and play preferences in Sarawak. Ten typical children (five females and five males) aged between 7 and 9 years without any comorbidities participated in the study. An online interview using a semi-structured interview was conducted using Google Meet platform to determine their play preferences and play experiences. Thematic analysis was carried out to analyze and organize the data collected from the interviews. Four main themes emerged which are (i) Playing with Purpose: How Immersive Theatrical Experiences Positively Shape Children's Worlds; (ii) Unlocking the Magic of Play: Exploring the Charismatic Traits of Playful Activities; (iii) Playful Bonds: Unveiling the Charismatic Connections of Playful Interactions and (iv) Where Time, Place, and Weather Unite: Unveiling the Vibrant Worlds of Children's Play Contexts. This study is significant since it offers professionals a deeper understanding of how to work with children. It can also assist occupational therapists and other professionals in incorporating play into their treatment plans, enhancing the use of play in pediatric interventions and evaluations.

Keywords: Semi-structured interview; play; perception; enjoyment; occupational therapy

P2

A Qualitative Study of the Effect of Dialysis on the Performance of Daily Living Activities in Diabetic Clients in the Kuala Selangor Region

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ABSTRACT

Dialysis is a well-known treatment for patients with renal failure. Over the years, dialysis patients have increased at an alarming rate. The functional level of dialysis patients is very low compared to non-dialysis diabetes patients. In this study, the researcher aims to determine how dialysis affects diabetes patients' Activity of Daily Living (ADL) performance in Kuala Selangor, as well as which factors contribute to ADL performance. Studies that specifically investigate the ADL performance of dialysis patients with diabetes were found to be limited. This study employed a qualitative method of semi-structured face-to-face interview sessions. Ten hemodialysis participants with stage 3 and stage 4 diabetes, aged thirty and above were recruited. Five main themes emerged from the interview, which are; (i) enhancing everyday life: a fresh perspective on daily activities; (ii) the impact of diabetes on daily living activities; (iii) the impact of dialysis on daily life activities; (iv) functional performance in basic activities of daily living and (v) essential daily life pursuits. Findings from the interview concluded that various types of activities of daily living performance were affected due to low physical body strength among the participants. This study may offer occupational therapy and other rehabilitation disciplines a deeper understanding of the physical capacity of diabetic patients undergoing hemodialysis to perform everyday activities.

Keywords: Diabetes; semi-structured interview; physical activity; activity of daily living; performance

P3

The Quality of Life and Sleep Quality of Health Sciences Undergraduate Students

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ABSTRACT

The existing literature on the relationship between sleep quality and quality of life seems to be lacking. For health science undergraduate students, having adequate and restful sleep is crucial for the student's optimal physical health, cognitive functioning, and emotional well-being. Students in health science programs often face rigorous academic demands, clinical training, and long hours of study, which can lead to sleep disturbances and poor sleep quality. Poor sleep quality is associated with decreased quality of life. Thus, this study aims to investigate the relationship between sleep quality and the quality of life among health science undergraduate students. A cross-sectional study was conducted using a non-probability convenient sampling technique. A total of 302 participants were selected based on the specified inclusion and exclusion criteria. The survey was distributed through Google Forms using WhatsApp and Facebook. The study utilized the Pittsburgh Sleep Quality Index (PSQI), and the Quality of Life Scale (QOLS). Data was analyzed using the Independent-Samples Mann-Whitney U Test, Independent-Samples Kruskal-Wallis Test, and Spearman's rho. The results reported a strong correlation between sleep quality and the quality of life with $p < 0.001$. Therefore, there is an association between sleep quality and the quality of life among health science undergraduate students. Findings from this study can contribute to the development of strategies and resources aimed at improving sleep habits and managing stress, thereby positively impacting their overall health and quality of life.

Keywords: Cross-sectional study; health sciences; undergraduate students; sleep quality; quality of life

P4

Practice and Perceived Challenges among Clinical Immunologists toward Genetic Testing and Genetic Counseling in Malaysia: A Qualitative Study

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ABSTRACT

Integration of genetic testing and counselling by clinical immunologists are essential in providing definitive diagnosis and holistic care for patients and families with inborn errors of immunity (IEI). However, the practice and perceived challenges of genetic testing and counselling by fellow clinical immunologists in Malaysia remain unclear. Therefore, this study aims to explore the practice and perceived challenges among clinical immunologists toward genetic testing and genetic counselling in Malaysia. This qualitative study employed semi-structured, in-depth one-to-one interviews with clinical immunologists recruited through a purposeful homogeneous sampling method. The findings revealed that clinical immunologists in Malaysia are well-oriented in genetic testing, and they acknowledge the importance of genetic counselling. However, most lack proper genetic counselling in their practice due to challenges underscored in the current study. The emphasis on getting in-house genetic counsellors to provide tailored genetic counselling for patients and families with IEI was a unified calling among all clinical immunologists, as most agreed it would deliver holistic care to families. Discussion on integral gaps in the clinical immunology field in Malaysia was highlighted, and suggestions were made to promote genetic testing and counselling in managing IEI.

Keywords: Practice; perceived challenges; clinical immunologists; genetic testing; genetic counselling; inborn errors of immunity

P5

Reliability, Usability, and Feasibility of the MINAT App among Children Aged 6 to 12 in Malaysia

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ABSTRACT

Self-care, social interaction, education, leisure, and play are important aspects of children's occupational development. This study aimed to determine the reliability, usability, and feasibility of the MINAT application in assessing children's leisure activities. This study used mixed methods: (i) quantitative methods to assess reliability, which involved 94 participants; and (ii) qualitative methods through interviews among four children aged 6 to 12, their parents, and experienced teachers to evaluate the usability and feasibility of MINAT apps. The data was analyzed using IBM SPSS Version 26 and QDA Miner Lite. The results showed moderate reliability within each domain and high reliability across all domains over time. About 65% of the variance in individual ratings is due to true differences between subjects, with 35% due to errors. For averaged ratings, 89% of the variance is due to true differences between subjects, indicating excellent reliability. The usability and feasibility analysis revealed three main themes: user perceptions and reactions, benefits and personal experiences, and feedback for improvement. The MINAT app is highly reliable, usable, and feasible for assessing children's leisure activities. Recommendations for improvement include adding more accessible content and features to maintain children's engagement.

Keywords: Interests; children; MINAT apps; occupational therapist; leisure activities

P6

Effects of Different Footwear Types and Barefoot on Static and Dynamic Balance among College Students

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ABSTRACT

Maintaining proper body balance is essential for preventing falls and injuries. Both static and dynamic balance can be influenced by various types of footwear. However, limited studies have investigated the effects of different footwear types and barefoot on both static and dynamic balance. Additionally, it remains unclear which type of footwear is most effective in enhancing balance among young adults as a preventive measure against falls and injuries. This study aimed to investigate the effects of different footwear types and barefoot on static and dynamic balance among college students. This cross-sectional study involved 48 participants (mean age = 22.42 ± 1.36) selected through purposive sampling. The balance of all participants was assessed under three conditions: wearing sports shoes, wearing flat shoes, and barefoot, using the Balance Error Scoring System Test (BESS) and the Tandem Walk Test (TWT). Data were analyzed using SPSS version 27. The total BESS score indicated significant differences between the sports shoes, flat shoes, and barefoot ($p < 0.001$). Additionally, significant differences were found between footwear types on different surfaces: foam surfaces ($p < 0.01$) and hard surfaces ($p < 0.001$). However, no significant differences in dynamic balance were observed between the footwear and barefoot. In conclusion, different types of footwear and barefoot conditions significantly impact static balance but do not affect dynamic balance. Health promotion campaigns can leverage these findings to educate young adults, especially college students about the importance of appropriate footwear for maintaining balance and reducing the risk of falls and injuries in their daily lives.

Keywords: Footwear; barefoot; static balance; dynamic balance

P7

Validity, Reliability and Profile of Children Handwriting Based on OTulis in Malaysia

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ABSTRACT

Handwriting is essential for children's fine motor skills, cognitive abilities, and literacy. OTulis, a new Bahasa Malaysia handwriting assessment, has shown excellent content validity, but its concurrent validity and reliability needed further evaluation. This study aimed to assess these aspects and profile handwriting skills in Malaysian children aged 4 to 6 using OTulis. A cross-sectional study with purposive sampling included 31 participants (1.71 ± 0.46) for concurrent validity testing with OTulis and the Minnesota Handwriting Assessment (MHA). Reliability and handwriting profiling were assessed in 185 participants (1.59 ± 0.49) using OTulis. Concurrent validity showed a positive correlation between seven OTulis domains and four MHA domains ($r = 0.37-0.99$). No significant correlation was found for the letter recognition domain in OTulis and the rate domain in MHA, with a negative correlation for the fine motor control domain in OTulis and the legibility domain in MHA. Cronbach's alpha for OTulis ranged from 0.89 to 0.90 after removing the visual memory domain. OTulis domain scores (median and IQR) were fine motor control 75 (56-93), fine motor precision 100 (75-100), visual memory 66 (33-100), copy shape 100 (80-100), letter recognition 66 (50-100), uppercase letter formation 35 (65-100), lowercase letter formation 100 (28-100), spacing 0 (0-0), size 100 (66-100), and alignment 100 (0-100). The 0-100 score range of OTulis caters to various skill levels. In conclusion, OTulis shows promise as a valid and reliable tool for assessing handwriting skills beyond fine motor abilities.

Keywords: OTulis; children's handwriting; concurrent validity; internal consistency; profile

P8

Validity and Profile of Children's Activity Preferences of 'MINAT'

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ABSTRACT

Children's participation in various activities is crucial for their growth and quality of life. It is important to use validated assessments and understand children's preferences. 'Penilaian Kecenderungan MINAT', a self-reported assessment measuring children's activity preferences were developed according to the cultural context in Malaysia. This study aimed to determine the validity of 'MINAT', and the profile of children's activity preferences as measured using MINAT among children 6 to 12 years old in Malaysia. A cross-sectional quantitative study with purposive sampling was conducted. MINAT and Preferences for Activity of Children (PAC) were used and involved a total of 218 participants. IBM SPSS Version 26 was used, and the significant level was $p < 0.05$. The validation finding showed that concurrent validity had a moderate to high correlation to PAC (0.53 - 0.79), while the findings of the profile of children showed that there was a significant difference between genders. Physical activity with the mean rank of (male = 125.79, female = 92.91), social (male = 97.05, female = 122.18) and skill-based (male = 97.21, female = 122.02). Similar findings were found in recreational, physical, skill-based, and self-improvement domains, specifically in races. A significant difference in recreational domain was found among children with different household incomes with the mean rank of (<RM 3860 = 54.52, >RM 8319 = 72.02). A profile of MINAT was also obtained in this study. In conclusion, MINAT can be used to measure the activity preferences of children in Malaysia, helping to develop individualized activities to promote participation.

Keywords: MINAT; PAC; children's activity preferences; concurrent validity; profile

P9

MicroRNA Expression Pattern in Complete and Partial Hydatidiform Moles

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ABSTRACT

Hydatidiform moles comprised complete (CM) or partial (PM) mole. Although benign, they may progress to choriocarcinoma. MicroRNAs are small, non-coding sequences regulating cellular functions in various tissues, including the placenta. Its role in the pathogenesis of hydatidiform mole remains unclear. This study aimed to determine microRNA expression patterns in CM and PM. Total RNA of CM (n=3), PM (n=3) and non-molar abortus as a control (n=3) were extracted from paraffin embedded tissue blocks. Next-generation sequencing (NGS) and bioinformatics analysis were used to determine microRNA expression. Differentially expressed microRNAs (DEmiRNAs) were identified between the 3 groups using DESeq2. Quantitative real time PCR and digital PCR further validated the expression of these DEmiRNAs. Respective target genes were predicted with TargetScan, TargetMiner and miRDB databases for eleven selected highly DEmiRNAs. NGS data analysis concluded 60 DEmiRNAs in CM and PM, compared to controls. Expression of miR-127-3p, miR-493-5p and miR-106a-5p were downregulated in CM. Expression of miR-584-5p, miR-187-3p and miR-192-5p were upregulated in PM. MicroRNAs downregulated in CM were predicted to share a common target gene BCCIP. Conversely, upregulated microRNAs in PM were predicted to share 25 common target genes. Interestingly, BCCIP, also known as a BRCA2 and CDKN1A interacting

protein, has been found to be involved in genomic stability maintenance, cell cycle regulation and microtubule formation. BCCIP deficiency was described in the tumour initiation of breast cancer. Further study on the signalling pathway of CM and PM is required to fully understand the role of microRNAs in the progression of hydatidiform moles.

Keywords: Complete hydatidiform mole; partial hydatidiform mole; molar pregnancy; microrna; next-generation sequencing

P10

The Effects of Calcium Phosphate Cement Doped with Palm Tocotrienol on Tibial Bone Defect in Ovariectomised Rats through Static Bone Histomorphometry

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ABSTRACT

Calcium phosphate cement (CPC) is a promising bone substitute material due to its injectability, self-setting properties, moldability, biocompatibility, bioactivity, and osteoconductivity. However, poor osteoinductivity and mechanical properties hinder its clinical use. This study investigated the effects of palm tocotrienol (T3) in addressing the limitations of CPC on bone regeneration in an ovariectomised rat model with tibial bone defects, evaluated through static bone histomorphometry. Twenty-four female Sprague-Dawley rats were split into four groups: sham-operated rats (sham), ovariectomised rats (OVX), ovariectomised rats with bone defect filled with CPC (CPC), and ovariectomised rats with bone defects filled with T3-incorporated CPC (CPC/T3). Eight weeks of treatment were given following a 12 weeks ovariectomy. At the end of the study, the left tibias were harvested and decalcified for two months. Following tissue processing and embedding, tibia samples were stained with haematoxylin and eosin, followed by examination under a microscope. Static bone histomorphometry was measured using the Weibel grid technique. The findings showed that the osteoclast surface of the CPC/T3 group was significantly decreased compared to the sham and OVX groups. Meanwhile, the eroded surface of the CPC/T3 group was significantly increased compared to the OVX group. Osteoblast surface, osteoid surface, and osteoid volume did not show any significant differences between groups. The incorporation of palm T3 into CPC potentially reduces osteoclasts at the bone defect site, which is not observed in those implanted with CPC only.

Keywords: Calcium phosphate cement; tocotrienol; bone defect; osteoporosis

P11

Relationship between Level of Self Satisfaction and Self Confident among Medical Student at National University of Malaysia (UKM) towards Simulation Based Learning

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ABSTRACT

Simulation-based learning is an essential component of modern medical education in facilitating cognitive and clinical skill development. However, the perception of such methods on students' self-satisfaction and self-confidence has not been extensively studied. This study aims to evaluate the levels of self-satisfaction and self-confidence among Bachelor of Medicine students at Universiti Kebangsaan Malaysia (UKM) and examine the correlation between these variables within the framework of simulation-based learning. A simple random sampling technique was employed to select students from years two to five for participation. The study utilized a pilot-tested questionnaire to ensure reliability, achieving a Cronbach's alpha of 0.99. The data were collected on self-satisfaction and self-confidence and analyzed using descriptive statistics to determine mean scores and standard deviations. The analysis indicated moderate levels of self-satisfaction and self-confidence among students. Self-satisfaction scores ranged from ($m = 3.33$, $SD = 0.53$) to ($m = 3.53$, $SD = 0.40$) while self-confidence scores exhibited similar values ranging from ($m = 3.25$, $SD = 0.53$) to ($m = 3.45$, $SD = 0.44$). A strong positive correlation was identified between self-satisfaction and self-confidence with correlation coefficients (r) ranging from 0.77 to 0.85 ($p < 0.001$). The findings suggest that simulation-based learning moderately enhances both self-satisfaction and self-confidence in medical students. These results underline the importance of incorporating simulation-based methods in medical curricula to foster comprehensive skill development in future healthcare professionals.

Keywords: Self-satisfaction; self-confidence; simulation based learning; Bachelor of Medicine students; Universiti Kebangsaan Malaysia

P12

Exploring the Dose-Dependent Impact of Celastrol on Anthropometric Data and Blood Glucose Levels in ApoE-knockout Mice Fed a High-Fat Diet

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ABSTRACT

The trend of consuming a hypercaloric (Western) diet in modern society has led to increased body weight and blood glucose levels. Celastrol, an emerging drug derived from *Tripterygium wilfordii* has proven to attenuate these effects in multiple models including, ApoE-knockout mice. However, the outcomes of different celastrol doses remain to be determined. This study aims to investigate the effect of different doses of celastrol on the body weight and blood glucose level of ApoE-knockout mice a fed high-fat diet (HFD). Four groups of male ApoE knockout mice (n=4) were fed with HFD for 12 weeks starting, at 8 weeks of age. During the last 4 weeks, three groups received celastrol intraperitoneally at doses of 1.5 mg, 2 mg, and 2.5 mg/kg/day respectively while the control group received 2% DMSO. Mice's body weight, length, and body mass index (BMI) were recorded weekly and blood glucose was measured at intervals following a 14-hour fast using a glucometer. At the end of the treatment, mice were euthanized using a ketamine-xylazine formulation. Data were analyzed using Kruskal-Wallis and One-way ANOVA tests in GraphPad Prism 10. The findings showed that body weight, BMI, and fasting blood glucose levels initially increased with the HFD, but exhibited a decreasing trend after administering celastrol. Notably, the 2 mg/kg dose of celastrol significantly contributed to these observations compared to the control group. This particular dose may be effective for other models and warrants further studies on prolonged Western diet consumption, especially for those dealing with weight gain and high blood glucose levels.

Keywords: Celastrol; ApoE-knockout mice; body weight; BMI; blood glucose

P13

Optimising Caco-2 Cells and Bifidobacterium Bifidum Co-Culture to Investigate the Possible Mechanism of Lapatinib-Induced Diarrhoea

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ABSTRACT

Lapatinib, an orally administered dual ErbB1/ErbB2 tyrosine kinase inhibitor (TKI), is approved by the FDA for ErbB2-overexpressing breast cancer treatment. However, diarrhoea is an adverse event with an incidence of 58-78% in patients receiving the drug. Previous studies showed a decrease in Bifidobacterium sp. in TKI-treated patients with severe diarrhoea, suggesting altered microbial composition, yet the exact mechanism of lapatinib-induced diarrhoea remains vague. This study aims to propose intestinal microflora and its interaction with lapatinib play a role in the mechanism of lapatinib-induced diarrhoea. Bifidobacterium bifidum (BB) is selected to investigate if lapatinib inhibits normal intestinal bacteria, leading to diarrhoea. The ability of Caco-2 cells to develop into enterocyte-like phenotypes was adapted to mimic a normal small intestine as an in vitro model. The optimum BB concentration that does not affect Caco-2 cell viability in the co-culture model was determined via 3-(4,5-dimethyliazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium (MTS) assay. Lapatinib inhibition on BB growth co-cultured with Caco-2 was elucidated through an antimicrobial assay. The MTS assay showed 10⁸ CFU/ml of BB provides the optimum Caco-2 cell viability; 86.60 ± 2.73 at 96 hours compared to other BB concentrations. In the antimicrobial assay, lapatinib inhibit BB growth (84.61% ± 1.68) with an optimum 10⁸ CFU/ml of BB concentration at 96 hours, but no inhibition was observed in the co-culture. In conclusion, a BB concentration of 10⁸ CFU/ml is the most optimal for maintaining Caco-2 cell viability and growth, at 96 hours, for co-culture development. Nevertheless, possible mechanism of lapatinib-induced diarrhoea via inhibition of normal intestinal bacteria growth requires further observation.

Keywords: Lapatinib; Caco-2; Bifidobacterium bifidum; MTS assay; antimicrobial assay

P14

Ultrastructural Characteristics of Placentas in Pregnancies Complicated with Fetal Growth Restriction

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ABSTRACT

Fetal growth restriction (FGR) is a serious pregnancy complication associated with higher perinatal morbidity and mortality, primarily related to abnormalities in placental anatomical structure or function. Even now, the exact causes of FGR remain poorly understood. This study aimed to identify the ultrastructural features of placentas in pregnancies complicated with FGR. Control placentas (n=11) and FGR placenta samples (n=10) were collected from consented mothers. Placental tissues were processed in accordance with the manufacturer's guide and analysed with transmission electron microscopy (TEM). Parameters such as the length and width of microvilli, the numbers of microvilli per 1 micron, basement membrane thickness and diffusion distance between the two groups were measured and recorded. A significant increase in the diffusion distance was observed in the villi of FGR placentas ($289.90 \pm 44.40 \mu\text{m}$) compared to those of normal ($215.60 \pm 57.54 \mu\text{m}$) ($p = 0.0019$). There were no significant differences in the microvilli length, width, number of microvilli per 1 micron or basement membrane thickness between the control and FGR groups ($p > 0.05$). The increase in the diffusion distance from maternal blood to fetal vessels in placentas complicated with FGR may impede effective transfer of oxygen supply and necessary nutrients to the fetus through the placenta, resulting in compromised fetal growth and development. Further studies with a larger sample size are however needed to elucidate this association.

Keywords: Fetal growth restriction; placenta; transmission electron microscopy (TEM); ultrastructure; diffusion distance

P16

Mapping Regorafenib's Protein Targets in Colorectal Cancer: Insights from Molecular Fingerprinting

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ABSTRACT

Globally, colorectal cancer (CRC) ranks third in incidence and second in cancer-related mortality. Cytotoxic chemotherapy is the standard first- and second-line treatment for metastatic CRC (mCRC) patients, either alone or in combination with targeted agents. Unfortunately, most mCRC patients experience disease progression after standard treatments and have limited subsequent therapeutic options. Regorafenib (REG), an FDA-approved multi-kinase inhibitor, has demonstrated efficacy in mCRC patients who are refractory to all previous therapies. Recent evidences suggest that combining REG with other targeted agents may improve outcomes, potentially moving its use to earlier treatment lines. However, the complete drug targets and molecular mechanism of REG remain unclear. In this work, we aim to elucidate the drug target profile of REG in CRC, gaining insights into the drug's mechanism of action. To achieve this, we computed the structural similarity of REG with FDA-approved drugs to infer drug targets from similar drug-ligand interactions by using molecular fingerprinting technique. Using the Tanimoto coefficient (cut off value > 0.7), we found nine drugs with a likely similar structure to REG. Based on molecular fingerprinting results, we discovered ten new potential proteins targets of REG that have not been previously reported. Notably, the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR), whose mutations can lead to chronic inflammation in the intestines, is one of the new potential targets identified. By identifying new protein targets of REG computationally, we aim to create a comprehensive map of REG's protein targets within CRC, potentially refining treatment strategies and improving therapeutic outcomes for mCRC patients.

Keywords: Colorectal cancer; regorafenib; targeted therapy; molecular fingerprinting; kinase inhibitor

P17

Enrichment of GBP7 Mutation in Patients with Primary Aldosteronism

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ABSTRACT

Primary aldosteronism (PA), showing excess production of the hormone aldosterone from the adrenal glands, is probably the commonest curable cause of hypertension. However, genome-wide association studies have only identified ~3.5% of the genetic contribution in blood pressure with most hits occurring in the non-coding regions. Whole genome sequencing (WGS), a powerful technology to detect all the genetic sequences in an individual, were utilized to identify the heritable mutations associated with PA. Based on the WGS results of 134 subjects, an enrichment of rare missense mutations in GBP7 was found in PA patients of Black ethnicity or in PA patients who have small aldosterone-producing micronodules (APMs). GBP7 is of interest as it encodes for a guanylate-binding protein that can hydrolyze GTP to both GDP and GMP, a process that plays a role in aldosterone synthesis pathway. The mutations in GBP7 has been verified to be true by Sanger Sequencing and overexpression of GBP7 in HAC15 cells significantly increased expression of

CYP11B2 mRNA, the aldosterone synthase gene, by 1.57 ± 0.21 fold ($p=0.001$). This was similar to the increase in CYP11B2 mRNA expression seen with angiotensin II-stimulated cells. Whereas silencing of GBP7 in HAC15 cells, significantly reduced CYP11B2 expression. These results suggest that alteration in the expression of GBP7 affects aldosterone production highlighting that GBP7 may play a potential role in PA pathogenesis especially those with idiopathic hyperaldosteronism and APMs.

Keywords: Primary aldosteronism; aldosterone; CYP11B2; GBP7; whole genome sequencing

P18

Exploring NPHS Mutations in Pediatric Patients with Congenital and Steroid-Resistant Nephrotic Syndrome

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NPHS1 and NPHS2 are both gene components of kidney that encodes for nephrin and podocin respectively. They play a role in progression of congenital (CNS) and steroid resistant (SRNS) nephrotic syndrome. Hence, this study aims to determine the prevalence and renal outcome of NPHS mutations among CNS and SRNS pediatric patients. We also aim to identify potential predictors of NPHS mutations in this patient cohort. Overall, there were 33 studies involving 2123 patients being screened for NPHS1, whereas 2889 patients from 40 studies were screened for NPHS2 mutations. Patients' mean age was 4.9 ± 1 years (ranged from birth – 18 years) and 56% was male (n=1281). Using random effects model, the pooled proportion of NPHS1 mutations among CNS and SRNS pediatric patients was 0.15 (95% CI 0.09; 0.24, $p < 0.001$, $I^2 = 92.0\%$). The pooled proportion of NPHS2 mutations was slightly lower 0.11 (95% CI 0.08; 0.14, $p < 0.001$, $I^2 = 73.8\%$). Among the 18 studies that reported on ESRF, the pooled proportion was 0.47 (95% CI 0.34; 0.61, $p < 0.001$, $I^2 = 75.4\%$). Our study showed that both NPHS1 ($\hat{\alpha} = 1.16$, $p = 0.35$) and NPHS2 ($\hat{\alpha} = 5.49$, $p = 0.08$) mutations did not predict ESRF in CNS and SRNS pediatric patients. Nevertheless, NPHS2 mutation from the European continents had a significantly higher risk of getting ESRF ($p < 0.05$, $\hat{\alpha} = 1.3$, OR = 7.97, 95% CI 0.30; 2.30) but not in NPHS1 mutation. We recommend NPHS mutations screening for earlier diagnosis and avoid unnecessary steroid treatments. More data are needed to better understand the impact of NPHS mutations among pediatric CNS and SRNS patients.

Keywords: NPHS1; NPHS2; congenital nephrotic syndrome; steroid resistant nephrotic syndrome; pediatric; end stage renal failure

P19

Effects of Kelulut Honey on the Frontal Lobe and Cerebellum in Amyloid β -induced Alzheimer's Disease Rat Model

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ABSTRACT

Alzheimer's disease (AD) is a progressive neurodegenerative disorder and is marked by cognitive decline and memory loss, due to β -amyloid plaques and neurofibrillary tangles in the brain. Kelulut honey, known for its antioxidant and neuroprotective properties, was tested for its effects on AD-induced rat models, focusing on the frontal lobe and cerebellum. Twenty-six male Sprague-Dawley rats, weighing 280-380 g, were randomly divided into three groups: control, disease (AB), and treatment with Kelulut honey (KH). The AB and KH groups underwent stereotaxic surgery, receiving intrahippocampal injection of 2.5 $\mu\text{g}/\mu\text{l}$ of $\text{A}\beta_{1-42}$. One-week post-surgery, the treatment group received Kelulut honey at a dose of 1 g/kg, for four weeks. The rats were then sacrificed and their brains were processed for histochemical staining using H&E and TUNEL assay, and ELISA. Findings indicate that Kelulut honey helps maintain the number of pyramidal cells in the frontal lobe ($p < 0.05$), which would otherwise decrease in AD. The TUNEL assay showed no significant difference in apoptotic cells between the groups in both the cerebellum and the frontal lobe. However, ELISA for SOD showed significant differences between AB and control group ($p < 0.05$) in the cerebellum, and treatment with KH significantly elevates ($p < 0.05$) the SOD level. We also found no significant differences between all groups for $\text{A}\beta_{42}$, p-tau, MDA and NF κ B. Our findings indicate that Kelulut honey treatment was able to reduce amyloid plaque deposition and elevated the antioxidant levels, suggesting its potential to alleviate AD-related pathology.

Keywords: Intrahippocampal injection; β -amyloid; tau protein; antioxidant

P20

Proteomic Profiling Reveals Interferon Pathway Upregulation in FOLFOX-resistant Colorectal Cancer Cells

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ABSTRACT

Colorectal cancer (CRC) patients receiving FOLFOX chemotherapy may eventually develop drug resistance, which remains poorly understood. To elucidate the mechanisms behind FOLFOX resistance, we generated FOLFOX-resistant CRC cell lines by exposing HCT-116 cells to FOLFOX at clinically relevant doses for ten cycles. The development of drug resistance was validated with cell viability assays (MTT). The cell lysates of both resistant and parental cells (before and after 24 hours of FOLFOX treatment) were then collected for mass spectrometry-based proteomics and bioinformatic analysis. As a result, we identified 9,477 proteins, of which 8,388 were quantified. Parental cells treated with FOLFOX showed significant overexpression of proteins associated with DNA damage response and cell cycle arrest (TP53, CDKN1A, CCNE1 and CCNA2). On the contrary, resistant cells did not exhibit enrichment of such pathways. Such observations are consistent with FOLFOX being a DNA-damaging agent and suggest a mechanism for the development of resistance. A comparison of parental and resistant cells before treatment showed that 51 out of 87 identified interferon-stimulated genes (ISGs) were significantly upregulated in the resistant cells. After 24 hours of FOLFOX treatment, there were 31 upregulated ISGs in the resistant cells, indicating the probable involvement of interferon pathways in FOLFOX resistance. Notable examples of these upregulated ISGs include ISG15, IFI35, IFIH1, OAS3, and STAT1. Our data highlights ISGs as potential biomarkers for stratifying responsive and resistant patients to FOLFOX treatment. Further validation in clinical settings is needed to establish their predictive utility and potential translation into clinical practice.

Keywords: Colorectal cancer; FOLFOX; interferon pathways; interferon-stimulated genes; proteomics