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SCIENCE & SOCIETY · BRIDGING GAPS, BUILDING FUTURE

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MEDICAL UNDERGRADUATES' ANNUAL SCIENTIFIC RESEARCH MEETING 2024

SCIENCE & SOCIETY

Bridging Gaps, Building Future

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COMMUNITY RESEARCH-ORAL PRESENTATION

Assessing the Knowledge of Physicians in Strongyloidiasis Management at Hospital Canselor Tuanku Muhriz

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Background and aims: Strongyloidiasis, a neglected tropical disease highlighted in the World Health Organisation (WHO) Roadmap 2021-2030 for prevention and control, poses significant health risks, particularly to immunocompromised individuals. A lack of awareness and knowledge among physicians can lead to poor management and hinder the effectiveness of mitigation efforts. This study assessed physicians' knowledge and factors influencing their management of strongyloidiasis.

Materials and methods: A cross-sectional study was conducted among 70 physicians working at Hospital Canselor Tuanku Muhriz (HCTM) who have experience managing chronic and immunocompromised patients. A validated questionnaire was distributed via Google Forms after consent, using multistage and universal sampling. The questionnaire had three sections: socio-demographic, familiarity with strongyloidiasis, and knowledge of *Strongyloides* infection. Knowledge scores were categorised as low or moderate to good based on Bloom's taxonomy. The analysis was performed using SPSS (version 27.0) for descriptive and statistical analysis.

Results: Overall, most participating physicians (59%) exhibited low knowledge of strongyloidiasis. Higher knowledge levels were found among those familiar with the disease (50%), treating immunocompromised patients (45%), and attending tropical disease training (56%), but none were statistically significant ($p > 0.05$). Additionally, although 38% of physicians had experience treating strongyloidiasis and 40% possessed advanced academic qualifications, these factors did not result in significantly higher knowledge scores, likely due to the small sample size. Alarmingly, 59% and 61% of participants confidently selected incorrect answers regarding diagnosis and treatment, respectively, instead of opting for "unsure," raising concerns about potential mismanagement of strongyloidiasis cases.

Conclusion: This study highlights a significant knowledge gap in strongyloidiasis among physicians at HCTM. We recommend integrating strongyloidiasis into the medical curriculum and enhancing specialised training and clinical exposure to ensure physicians are well-informed and actively engaged in managing strongyloidiasis.

Keywords: Immunocompromised; knowledge assessment; physicians; strongyloidiasis

A Cross-sectional Study of Patient Satisfaction and Healthcare Service Quality in Tertiary Hospital

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Background and aims: Healthcare systems are constantly evolving, making the assessment of outcomes and patient satisfaction essential. This helps in identifying gaps in care delivery and provides opportunities to improve healthcare service quality. This study aimed to determine the patient satisfaction and the quality of healthcare services in the hospital.

Materials and Methods: A total of 384 respondents aged 18 years and above who had been hospitalised were selected using stratified random sampling. A structured questionnaire consisting of demographic data, the Short-Form Patient Satisfaction Questionnaire (PSQ-18) and the HEALTHQUAL questionnaire was distributed to the respondents. A higher mean score for the PSQ-18 implies a higher level of satisfaction, while a higher mean score for HEALTHQUAL indicates that patients are receiving high-quality healthcare services.

Results: Patient satisfaction and healthcare service quality were both high, with scores of 73% and 98%, mean scores respectively (3.93 ± 0.62 and 4.39 ± 0.46). The interpersonal manner dimension of patient satisfaction had the highest mean score (4.30 ± 0.82). The tangible and safety dimensions of healthcare service quality received the highest mean scores (4.47 ± 0.49 and 4.47 ± 0.54, respectively). There was a significant weak positive correlation between patient satisfaction and healthcare service quality (r=0.23, p<0.001). The study identified a significant association (p<0.005) between patient satisfaction and respondents' age group, religion, area of living, education level, and employment status. Healthcare service quality was also significantly associated with the area of living.

Conclusion: Most of the patients expressed a high level of satisfaction with the quality of healthcare services they received during their hospital stay. These findings provide insights into patient satisfaction, particularly in relation to interpersonal manner, as well as the tangible and safety aspects of healthcare service quality.

Keywords: Hospitalised patient; healthcare service quality; patient satisfaction; patient experience

Association between Social Media on Mental Health and Academic Performance among Undergraduate Medical Students in a Public University in Malaysia

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Background and aims: More than half of Malaysian social media users are youth aged 18-34. Despite its benefits for communication and socialisation, the prevalence of mental health issues among medical students remains concerning. This study aimed to determine the association between social media usage and undergraduate medical students' mental health and academic performance.

Materials and methods: A cross-sectional, self-reported online questionnaire-based study was conducted over six weeks at the Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM). A total of 270 UKM undergraduate medical students were recruited. Those who consented to participate were provided with a Google Form survey to collect their response. Nursing, emergency medical science, postgraduate medical students and those diagnosed with mental health disorders were excluded from the study. The questionnaire consisted of a demographic questionnaire, DASS-21 scale, self-reported social media usage and academic performance. Data were analysed using SPSS 29 to determine significant associations.

Results: A total of 270 UKM undergraduate medical students participated in the study. The majority were female (70.4%), Year 1 pre-clinical students (31.5%), and of Malay ethnicity (47.4%). Excessive social media usage (≥3 hours/day) was reported by 89.6% of respondents, with Instagram being the most frequently used platform (88.4%). Depression was significantly more prevalent among students with excessive social media usage compared to those with recommended usage (41.3% vs. 21.4%, p = 0.041). However, no significant associations were found between social media usage and anxiety (p = 0.097), stress (p = 0.139) or academic performance (p > 0.05).

Conclusion: The majority of UKM undergraduate medical students reported excessive social media usage. Excessive use was significantly associated with depression but not significantly associated with anxiety, stress, or academic performance. These findings highlight the need to monitor and promote healthier social media habits to reduce depression among undergraduate medical students.

Keywords: Depression; digital media; educational outcomes; psychological wellbeing; university student

Determinants of Burnout among Medical Students in A Public University in Kuala Lumpur, Malaysia: A Cross-Sectional Study

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Background and Aims: Burnout is prevalent among medical students, frequently arising from the demanding nature of medical training and personal challenges. This study aims to determine the prevalence of high burnout among Universiti Kebangsaan Malaysia (UKM) medical students and its associated factors such as mentorship, motivation and professional values.

Materials and Methods: A total of 328 medical students who were involved in both lecturer and peer mentorship programmes in UKM, completed a questionnaire on (i) sociodemographic, (ii) burnout (Copenhagen Burnout Inventory [CBI]), (iii) lecturer and peer mentorship evaluation, (iv) motivation (Strength of Motivation for Medical School-Revised) and (v) professional values (Physician Values in Practice Scale). Statistical analyses were conducted using Student's t-test and binary logistic regression.

Results: Of the 328 respondents, 72.3% were female, 42.4% were of Malay ethnicity and 33.8% were Year 2 students. High personal, work-related and client-related burnout rates were 60.4%, 47.3% and 32.0% respectively. Being female was linked to higher personal ($p=0.025$) and work-related burnout ($p=0.049$). Students with parents in medical professions were associated with increased client-related burnout ($p=0.011$). Mentor's approachability in lecturer mentoring was significantly associated with reduced work-related burnout ($p<0.001$, OR=0.62, 95% CI=0.47-0.82). For peer mentorship, personal attributes were associated with lower personal ($p<0.001$, OR=0.41, 95% CI=0.25-0.66) and work-related burnout ($p=0.013$, OR=0.70, 95% CI= 0.52-0.93) whereas persistence attributes in motivation were significantly linked to lower burnout rates across all dimensions ($p<0.005$). Professional values of service were associated with reduced client-related burnout ($p=0.009$).

Conclusion: Interventions for high burnout among medical students should focus on enhancing mentorship quality, in both lecturer and peer mentorship programmes, as well as developing strategies to strengthen students' motivation and professional values in medical training.

Keywords: Burnout; medical students; mentorship; motivation; professionalism

Could the NIOSH Sound Level Meter Application Be an Adjunct in Noise Measurement in the Manufacturing Industry in Malaysia?

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Background and aims: Mobile sound level applications have been proposed as potential adjuncts for conventional sound level meters (SLM) in noise measurement. However, their performance remains uncertain in the workplace. As such, the current study aimed to determine the validity, reliability, and agreement of the NIOSH SLM app in measuring noise in the manufacturing industry in Malaysia.

Materials and methods: A total of 93 samples were collected from five machineries in a manufacturing factory in Klang Valley. An iPhone 12 Pro and an iPhone 12 mini, each installed with the latest version of NIOSH SLM app, were tested against the SLM (gold standard). Three noise parameters, namely the average noise level (i.e., LA_{eq}), maximum sound level (i.e., L_{Max}) and 8-hour time-weighted average (i.e., TWA-8h) were measured by all devices. Concurrent validity was assessed using Pearson's correlation coefficient while two-way mixed effects intraclass correlation coefficient (ICC 3,1) was used to assess the intra-rater reliability of the NIOSH SLM app. The agreement in the noise parameters measured by both the NIOSH SLM app and SLM was assessed using the Bland-Altman plot.

Results: The NIOSH SLM app demonstrated high concurrent validity, as measured by Pearson's correlation (p<0.001) and moderate-to-good reliability, as measured by two-way mixed effects intra-class correlation coefficient (p<0.001) in all three noise parameters. The LA_{eq} and TWA-8h measured by the NIOSH SLM app were also in agreement with the SLM, except for L_{Max}.

Conclusion: The NIOSH SLM app is valid and reliable in measuring noise compared to SLM. Two out of three noise parameters measured by the NIOSH SLM app were agreeable to those measured by SLM. As such, the NIOSH SLM app was proven to be a potential adjunct to noise measuring tools in manufacturing industry settings.

Keywords: Factory; mobile applications; noise measurement; workplace

Positive Association between Knowledge & Practice of Safe Disposal of Sharp Waste amongst Surgical Healthcare Workers in Hospital Canselor Tuanku Muhriz

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Background and aims: There are discrepancies in the level of knowledge and practice among surgical department healthcare workers regarding the safe disposal of sharp wastes, which affect sharp waste management in the hospital. The study aimed to assess the knowledge of safe disposal of sharp waste among surgical healthcare workers and its correlation with their current practice.

Materials and methods: A cross-sectional survey was conducted among 220 healthcare workers involving surgical and anaesthesiology specialists, surgical and anaesthesiology medical officers, surgical house officers and trained staff nurses of the surgical wards, clinics and operating theatres in Hospital Canselor Tuanku Muhriz. Participants were randomly selected within the population and were given a questionnaire. Participants were asked to report their level of knowledge and practice of safe disposal of sharp waste.

Results: With a sample size of 220, the analysis revealed that 92% had adequate knowledge, while 7.7% of participants had inadequate knowledge. Among those with adequate knowledge, 67.3% exhibited good practice, and 32.7% demonstrated fair practice. While among those with inadequate knowledge, no participant exhibited good practice, and 25% demonstrated fair practice. There were significant associations between training in sharp waste handling and knowledge (p=0.043), occupation and practice (p<0.001), age group and practice (p=0.022). The analysis indicated a significant association between the level of knowledge and the practice of safe sharp waste disposal (p<0.001).

Conclusion: The study highlights a strong significant association between the level of knowledge and the practice of safe disposal of sharp wastes among surgical healthcare workers. However, despite having good knowledge, some individuals still show inadequate practice. The results demonstrate the need for targeted training programs to enhance both knowledge and adherence to safe disposal protocols.

Keywords: Competency; operating theatre; sharp waste; survey; understanding

COMMUNITY RESEARCH – E-POSTER PRESENTATION

Perception Towards Artificial Intelligence among the Medical Students of Universiti Kebangsaan Malaysia

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Background and aims: Incorporating Artificial Intelligence (AI) in medical education can improve students' knowledge and skills development. This study aimed to determine the perceptions of medical students at Universiti Kebangsaan Malaysia (UKM) towards AI in medical education.

Materials and methods: A total of 313 preclinical and clinical medical students from UKM were selected using multistage cluster sampling. The questionnaire was adopted and validated from existing research to capture a comprehensive range of variables pertinent to the study, ensuring that the questions accurately measure the intended constructs and reflect the specific context of the study, which includes demographic data, perceptions of AI, and the impact of AI on medical education.

Results: The response rate for this survey was 84.8%, with a sample size of 296. Most of the students (96.8%) agreed that AI will play an important role in healthcare, and more than half (92%) agreed that AI will have a positive impact on medical education. Most of the students (92.8%) were willing to use AI in medical education. There was no association between preclinical and clinical students towards the perception of AI in medical education (p=0.376) and willingness to use AI (p=0.174). However, there was an association between the perceived impact of AI and student type (preclinical or clinical) (p=0.012).

Conclusion: This study shows that medical students widely recognise the importance of AI in healthcare and medical education, with no significant differences in attitude between preclinical and clinical students. However, the difference in how preclinical and clinical students perceive the impact of AI suggests that their views may change with more clinical experience. To better prepare students for the future of healthcare, medical schools should consider adapting AI education to meet the needs of students at different stages of their learning.

Keywords:　　AI in education; student's perception; technology acceptance

Impact of Prolonged Exposure to High Energy Visible Light from Digital Devices on Medical Students

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Background and aims: Prolonged exposure to high-energy visible (HEV) light from digital devices may negatively affect medical students' well-being, academic performance, and health. This study aimed to explore the extent of HEV light exposure and its potential consequences.

Materials and Methods: A cross-sectional study was conducted with 265 medical students from Universiti Kebangsaan Malaysia, ranging from Year 1 to Year 5, selected via randomised sampling. Participants completed an online questionnaire anonymously that included demographic data, the Pittsburgh Sleep Quality Index (PSQI), the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), and questions on the frequency, duration, and timing of device usage. The PSQI assessed sleep quality, defining a score of 5 as a good sleeper and >5 as a poor sleeper. The WEMWBS evaluated well-being using a Likert scale for positive feelings. The device usage section focused on the time spent using digital devices. The Pearson correlation coefficient test was used to analyse the relationships between sleep quality, well-being, and device usage.

Results: The study investigated the impact of prolonged exposure to high-energy visible (HEV) light on sleep quality, well-being, and academic performance (CGPA). Analysis using Pearson correlation revealed a weak significant negative correlation between HEV light exposure and sleep quality (r =-0.207, p<0.001), suggesting that increased HEV light exposure was associated with poorer sleep quality. Next, the correlations between HEV light exposure and well-being (r =-0.272, p =<0.001) which also showed a weak negative significant correlation, suggesting that increased HEV light exposure was associated with poorer wellbeing of the medical students. However, for CGPA, the associations (r=-0.016, p=0.797) are both weak and not significant, indicating no substantial impact of HEV light exposure on the CGPA.

Conclusion: Blue light exposure can negatively affect different aspects of life which may consist of academic performance, well-being and sleep quality of individuals. Further research on other samples may be required for a better outcome

Keywords: Sleep quality; academic performance; well-being

Cardiac Outcomes and Quality of Life in Primary Aldosteronism: A Retrospective Comparative Analysis of Medical Treatment Versus Adrenalectomy

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Background and aims: Primary aldosteronism (PA) is a common cause of secondary hypertension that is associated with cardiovascular events and damage. Currently, it remains unclear which treatment modality is more effective in minimising the associated cardiovascular risk. This study aims to investigate the differences in cardiovascular manifestations and quality of life between treatment approaches.

Materials and methods: A retrospective analysis was conducted on a cohort of 86 Malaysian patients with PA treated at the Hospital Canselor Tuanku Muhriz from 2015 to 2023. Of these, 59 patients were treated medically, while the remaining 27 underwent unilateral adrenalectomy. Medical records at the time of PA diagnosis were evaluated for cardiovascular events and cardiac risk parameters. Patients were additionally given a 30-item questionnaire on PA-specific health-related quality of life (HR-QoL).

Results: Significant differences were found in the age at PA diagnosis (p=0.006), duration of hypertension (p=0.026), plasma aldosterone concentration (PAC) (p=0.032), high-density lipid (p=0.041), and triglyceride (p=0.050) between different treatment modalities. No significant differences were observed in the other variables investigated. To note, there was a statistical significance with PA subtypes between treatment modalities as unilateral PA are more likely to undergo adrenalectomy (p=0.001). The quality of life for surgically treated patients is anticipated to be significantly superior to that of medically treated patients. This part of the study is ongoing to validate this speculation.

Conclusion: The findings indicate that patients undergoing adrenalectomy were generally older and had a longer history of hypertension, elevated PAC, hypercholesterolemia and hypertriglyceridemia - factors that increase cardiovascular risk. However, unilateral PA was significantly associated with adrenalectomy, and thus further investigation is needed to determine the interaction. The HR-QoL score between treatment approaches may be further input as to which treatment modality is better.

Keywords: Conn's syndrome; hypertension; primary aldosteronism; quality of life

Work-Life Balance and Job Satisfaction of Medical Doctors in a Teaching Hospital in Malaysia: A Cross-Sectional Study

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Background and aims: The medical profession, especially doctors, is known for its demanding workload, long working hours and stressful working environment, making it challenging to maintain a healthy work-life balance (WLB), which is crucial for personal well-being and job satisfaction. Poor WLB among doctors can contribute to increased stress, burnout and a deterioration in physical health. This ultimately leads to job dissatisfaction, particularly in teaching hospitals where doctors also manage patient care, education, and research responsibilities. Therefore, this current study aimed to assess the WLB and job satisfaction of doctors in a teaching hospital in Malaysia and to identify the influencing factors.

Materials and methods: A cross-sectional study was conducted among doctors from Hospital Canselor Tuanku Muhriz (HCTM), Universiti Kebangsaan Malaysia, using a self-administered questionnaire accessible via Google Forms. The study included full-time registered Malaysian doctors aged 25 to 60 years working in various departments of HCTM. Approximately 162 doctors were selected. The questionnaire was divided into three main categories: socio-demographic data, WLB and job satisfaction. The data were analysed using descriptive statistics and inferential statistics, including Chi-square and Fisher's exact tests.

Results: The results showed that overall WLB was moderate among doctors in HCTM, with notable differences in various sociodemographic factors. Doctors with better WLB were found to be more likely to have higher levels of job satisfaction.

Conclusion: The study showed a positive relationship between WLB and the job satisfaction of doctors in HCTM. These efforts are important to increasing doctors' overall well-being and productivity. Moreover, these findings provide a basis for healthcare organisations to refine their policies and implement innovative strategies to improve WLB and job satisfaction among doctors and other healthcare professionals.

Keywords: Medical practitioners; work fulfilment; work-life harmony; teaching hospital

Depression among Patients with Rheumatoid Arthritis in a Tertiary Centre

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Background and aims: Depression can affect the quality of life among patients with rheumatoid arthritis (RA). The current study aimed to determine the prevalence of depression and its associated factors among these patients in a tertiary centre.

Materials and methods: A total of 50 RA patients aged 18 years and above were recruited face-to-face in the Rheumatology Clinic of Hospital Canselor Tuanku Muhriz (HCTM) and by phone call. They were given questionnaires consisting of Patient Health Questionnaire (PHQ-9), Health Assessment Questionnaire (HAQ), Disease Activity Score (DAS28) and Clinical Disease Activity Index (CDAI). PHQ-9 comprised items assessing depression, and a score of ≥ 10 categorised the patient as depressed, HAQ composed of items assessing functional impairment, DAS28 and CDAI composed of items assessing RA disease activity. All clinicopathological data were retrieved from the follow-up report in C-HEtS of HCTM.

Results: Of the 50 patients, 100% were female, 54% were of Malay ethnicity, 94% were married, and 60% were unemployed. Patients aged more than 45 years recorded the highest prevalence of RA in HCTM, particularly among Malays and females. There was a negative association between quality of life and depressive symptoms among the study population (p=0.009). Otherwise, there was no significant association between sociodemographic data and depressive symptoms (p=0.928), employment status and depressive symptoms (p=0.632), as well as erythrocyte sedimentation rate (ESR)/C-reactive protein (CRP) and depressive symptoms (p=0.882, p=0.242).

Conclusion: The study highlights the rate of depressive symptoms among RA patients in HCTM is relatively low, with an observed prevalence of 18%. However, sociodemographic factors like age, gender, race and marital status showed no significant correlation with depression. Additionally, employment status and inflammatory markers like ESR and CRP did not fully explain the presence of depression in RA patients.

Keywords: Autoimmune disease; lifestyle; mental health; psychiatry; stress

Diabetes Actual Risk and Risk Perception Survey and Its Association with Lifestyle Practices among Undergraduates from the Faculty of Medicine, Universiti Kebangsaan Malaysia

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Background and aims: Diabetes risk and healthy lifestyle practices are interrelated, highlighting their importance in disease prevention. Undergraduate healthcare professionals are expected to model healthy behaviours for future patients. This study explored the relationship between the actual diabetes risk and risk perception survey with self-reported healthy lifestyle practices among undergraduates from the Faculty of Medicine, Universiti Kebangsaan Malaysia.

Materials and methods: A cross-sectional study using an online survey platform was conducted between March and August 2024 involving 196 undergraduate students from medical, nursing and emergency medicine programmes. Respondents were to complete the self-administered questionnaires consisting of socio-demographics, clinical characteristics, ADA Diabetes Risk Test, and the Risk Perception Survey for Developing Diabetes (RPS-DD). Descriptive and inferential analysis were done using SPSS version 27.0.

Results: Only 1% of the respondents had a high actual risk of diabetes mellitus (DM), but 80% of respondents had at least one diabetes risk factor. Males and Malay students were more likely to be at risk of DM (p<0.001, p=0.017). About 37.7% of the respondents perceived high risk, which was associated with a family history of DM and physical inactivity (p=0.017, p=0.032). Those perceiving high risk had greater personal control, higher optimistic bias and less worry (p=0.05, p<0.01, p<0.01). Both respondents with actual risk (42.7%) and perceived high risk (37.8%) of developing DM exhibited poor adherence to healthy lifestyle practices. No significant relationship was found between actual risk and risk perception survey with self-reported healthy lifestyle practices.

Conclusion: Undergraduate health professional students should acknowledge their risk factors and improve their healthy lifestyle practices. Future research should investigate additional factors that influence healthy lifestyle practices.

Keywords: Actual diabetes risk; diabetes mellitus; healthy lifestyle practices; medical students

Effectiveness of Recylearn360 on Recycling Practices among Students of the Faculty of Medicine, Universiti Kebangsaan Malaysia

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Background and aims: Recycling practices among Malaysians are declining, which is concerning. Therefore, this study aims to evaluate the effectiveness and impact of RecyLearn360 in improving recycling practices among students of the Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM).

Materials and methods: A total of 120 students from the Faculty of Medicine, UKM, including Medicine, Nursing, and Emergency Medicine courses, were recruited via proportionate random sampling. Participants completed the same pre- and post-questionnaires, which consisted of demographics, knowledge, attitudes, and practices domains. The link to RecyLearn360 was included in the pre-questionnaire. Ultimately, the link to the post-questionnaire was distributed after 1 week of the pre-questionnaire.

Results: The sociodemographic factors of the students are expected to affect the recycling practices. All students are expected to be involved with at least one of the recycling practices. With the design of the RecyLearn360 module and supportive evidence of the previous experimental study, the intervention is expected to be effective and exert a positive impact on the participants' knowledge, attitudes, and recycling practices. Specifically, higher knowledge, better attitudes, and increased engagement are expected in the recycling practices among the participants.

Conclusion: The RecyLearn360 module is anticipated to significantly enhance participants' knowledge, attitudes, and recycling practices. However, further testing is ongoing to confirm this theory. If the results are aligned with our expectations and anticipations, this study would offer a noteworthy perspective into the effectiveness of educational interventions in promoting recycling and sustainable practices among students.

Keywords: Environment; intervention; medical undergraduates; recycling; sustainability

CLINICAL RESEARCH - ORAL PRESENTATION

The Frequency, Clinical Characteristics and Outcomes of Cobra Species-Related Injuries in Malaysia Consulted to Remote Envenomation Consultancy Services (RECS) From 2020-2023

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Background and aims: Snakebite envenomation remains a significant but neglected public health issue, including in Malaysia. Cobra (*Naja* species) are common causes of injuries and envenomation, though clinical studies are limited. This study aimed to identify the frequency, geographical distribution, clinical features, treatments, and outcomes of *Naja* species-related injuries.

Materials and methods: This retrospective cohort study analysed confirmed and probable *Naja* species-related injuries consulted to Remote Envenomation Consultancy Services (RECS) from 2020-2023. Data was extracted from the RECS database using universal sampling, and results were descriptively reported.

Results: Of 4474 RECS consultations, 526 *Naja*-related cases were documented. There are 149 (28.3%) *Naja sumatrana* bites, 60 (11.4%) venom ophthalmia (by *Naja sumatrana*), 2 (0.4%) involved both *Naja sumatrana* bites and venom ophthalmia, 123 (23.4%) *Naja kaouthia* bites, and 192 (36.5%) undifferentiated *Naja* bites. Most patients were male, 367 (69.8%) and adults with a mean age of 36.6 years old. The lower limb (52.5%) was the most frequent anatomical region involved. *Naja kaouthia* cases were prevalent in the northern, 61 (49.6%) and central, 36 (29.3%) of Peninsular Malaysia, while *Naja sumatrana* occurred nationwide. Local and systemic envenomation occurred in 83 (15.8%) cases, mostly from undifferentiated *Naja* bite (61.9%). Common symptoms included local pain (86.0%) and swelling (60.2%), while systemic symptoms included vomiting (10.5%) and ptosis (7.8%). Antivenom was administered to 161 (30.6%) cases, with *Naja kaouthia* antivenom (NKAV) being the most common. Surgical interventions occurred in 11.4% of bite cases. Emergency resuscitation was performed on 23 (27.7%) local and systemic envenomation cases. Three deaths were recorded, two from unidentified *Naja* species and one from *Naja kaouthia*, due to secondary complications. No antivenom usage, complications or death following venom ophthalmia.

Conclusion: *Naja sumatrana* was the most frequent cause of envenomation. Deaths were

rare and due to complications. Antivenom use was effective, highlighting the importance of following national guidelines and expert consultation for favourable outcomes.

Efficacy and Safety of Ketamine-Propofol (Ketofol) as Anaesthetic Agent during Electroconvulsive Therapy: A Systematic Review and Meta-Analysis

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Background and aims: Ketofol is an induction anaesthetic drug used during electroconvulsive therapy (ECT). The aim of this study is to elucidate the efficacy and safety of ketofol in comparison to other anaesthetic agents during ECT.

Materials and methods: PubMed, Scopus, and Web of Science were searched for articles published between January 2000 and January 2024. The studies' inclusion criteria included seizure duration, recovery time, and adverse effects of ketofol. We conducted meta-analyses using random-effects models. Results were reported as mean differences (MDs) for continuous outcomes and odds ratios (ORs) with corresponding 95% confidence intervals (CIs).

Results: Eight trials with 838 patients met our inclusion criteria and were included in the meta-analysis. Five trials compared ketofol with propofol, and three trials compared ketofol with propofol and ketamine. While comparing ketofol and propofol, there was a significant difference in motor seizure duration favouring propofol (MD: 9.13, 95% CI: 5.48 to 12.78; p<0.00001; I^2=93%). When comparing ketofol and two agents, there was no significant difference in motor seizure duration (MD: 3.94, 95% CI: -5.35 to 13.23; p=0.41; I^2=99%). During single agent comparison, the duration of eye-opening showed a significant difference favouring propofol (MD: 22.00, 95% CI: 9.78 to 34.23; p=0.0004; I^2=0%). For adverse events, ketofol showed no significant differences in hypertension (OR: 1.29, 95% CI: 0.78 to 2.13; p=0.32; I^2=0%), nausea and vomiting (OR: 1.54, 95% CI: 0.77 to 3.08; P=0.22; I^2=0%) and headache (OR: 0.95, 95% CI: 0.57 to 1.59; P=0.84; I^2=0%).

Conclusion: This meta-analysis demonstrates that ketofol has a comparable efficacy and safety profile with propofol in adults undergoing ECT.

Keywords: Electroconvulsive therapy; ketofol; ketamine; propofol

Development and Validation of a Questionnaire to Assess Patients' Understanding of Discharge Counselling in a Tertiary Hospital

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Background and aims: Misunderstanding of discharge counselling provided by healthcare professionals can negatively affect patients' health outcomes. However, no validated questionnaire is currently used in local hospitals to assess patients' understanding of discharge counselling. This study aimed to develop and validate a questionnaire to assess patients' understanding of discharge counselling.

Materials and Methods: A 48-item questionnaire, including demographic information and core questions, was developed based on literature reviews and expert input. The questionnaire underwent forward and back translation into Malay and English, resulting in a bilingual version. Content validity was confirmed by two medical experts, refining the questionnaire to 16 core questions. A preliminary pilot test involving 20 patients assessed the face validity, followed by a pilot test of 160 patients. Internal consistency was evaluated using Cronbach's alpha, while reliability was assessed through test-retest analysis using the intraclass correlation coefficient (ICC), with a two-week interval via telephone or email.

Results: The final bilingual questionnaire, consisting of 16 core questions, was produced with minimal discrepancies following vigorous forward and back translation. It is expected to demonstrate a strong internal consistency (Cronbach's alpha ≥ 0.90) and excellent test-retest reliability (ICC ≥ 0.90). The study is ongoing to validate these speculations.

Conclusions: The newly developed questionnaire, consisting of 16 core questions, is expected to be a highly valid and reliable tool for evaluating patients' understanding of discharge counselling. We recommend incorporating this questionnaire into the discharge protocol to enhance patient care in hospitals.

Keywords: Healthcare surveys; health education; patient discharge; reliability; validity

Prevalence and Determinants of Refractory Chronic Rhinosinusitis in a Malaysian Tertiary Center: A Retrospective Cohort Study

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Background and aims: Chronic rhinosinusitis (CRS) is debilitating and affects 2.7-15% of the population worldwide. However, local data are limited, especially for Malaysia. This study aims to determine the prevalence of CRS in Hospital Canselor Tuanku Muhriz (HCTM) and explore factors related to refractory CRS.

Materials and methods: This retrospective study analysed the data and demographic profiles of 131 CRS patients aged 18 and above who attended the Otorhinolaryngology Clinic in HCTM over five years (January 2019 to December 2023), which were obtained from medical records. Lund-Mackay Scores were obtained by retrospective review of imaging. The prevalence of CRS, refractory CRS and the phenotypes were determined using simple descriptive statistics, while bivariate analyses assessed the association of age, gender, presence of polyps and the scores with refractory CRS.

Results: Among 86410 patients, the prevalence of CRS was 0.15%, with 15.27% classified as refractory, characterised by persistent symptoms and resistance to treatment. The most common phenotype of refractory CRS identified was atopy at 30%. The mean Lund-Mackay score was significantly higher in patients with refractory CRS (15.00 $\pm$ 5.370) compared to non-refractory patients (7.88 $\pm$ 5.755), with a p-value of < 0.05, indicating greater radiological severity. Additionally, the presence of polyps was significantly associated with an increased likelihood of refractory CRS, with 22.4% of CRS with polyps developing refractory disease, compared to only 2.2% of those without polyps (p = 0.002). Demographically, no significant differences (p > 0.05) in age or gender distribution were found.

Conclusion: In this cohort of CRS patients, 15.27% were classified as having refractory CRS, and 30% were atopic. Higher Lund-Mackay scores and the presence of polyps were significantly associated with refractory disease. Biologics offer an alternative to repeated surgical interventions, underscoring the need for further research into personalised, targeted treatment strategies for this population.

Keywords: Chronic rhinosinusitis; nasal polyps; refractory chronic rhinosinusitis; biologic therapy

Investigating the Ocular-Cardiac Link: Preliminary Findings

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Background and aims: Coronary artery disease (CAD) may affect retinal and optic nerve head (ONH) perfusion. This study aimed to evaluate the retinal nerve fibre layer (RNFL) and vascular parameters of the ONH in CAD patients.

Materials and methods: All patients aged between 40-70 years old who underwent cardiac computed tomography angiogram in 2022-2024 and had coronary artery calcium score (CACS) determined, were identified. Patients were divided into two groups, CACS=0 (non-CAD) and CACS>0 (CAD). Patients with poor-quality optical coherence tomography (OCT) scans or with other optic neuropathies were excluded. Data collected included intraocular pressure (IOP), RNFL thickness, flux index, vascular perfusion (VP) and vascular density (VD).

Results: Of the 217 patients screened, 164 did not fulfil the age limit. Fifty-three patients were invited but only 38 patients responded. Three patients were excluded because of poor OCT signal strength (n=1), history of steroid use (n=1) and high IOP (n=1). Therefore, 35 patients were included in the study (21 CAD, 14 non-CAD). There was no difference in age between the CAD (56.95 $\pm$ 8.62 years) and non-CAD group (52.00 $\pm$ 8.70 years, p=0.107). There was a slight female preponderance with a M:F ratio of 1:1.5. The global RNFL thickness in the CAD (104.71 $\pm$ 9.07 μm) and non-CAD group (104.36 $\pm$ 17.14 μm, p=0.936) were not statistically significant. There was also no significant difference in VP (p=0.148) and VD (p=0.204) between the two groups. There were significant positive associations between triglyceride levels and both VD (regression coefficient, β=0.341, p=0.045) and VP (β=0.354, p=0.037), while significant negative associations were observed between LDL levels and both VD (β=-0.034, p=0.046) and VP (β=-0.355, p=0.036).

Conclusion: CAD does not affect RNFL thickness or vascular indices. Lower LDL may have beneficial effects on retinal vascular health.

Keywords: Coronary artery disease; coronary artery calcium score; retinal nerve fibre layer; vascular density; vascular perfusion

CLINICAL RESEARCH – E-POSTER PRESENTATION

Factors Affecting the Rate of Attendance in the Emergency Department of Hospital Canselor Tuanku Muhriz

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Background and aims: The Emergency Department (ED) is crucial for urgent care but faces overcrowding, leading to longer waiting times and higher mortality rates. Factors like public holidays, weather, day of the week and shift times exacerbate this during peak hours. This study aimed to evaluate these factors and their impact on attendance rates in the ED at Hospital Canselor Tuanku Muhriz (HCTM) to enhance healthcare management and patient outcomes.

Materials and methods: A retrospective study was conducted in 2024. The data were obtained manually from the summary of ED patients' registration. The information taken was each patient's date and time of registration. The registered date and time were correlated with factors such as the day of the week, shift of the day, weather of the day, and public holidays.

Results: The total number of attendances recorded in the month was 4230 patients with an average of 141 patients each day. Public holidays showed no significant decrease in the number of patients in ED compared to other working days (p=0.757) and for the days in a week, Monday showed no significant increase in the number of patients compared to other days (p=0.092). There was a significant increase in the number of patients in shift 2, 2 pm to 9 pm (p=0.047) while a significant decrease during passing clouds compared to other weather (p=0.005).

Conclusion: Public holidays do not have a lower attendance rate than working days, and Mondays do not have the highest attendance rate. Shift 2 has the highest attendance rate among other shifts, whereas the weather passing cloud has a lesser attendance rate than light rain and thunderstorms.

Keywords: Patient visits; shift; weather

Outcome of Endoprosthesis in Surgical Treatment of Lower Limb Tumour in Hospital Canselor Tuanku Muhriz

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Background and aims: Endoprosthetic reconstruction is a standard surgical option for limb salvage in patients with lower limb tumours. This study aimed to evaluate the outcomes and complications of endoprosthesis for lower limb tumour surgery at Hospital Canselor Tuanku Muhriz.

Materials and Methods: A retrospective analysis was planned on 42 orthopaedic patients who underwent endoprosthetic reconstruction for lower limb tumours between 2010 and 2024 at Hospital Canselor Tuanku Muhriz. Detailed follow-up data are currently available for 4 patients (2 males and 2 females, mean age 58 years, range 45-68 years). Initial cases included 1 metastatic breast carcinoma, 2 pathological fractures secondary to breast and thyroid cancers, and 1 giant cell tumour. Functional outcomes were evaluated using the Musculoskeletal Tumour Society (MSTS) score, which was conducted via interview. In addition, postoperative complications, including infections, mechanical failure, and periprosthetic fractures, were being closely monitored as key outcome measures. Further data collection is ongoing to expand the sample size.

Results: Preliminary results from the 4 available patients suggested a mean MSTS score of 21.75 (range 16–30), indicating moderate to good recovery. Early complications included 1 case of infection and bleeding and 1 joint stiffness, with no non-union or implant failures reported. In the broader cohort, complications observed included infections, mechanical failure, and periprosthetic fractures. Younger age, smaller tumour size, and the absence of metastasis were associated with better functional outcomes. The mean MSTS score for the entire group is projected to be around 75%, indicating moderate to good recovery, comparable to international standards. Further data collection and analysis are ongoing to support these preliminary findings.

Conclusion: Endoprosthesis in the surgical treatment of lower limb tumours showed satisfactory functional outcomes, acceptable complication rates, and favourable survival outcomes. These findings suggest that endoprosthesis is a viable option for improving the quality of life and recovery in patients undergoing surgical treatment for limb tumours.

Keywords: Endoprosthesis; functional outcome; recover

Body Image Perception in Adolescent Idiopathic Scoliosis Patients: A Cross-Sectional Study

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Background and aims: Adolescent idiopathic scoliosis (AIS) has been associated with poor body image perception globally. However, this relationship remains unexamined in the Malaysian population. This study aimed to address this gap by investigating the associations between body image perception and AIS in Malaysia.

Materials and methods: A total of 44 AIS patients currently under follow-up at the Spine Clinic, Hospital Canselor Tuanku Muhriz, were recruited through convenience sampling. Participants were required to be diagnosed, currently between the ages of 13 and 18 years old and had not yet undergone any surgical interventions. Questionnaires used included the sociodemographic information survey, the Walter Reed Visual Assessment Scale (WRVAS) and the Scoliosis Research Society Questionnaire (SRS-22r). The WRVAS was utilised to assess the patients' perception of their deformity, while the SRS-22r evaluated their mental health and activity levels.

Results: In patients with AIS, a more severe Cobb angle significantly correlated with poorer body image perception ($p<0.001$). Otherwise, no significant correlation was found between mental health and body image perception scores ($p=0.715$). Physical activity did not significantly impact body image perception ($p=0.814$). There was also no significant difference found in body image perception scores between Malays and non-Malays ($p=0.317$), males and females ($p=0.144$), nor between younger and older adolescents ($p=0.408$).

Conclusion: The study found that the severity of scoliosis, as indicated by the Cobb angle, plays a crucial role in shaping body image perception in adolescents with AIS. However, mental health, physical activity, ethnicity, gender and age do not appear to significantly affect body image perception. These findings highlight the need for targeted interventions to address body image concerns related to scoliosis severity. At the same time, further research could explore additional factors that might contribute to body image perception in AIS patients.

Keywords: Psychosocial; quality of life; self-image; spinal deformities

Paediatric Asthma Status Affecting Parental Quality of Life in Malaysia

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Background and aim: Paediatric asthma places emotional and physical strain on parents due to constant monitoring, medical care and the stress of managing unpredictable symptoms. This study aimed to assess how paediatric asthma status affects parents' quality of life.

Materials and method: A cross-sectional study was done from 31st May 2024 to 31st August 2024 at UKM Specialist Children's Hospital (HPKK). Two questionnaires were completed by either one of the consented parents, namely Paediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ), measuring the impact of asthma on family activities and parental anxiety, and the Global Initiative for Asthma (GINA) questionnaire, assessing the child's symptom control and asthma severity. The PACQLQ had 13 questions on emotional function and activity limitation which parents rated on a 7-point scale.

Results: Overall, 70 parents of asthmatic children aged 7 to 12 participated in the study. The overall PACQLQ score for activity limitation was statistically significant for the 2 asthma severity groups, which were partly controlled and well controlled with a p-value of 0.031. Comparison using the overall PACQLQ score for emotional function and asthma severity showed that statistically, it was not significant, with a p-value of 0.434. To compare the mean PACQLQ score for activity limitation and parents' gender (for example, male vs female), the results were significant with a p-value of 0.004.

Conclusion: The evidence presented in this study supports the idea that factors such as asthma severity and parents' sociodemographic characteristics, including gender, can influence parental quality of life. Future research should include parents in multiple settings, such as those with disabilities and psychological health issues, for a better and consistent outcome.

Keywords: Childhood asthma; parental quality of life; severity of asthma

Comprehensive Analysis of the Incidence of Respiratory Virus Infections among the Paediatric Population in Post COVID-19 Pandemic Era at a Tertiary Centre

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Background and aims: Acute respiratory infection (ARI) is the most common illness among children worldwide, leading to hospital admissions. Respiratory syncytial virus was the most common pathogen in the pre-COVID-19 pandemic era. The movement control order during the COVID-19 pandemic significantly reduced the incidence of ARI, but the incidence of ARI markedly increased after the restrictions were lifted. This study aims to analyse the changes in respiratory virus incidence and morbidities in Malaysian children to enhance prevention and treatment strategies.

Materials and methods: A total of 1212 positive nasopharyngeal swabs from 1st January 2023 to 31st December 2023 were obtained. All paediatric patients aged 0-12 years who presented to Hospital Tuanku Ampuan Besar Tuanku Aishah Rohani (HPKK) with acute respiratory infections and had nasopharyngeal swabs done were included. The data were collected using universal sampling by accessing HPKK's health information system, Arcus Air.

Results: Children aged 1-2 years recorded the highest frequency of respiratory viral infections throughout the year, with lower respiratory tract infections being the most common, particularly among the Malay and males. There was no association between ICU admission and the number of viruses detected for each patient (p=0.079). There was no association between ICU duration of stay and the number of viruses detected for each patient (p=0.101). Throughout the year 2023, rhinovirus/enterovirus was the most predominant respiratory virus detected among the paediatric population (40.0%).

Conclusion: There has been a significant change in the pattern of respiratory viruses among the paediatric population, with rhinovirus/enterovirus being the most predominant respiratory virus detected in the post-COVID-19 pandemic era. There is no association between the number of viruses detected for each patient, ICU admission, and ICU duration of stay.

Keywords: Acute respiratory infection; viral pattern; paediatrics; post-pandemic trends

Changes of Corneal Thickness, Corneal Epithelial Thickness and Corneal Topography After Brief Cessation of Long-term Soft Contact Lens Usage

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Background and aims: Long-term soft contact lens (SCL) usage might affect corneal thickness (CT), corneal epithelial thickness (CET), and corneal topography. This study aimed to analyse the changes in CT, CET, and corneal topography after a brief cessation of SCL usage.

Materials and methods: Thirty-two SCL users and forty non-contact lens (NCL) users were recruited via convenience sampling. Long-term SCL users who wore lenses at least five days weekly for a year removed contact lenses before corneal tomography and topography examinations. CT, CET and topography were measured. The SCL group abstained from lenses for a week, with repeated measurements on days 0, 4 and 7. The NCL group was measured once on day 0. Student's t-test compared CT and CET differences, while Mann-Whitney U tests compared topography differences between SCL and NCL groups. ANOVA analysed trends in CT, CET and topography changes.

Results: On day 0, CT and CET showed no significant difference between SCL and NCL groups. The steep keratometry (K2) (p=0.047) and astigmatism value (p=0.002) were significantly higher in the SCL group. Upon seven days of SCL cessation, CT decreased significantly across all regions, while CET increased significantly from day 4 to day 7 in the inferior (p=0.040), inferonasal (p=0.010) and superonasal (p=0.006) regions. Mean keratometry (Km) also increased significantly (p<0.001). On day 7, K2 (p=0.029) and astigmatism values (p<0.001) were significantly higher in the SCL group compared to the NCL group.

Conclusion: After seven days of SCL cessation, CT decreased significantly, CET only increased significantly from day 4 to day 7 and Km increased significantly. Despite these changes, there were no significant differences in CT or CET between the SCL and NCL groups, either before or after cessation. The partial reversible effects on the cornea suggest the importance of considering at least seven days of SCL cessation before ocular surgeries.

Keywords: Chronic contact lens usage; curvature; discontinuation; optical coherence tomography (OCT); Pentacam

Breast Imaging-Reporting and Data System (BI-RADS) Category 4 Lesion and Histopathological Findings in Mammography: A Retrospective Analysis

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Background and aims: This study aimed to determine the prevalence of Breast Imaging-Reporting and Data System (BI-RADS) category 4 lesions identified on mammography and to investigate the histopathological findings associated with BI-RADS 4 lesions.

Materials and methods: Through convenience sampling, 110 female patients aged over 40 who underwent mammography with BI-RADS category 4 lesions at the Radiology Department, Hospital Canselor Tuanku Muhriz (HCTM) from January 2021 to December 2021 were included. Data were collected on patient demographics, including age, ethnicity, presenting symptoms, BI-RADS classification, and histopathological characteristics. Tissue diagnoses were obtained via core breast biopsy, excision, or mastectomy. The data were collected using ILMS, IRIS, and CHETS software.

Results: With the current number of patients (n=110), the mean age was 59 years and the majority of breast biopsies done were among the Malays. Out of the 110 patients, 66% (n=73) were categorised as BI-RADS 4a, 21% (n=23) as BI-RADS 4b and 13% (n=14) as BI-RADS 4c. Out of them, 80% (n=88) were found to be benign and 20% (n=22) were malignant. Out of the 88 benign tissues, 59% (n=52) were classified as other "Histopathological Examination", which among those were benign and benign fibrotic breast tissue, followed by 11% (n=10) classified as fibrocystic changes and 10% (n=9) classified as fibroadenoma. Among the 22 malignant tissues, 82% (n=18) were classified as others, which includes invasive carcinoma with no particular type and metastatic carcinoma, followed by 14% (n=3) as ductal carcinoma in situ and 4% (n=1) as invasive lobular carcinoma.

Conclusion: It is expected that there will be a significant correlation between BI-RADS category 4 and histopathological results of breast cancer. The study is ongoing to validate this speculation.

Keywords: BI-RADS; mammography; tissue pathology

LABORATORY RESEARCH - ORAL PRESENTATION

Effects of Stingless Honey Bee 'Madu Kelulut' on Bone Formation and Mineralization in Metabolic Syndrome Induced-osteoporosis Rat Model

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Background and aims: Metabolic syndrome (MetS) and osteoporosis are two major healthcare problems worldwide. Earlier studies demonstrated the bone-promoting effects of stingless bee honey in a rat model of glucocorticoid-induced osteoporosis and improved metabolic parameters of the MetS rat model. This study aimed to determine the effects of stingless bee honey 'Madu Kelulut' on bone formation and mineralisation of osteoporosis caused by MetS.

Materials and methods: Thirty-six male Wistar rats, aged 12 weeks, were divided into six groups (n=6): a normal control group (standard diet) and five groups fed a high-carbohydrate, high-fat (HCHF) diet for 12 weeks. For the next 12 weeks, HCHF groups were treated daily with saline (MetS) or KH (200, 400, or 600 mg/kg) (KH200, KH400, KH600) for 12 weeks. At the end of 24 weeks, the rats were sacrificed and dynamic parameters of bone histomorphometry were analysed. Undecalcified bone samples were analysed for dynamic parameters using histology fluorescent labelling.

Results: HCHF significantly reduced the double-labelled surface (DLs/BS), Mineral apposition rate (MAR), and bone formation rate (BFR). Treatment with KH and PVE significantly improved DLs/BS, MAR, and BFR compared to the MetS group. The KH200 group showed better improvements compared to the KH400 group. However, there was no significant difference between the KH400 and KH600 groups.

Conclusion: This study revealed that KH improved bone formation and mineralisation and mitigated osteoporosis caused by MetS. KH has the potential as a prophylactic or therapeutic agent to be used as an adjunct therapy or protective agent for osteoporosis induced by MetS.

Keywords: Bone histomorphometry; metabolic syndrome; osteoporosis; stingless bee honey

HER2-Low Breast Cancer: Incidence and Clinicopathologic Characteristics in a Single Tertiary Centre Over 10-year Period

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Background and aims: Human epidermal growth factor receptor 2 (HER2) low is a newly recognised category of breast cancer that comprises HER2 immunohistochemistry scores 1+ and 2+ without gene amplification. Historically, this subgroup is not eligible for HER2-targeted therapies. However, the emergence of trastuzumab dextran has shown potential as a treatment for HER2-low individuals. This study aimed to explore a series of breast cancer cases over a 10-year period, determining the prevalence of HER2 low cases and its correlation with clinicopathologic characteristics.

Materials and methods: A retrospective analysis of breast cancer cases from 2013 to 2023 was performed. The relevant clinicopathological data were retrieved from the histopathological reports.

Results: A total of 1426 breast cancer cases were diagnosed within the study period. Most of them were females who were 51 to 70 years old (51%). Overall, 33% of the cases showed HER2 low expression, most of which were Malay (60%) and of invasive carcinoma no special type (84.51%). Furthermore, 56% of HER2-low showed 1+ protein expression. HER2 low cases were mainly categorised as grade 2 (49.25% score 1+, 51.92% score 2+) and low-stage disease (72.37% score 1+, 69.23% score 2+). Most HER2 low cases were oestrogen (ER) and progesterone receptor (PR) positive (ER 83.4% score 1+, ER 83.3% score 2+, PR 62.8% score 1+, PR 60.3% score 2+). There was no significant association seen between different HER2 low scores and the clinicopathologic parameters.

Conclusion: One-third of breast cancer cases in our series were HER2 low, the majority of which were of low-grade and low-stage disease at diagnosis. No significant association between different HER2 low protein expressions and the clinicopathologic data was observed. A larger study with survival outcome correlation is needed to give further insight into HER2 low cancer.

Keywords: Breast cancer; HER2; immunohistochemistry

Effects of Palm Tocotrienol on Osteocyte Numbers and Markers in a Rat Model of Oestrogen Deficiency

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Background and aims: Palm tocotrienol can prevent osteoporosis in animal models of osteoporosis but speculations about its mechanisms of action are confined to its anti-inflammatory and antioxidant properties. Osteocytes play an important role in regulating bone remodelling. Therefore, this study aimed to examine the effects of palm tocotrienol supplementation on osteocyte numbers and markers in ovariectomised rats.

Materials and methods: Three-month-old Sprague-Dawley rats (n=46) were randomly assigned into baseline, sham, negative control, non-emulsified palm tocotrienol (NEPT), emulsified palm tocotrienol (EPT) and positive control groups. The baseline group was sacrificed upon receipt. The sham group had laparotomy without bilateral ovariectomy. Bilateral ovariectomy was performed on the other groups. Treatment commenced one week after ovariectomy. The NEPT group received 100 mg/kg/day of non-emulsified palm tocotrienol orally, while the EPT group received emulsified palm tocotrienol. The positive control group was given glucosamine sulphate (250 mg/kg/day) and calcium (1% in drinking water). After ten weeks, all rats were sacrificed for bone and serum analysis.

Results: NEPT and EPT significantly increased trabecular osteocyte number and total lacunae number (p<0.05 vs negative control) but not in the cortical bone (p>0.05 vs negative control). *Dkk1* mRNA expression was significantly increased in the EPT group (p<0.05 vs negative control). NEPT and EPT lowered *Dmp-1* and *Fgf-23* mRNA expression significantly (p<0.05 vs negative control), while *Sost* expression was not altered with either supplementation (p>0.05 vs negative control). However, NEPT and EPT did not improve the circulating and skeletal redox status of the rats (p>0.05).

Conclusion: Palm tocotrienol may exert its bone-protecting effects by preserving trabecular osteocyte number and modulating osteocyte's bone remodelling activities. Further studies are needed to illustrate how palm tocotrienol exerts these effects.

Keywords: Bone remodelling; menopause; oestrogen deficiency; Wnt signalling; vitamin E

Effects of Different Forms of Human Platelet Lysates on the Proliferation and Phenotype of Human Osteoblasts

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Background and aims: Enhanced cell proliferation is crucial for reducing production time and costs in cell therapy, and human platelet lysate (HPL) is often used to boost proliferation due to its favourable safety profile. Understanding the roles of different HPL components and their effects on cell culture can lead to more informed choices in medium formulation, which in turn can influence cell behaviour and outcomes. Therefore, this study aimed to investigate the effects of two types of HPL, i.e., heparin-supplemented HPL (He-HPL) and fibrinogen-depleted HPL without heparin (Fd-HPL), on human osteoblasts.

Materials and Method: He-HPL and Fd-HPL were prepared from expired platelet concentrates obtained from the HCTM Blood Bank. The presence of growth factors, i.e., brain-derived neurotrophic factor and vascular endothelial growth factor, in HPL was evaluated. Human foetal osteoblast (hFOB) cells were cultured in Dulbecco's Modified Eagle Medium supplemented with either He-HPL or Fd-HPL. The cell morphology, viability, cytokine production tendency (interleukin-6 and tumour necrosis factor-alpha), and calcium deposition were assessed.

Results: Significant higher levels of BDNF and VEGF were observed in He-HPL ($p < 0.05$); however, no apparent changes in cell morphology were seen between the two HPL types. Meanwhile, cells cultured with He-HPL exhibited slightly higher viability, faster population doubling time ($p < 0.05$), and increased total cell yield ($p < 0.05$) compared to those cultured with Fd-HPL. Similarly, greater mineral deposition was found in cells treated with He-HPL compared to Fd-HPL.

Conclusion: He-HPL outperforms Fd-HPL in promoting osteoblast proliferation and mineralisation, making it preferable for bone tissue engineering. However, studying Fd-HPL remains valuable for understanding the role of fibrinogen and its potential benefits in reducing clotting risks or modifying cellular behaviour. These findings highlight the importance of tailoring HPL preparations to specific research or clinical requirements.

Keywords: Bone tissue engineering; cell culture; fibrinogen; human platelet lysate; osteoblast

Assessing Cx3cl1-coated Decellularised Xenografts for Coronary Artery Bypass: Histological Insights from an in vivo Pilot Study

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Background and Aims: Decellularised xenografts, like CorMatrix®, hold promise for coronary artery bypass grafting (CABG) due to their regenerative potential. However, when used in small-diameter grafts, they have been linked to high rates of intimal hyperplasia and significant stenosis. In high-wall shear stress environments, chemokines like fractalkine (CX3CL1), along with pro-inflammatory cytokines such as tumour necrosis factor- and macrophage colony-stimulating factor (M-CSF), may enhance cellular infiltration and support better graft remodelling. This study aimed to evaluate the potential of CX3CL1-coated decellularised xenografts as an alternative scaffold for CABG.

Materials and Methods: A one-month in vivo pilot study was performed using a pig carotid artery model with female White Landrace pigs at the University of Bristol, UK. Histological analysis of the grafts was conducted at Universiti Kebangsaan Malaysia. Luminal stenosis and intimal-to-medial thickness ratio were assessed through morphometric analysis of haematoxylin & eosin-stained sections. The extracellular matrix was evaluated using Picrosirius Red, Elastin Van Gieson, and Alcian Blue staining to quantify collagen, elastin, and glycosaminoglycans, respectively. Cellular infiltration was analysed using markers for endothelial cells, smooth muscle cells, fibroblasts, and progenitor cells.

Results: Patency rates were 50% in the control group, 43% in T1 (grafts coated with CX3CL1, M-CSF, and TNF-α), and 57% in T2 (grafts coated with CX3CL1 alone). No significant differences in luminal stenosis were observed between groups (Control: $76.50 \pm 26.85\%$, T1: $74.19 \pm 21.87\%$, T2: $81.91 \pm 19.65\%$; $p > 0.05$). However, T2 showed reduced variability, indicating more consistent graft performance. Immunostaining revealed that while cells lined the lumen in patent grafts, these cells were not CD31-positive, suggesting the absence of typical endothelial cells.

Conclusion: CX3CL1-coated grafts (T2) demonstrated the highest patency rate with reduced variability, indicating their potential as a more reliable option for CABG.

Keywords: Biomaterial scaffold; chemokine coating; coronary artery bypass grafting; extracellular matrix; immunohistochemistry

The Level of Knowledge and Seroprevalence of *Helicobacter pylori* among Medical Students of Universiti Kebangsaan Malaysia

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Background and aims: Medical students lack knowledge of *Helicobacter pylori* infection. This study aimed to determine the level of knowledge and seroprevalence of *H. pylori* among medical students of Universiti Kebangsaan Malaysia.

Materials and methods: A total of 327 preclinical students were recruited via convenience sampling. A questionnaire was provided which included student's demographic information and knowledge about *H. pylori* infection. The level of knowledge was grouped into three categories: low (<33%), moderate (33-70%) and high (>70%). Among the respondents, 224 students consented to undergo a finger prick blood test to determine the seroprevalence of *H. pylori.* The *H. pylori* infection status was analysed to evaluate its association with demographic factors.

Results: Among the 327 participants, 66.7% were female, with a majority being Malay (46.2%). Most were Year 1 students (55.4%) and lived in urban areas (59.3%). The majority reported a household income below 10,000 (70.6%) and had fewer than three siblings (63.3%). Additionally, 28.7% had a family history of cancer. High awareness of *H. pylori* was noted, with 96.6% identifying the stomach as the organ colonised, and most recognising food, faecal-oral, and water as transmission routes. Common symptoms like stomach pain (94.2%) and nausea (94.2%) were well-recognised. Participants were knowledgeable about diagnostic methods and treatment options. Regarding knowledge levels, 52.9% had a high knowledge level, 43.1% had an average level, and 4% had a low level. No significant difference in knowledge levels was found between the different years of study. The seroprevalence of *H. pylori* among the students is relatively low (5.8%), with no significant differences observed in relation to the sociodemographic factors (p-value > 0.05).

Conclusion: The study shows a high level of knowledge about *H. pylori* among medical students of Universiti Kebangsaan Malaysia. The low seroprevalence among this population suggests effective prevention or low exposure to *H. pylori*.

Keywords: *Helicobacter pylori*; knowledge; seroprevalence

Effects of Neurotrophin 3 in Traumatic Brain Injury Model of Zebrafish

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Background and aims: Traumatic brain injury (TBI) is a prevalent and severe health issue in Malaysia. Following TBI, secondary injury mechanisms such as oxidative stress, excitotoxicity, and neuroinflammation contribute to long-term brain damage. Current treatments fail to address these mechanisms adequately, leading to poor long-term outcomes. Neurotrophin-3 (NT3) is known to be involved in the growth, differentiation and survival of neurons. Therefore, this study aimed to explore the role of NT3 in zebrafish models of TBI.

Materials and Methods: Zebrafish (n=21) were divided into three groups: Group A (control sham), Group B (TBI), and Group C (TBI + NT3). Stab wound injury was performed on the left telencephalon using a 30-gauge needle. Group C received an intracranial NT3 injection (400 ng/g body weight) 30 minutes post-injury. Fish were sacrificed on days 3, 10 and 21 post-injury, and whole brains were dissected. RNA extracted from the whole brain was used for gene expression study of pro-inflammatory cytokines using qPCR. Data were analysed using independent t-test and/or ANOVA followed by post-hoc Tukey's test. A $p < 0.05$ was considered significant.

Results: In the TBI group, the expressions of proinflammatory cytokines *interleukin-1 alpha* (*il-1a*), *tumour necrosis factor-alpha* (*tnfa*) were significantly increased ($p < 0.05$) while the expression of neuroprotectant *brain-derived neurotrophic factor* (*bdnf*) was significantly reduced ($p < 0.05$) following 3 days post-TBI, compared to control. Treatment with NT3 was able to reduce the expression of proinflammatory cytokines (*il-1a*, *tnfa*, *cyclooxygenase-2* (*cox2*) and *bdnf*). Following day 10 and 21 post-TBI, the expressions of both *tnfa* and *bdnf* remain significantly low in the NT3-treated group compared to the TBI group.

Conclusion: Treatment with NT3 was shown to reduce neuroinflammation. These results indicated that NT3 administration could be a potential treatment for TBI.

Keywords: Brain injury; neurotrophin; neuroprotection; neuroinflammation; oxidative stress

The Role of Endometrial, Endocervical and Vaginal Microbiota in the Pathology of Heavy Menstrual Bleeding

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Background and aims: This research investigates the microbial composition across the endometrium, endocervix and vagina, the influence of menstrual cycle phases on microbial communities, and identifies specific microbial markers associated with heavy menstrual bleeding (HMB) for potential diagnostic or therapeutic use. This study aims to characterise and compare the microbial communities from various regions in women with HMB and healthy controls.

Materials and methods: Case-control groups of women of reproductive age having HMB were recruited via random sampling from gynaecological clinics. They were given questionnaires that included demographic data and medical history prior to recruitment for the study. Patients who fulfilled the inclusion and exclusion criteria were recruited into the study to take part in the endometrial, endocervical and vaginal cohorts which were constructed by their microbiological reports.

Results: Differences in the microbial community profiles between women with HMB and normal healthy women are expected. A dominance of Gram-positive or Gram-negative bacteria leads to dysregulation of the coagulation pathway, resulting in HMB. The study is ongoing to validate this speculation.

Conclusion: *Lactobacillus* spp. is expected to be found predominantly in both endocervix and endometrium of patients with heavy menstrual bleeding throughout the proliferative and secretory phases of the menstrual cycle. However, *Prevotella* spp. will be notably high in the proliferative phase whereas *Sneathia* spp. will be the dominant populations in the secretory phase. The study is pending validation from the experiment.

Keywords: Female reproductive system; heavy menstrual bleeding; microbiota

Characterisation of Adult Acute Myeloid Leukaemia in Hospital Canselor Tuanku Muhriz, Universiti Kebangsaan Malaysia

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Background and aims: Acute myeloid leukaemia (AML) is characterised by various genetic abnormalities and immunophenotypic markers, resulting in differing chemotherapy approaches and treatment outcomes. This study aimed to characterise AML patients at Hospital Canselor Tuanku Muhriz by identifying the genetic and immunophenotypic features and assessing the influence of risk stratification based on the ELN Classification 2017 and chemotherapy intensity on post-induction treatment response.

Materials and methods: Retrospective data from 87 AML patients aged 18 years and above diagnosed between June 2014 and June 2024 were gathered from patient medical records and the Laboratory Information System. Descriptive statistics and the Chi-square test were applied to the patients' data to assess their demography and correlations between risk stratification, chemotherapy intensities, and post-induction treatment response.

Results: Eighty patients had immunophenotypic data, of whom 81.3% (65/80) had MPO positivity. CD117 (86.3%) and CD34 (73.8%) were the most prevalent stem cell markers. The most expressed myeloid markers were CD13 (90%) and CD33 (56.3%) while CD123 (27.5%) was the most common aberrant immunophenotype. Neither 72% (54/75) of patients with karyotyping results nor 64% (41/64) with fluorescence in-situ hybridisation results had any detectable abnormality. Molecular studies were only available in 23/87 (26%) with NPM1 and FLT-ITD mutations detected in seven (30.4%) and six (26%) patients. There was no significant correlation between risk stratification and post-induction treatment response. Among patients over 60, there was no significant correlation between chemotherapy intensity and post-induction remission status ($p > 0.05$).

Conclusion: This study highlighted the prevalent immunophenotypes, karyotypes, and molecular markers in adult AML patients. The lack of significant correlations between risk stratification and chemotherapy intensity with remission status emphasised the need for personalised treatment approaches. Future research should enhance risk assessment models and tailor treatment for better outcomes among AML patients.

Keywords: AML profiling; remissio; therapy

Clinico-Epidemiology of *Stenotrophomonas maltophilia* Infection in Hospital Canselor Tuanku Muhriz

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Background and aims: *Stenotrophomonas maltophilia* is an important cause of nosocomial infection. The multidrug-resistant bacteria are associated with high morbidity and mortality, ranging from 21% to 69%, and are particularly observed in immunocompromised or critically ill patients. However, this microorganism has been understudied in Malaysia despite its clinical impact. This study aimed to demonstrate the type of infection, risk factors and susceptibility rate of *S. maltophilia* towards trimethoprim-sulfamethoxazole.

Material and methods: All patients with bacterial cultures positive for *S. maltophilia* from January 2021 to December 2023 were included in the study. Clinical data and patient's demographic details were collected from the medical records department. Thereafter, data was analysed using descriptive statistics and Chi-square test.

Results: A total of 103 patients were included in this study. There were 64 (62.14%) male and 39 (37.86%) female patients with a mean age of 61 years. The samples were collected via blood (55.33%), respiratory samples (36.89%), urine (3.88%), tissue (1.94%), wound (1.94%) and cerebrospinal fluid (0.97%). Bacteraemia is the most prevalent infection, accounting for 39.8% of cases, followed by pneumonia (27.2%) and urinary tract infection (1%). In 32% of the cases, *S. maltophilia* causes colonisation or contamination. Prior carbapenem use is a significant risk factor for *S. maltophilia* infection (p<0.05). *S. maltophilia* was found to be susceptible towards trimethoprim-sulfamethoxazole in 95.15% of the cases.

Conclusion: This study underscores *Stenotrophomonas maltophilia* as a significant nosocomial pathogen, predominantly causing bacteraemia and pneumonia. The association with prior carbapenem use highlights the importance of antibiotic stewardship. Notably, *S. maltophilia* showed high susceptibility to trimethoprim-sulfamethoxazole (95.15%), affirming its efficacy as a treatment option. These findings stress the need for enhanced infection control and tailored therapeutic strategies.

Keywords: Antimicrobial susceptibility; hospital-acquired infection; risk factor; *Stenotrophomonas maltophilia*

COMMUNITY RESEARCH - RAPID ORAL PRESENTATION

Association of Frequency, Duration of Rest and Lighting Intensity in Computer Vision Syndrome among Medical Students from the University of Islam Malang

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Background and aims: Gadgets are an important part of human activities in the modern era, including in higher education. Less frequency, shorter duration of rest and unbalanced lighting intensity while using gadgets can increase the incidence of computer vision syndrome (CVS), a group of eye, vision and non-eye symptoms related to gadget use. This research aimed to determine the effect of rest frequency and duration and lighting intensity on CVS.

Materials and methods: This research was an analytical, quantitative, cross-sectional observational study involving second and third-year medical students using convenience sampling. CVS was assessed using the Computer Vision Syndrome Questionnaire (CVS-Q), frequency and duration of rest were obtained through a questionnaire, and light intensity was measured using a lux-meter. The Chi-square test was used to investigate the influence, and the binary logistic regression test was used to calculate the odds ratio.

Results: Of the 181 respondents aged around 18-22 years, 88 (48%) suffered from CVS (CVS-Q 9.65 3.43). About 56.35% (n=102) rested after more than 20 minutes and 53% (n=96) rested less than 20 seconds each time. Imbalanced lighting intensity between the gadget screen and surrounding light was found in 50.82% of respondents (n=92). Frequency and duration of rest and lighting intensity were found to affect CVS-Q score (p<0.001).

Conclusion: Higher frequency, lower duration of rest, and higher lighting intensity on gadgets increase the severity of CVS. Further research should expand the research population and involve various faculty on campus so that the research results are more representative.

Keywords: Break frequency; break duration; college students; CVS score; lighting intensity

Duration of Hypertension and its Association with the Prevalence of Erectile Dysfunction among Patients at the Regional General Hospital of Malang

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Background and aims: Hypertension is a cardiovascular disease with erectile dysfunction as a risk factor. This study aimed to explore further the association between hypertension and the prevalence and risk factors of erectile dysfunction among patients at the Regional General Hospital of Malang.

Materials and methods: This research was an analytical observational study with a cross-sectional approach conducted at the Regional General Hospital of Malang. The patients (n=120) were recruited through purposive sampling. The subjects were divided into the control group (normotensive) and the observation group (hypertensive). Data on hypertension and its duration were obtained from the medical records of the hospital, while erectile dysfunction risk factors were gathered using the International Index of Erectile Function (IIEF-5) questionnaire and were then analysed using the Mann-Whitney and Chi-square tests.

Results: Sociodemographic data showed that the average age of respondents in the control group was between 41-50 years, while the hypertension group had an average age of 51-60 years. The average blood pressure in the control group was found to be within the normal range for 100% of respondents, whereas in the hypertension group, 55.7% were identified with stage 1 hypertension. The IIEF-5 score indicated that 72.3% of respondents in the control group had normal erectile function, while 29.5% of those in the hypertension group experienced mild to moderate erectile dysfunction. The test results on the effect of hypertension on erectile dysfunction showed a significant association (p<0.001). However, no significant effect was found regarding the duration of hypertension on erectile dysfunction (p=0.675).

Conclusion: The prevalence of erectile dysfunction among hypertensive patients is high but the duration of hypertension is not associated with the risk of erectile dysfunction. Other factors, such as comorbid diseases may influence the score of erectile dysfunction.

Keywords: Blood pressure; hypertension; erectile dysfunction; male reproductive system

The Effect of Eye Exercise and Neck Muscle Strengthening on the Symptoms of Computer Vision Syndrome among Medical Students of University Islam of Malang

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Background and aims: Computer vision syndrome (CVS) encompasses eye and vision problems resulting from prolonged use of computers, mobile phones, tablets and other gadgets. Symptoms of CVS include pain in the musculoskeletal system involving the neck, shoulder and head. This study introduces the 'MASLEKU' (Healthy Eyes Strong Neck) exercise to alleviate CVS symptoms evaluated using the Computer Vision Syndrome Questionnaire (CVS-Q) and Neck Disability Index (NDI) scores before and after MASLEKU training.

Materials and methods: This quantitative descriptive analytic experimental study used a cross-sectional approach. The study included 100 third-year students aged 19-23 years. Participants were third-year pre-clinic medical students at UNISMA, who met the inclusion and exclusion criteria. Participants were divided into CVS and non-CVS groups; each was further split into treatment and control subgroups. The treatment group performed MASLEKU exercises for 14 days. CVS-Q and NDI scores were measured before and after the intervention.

Results: Statistical tests revealed significant differences between the control and intervention subgroups of the CVS group after MASLEKU in CVS-Q scores ($p=0.0002$) and NDI scores ($p=0.0001$). Significant reductions in CVS-Q and NDI scores were also found between day 0 and day 14 in the CVS control subgroup, possibly due to other factors. Mann-Whitney tests confirmed significant differences between the treatment and control groups, indicating MASLEKU's effectiveness in reducing CVS symptoms.

Conclusion: The MASLEKU exercise is effective in reducing CVS symptoms and improving NDI among medical students with CVS. Further research is needed to confirm the specific effectiveness of MASLEKU.

Keywords: Computer vision syndrome; MASLEKU; CVS-Q; NDI

Duration of Diabetes Mellitus and its Association with Risk of Erectile Dysfunction: A Study at the Internal Medicine Department of Malang City General HospitaL

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Background and aims: Diabetes mellitus (DM) is a disease associated with various complications, including macrovascular and microvascular complications. Both macroangiopathy and microangiopathy in patients with DM can lead to systemic organ damage, affecting sexual function. This study aimed to observe the correlation between the duration of DM and erectile dysfunction risk.

Materials and methods: This observational analytical study recruited 130 male respondents (65 non-DM and 65 DM) via purposive sampling. ED was assessed using the International Index of Erectile Function (IIEF) questionnaire analysis. The correlation between ED and DM was determined with the Chi-square test.

Results: A significant correlation was observed between ED risk and DM status and the duration of DM (< 5 and ≥ 5 years) (p<0.001). The average onset of ED was recorded at 2.25 years following the diagnosis of DM. The risk ratio (RR) for diabetic respondents with ED was determined to be 10.8, while those with DM for over five years had a 1.12 times higher RR for developing ED.

Conclusion: DM respondents are at a higher risk of ED compared to non-DM respondents. Individuals who have had DM for more than 5 years are at a higher risk of ED. Future studies could use laboratory and imaging modalities to advance the diagnosis of ED caused by DM.

Keywords: Diabetes mellitus; duration; erectile dysfunction

"Rule of Twenty" Educational Video Improves Knowledge and Computer Vision Syndrome Score among Second-Year Medical Students

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Background and aims: Continuous and prolonged use of computers and electronic devices with a screen (gadgets) can lead to eye health issues, known as computer vision syndrome (CVS). CVS is particularly prevalent among university students, highlighting the importance of CVS prevention measures. The aim of this study is to analyse the impact of the "Rule of Twenty" educational video on respondents' knowledge, attitudes, behaviours, and CVS scores.

Materials and methods: Respondents of this study were 103 second-year medical students from the Islamic University of Malang, with an age range of 18-22 years. A quasi-experimental study employed a pretest-posttest and non-equivalent control-group design with two groups of respondents: CVS groups (n=70) and non-CVS groups (n=33). The CVS group was further divided into a control group (n=35) and an intervention group (n=35). The intervention group received education through video media. Pre- and post-intervention questionnaires were analysed using the Wilcoxon Signed Rank Test. A p-value <0.05 was considered statistically significant.

Results: The Wilcoxon test results from the intervention group showed significant differences in knowledge and CVS scores between pre- and post-intervention. The Kruskal-Wallis test, conducted using post-test values, indicated significant differences among the three groups in terms of knowledge (p<0.001) and CVS scores (p<0.001). No statistically significant difference was found in the knowledge of the non-CVS groups, as well as attitudes and behaviour of all three groups, as well as CVS scores of the non-CVS group.

Conclusion: "Rule of Twenty" educational video can enhance knowledge and reduce CVS scores. However, it does not appear to influence attitudes and behaviours related to CVS prevention.

Keywords: Computer vision syndrome; educational video; medical students; rule of twenty

"The Frenemy" – Knowledge, Attitudes and Practices, and Their Association with Stethoscope Bacterial Contamination among Undergraduate Medical Students

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Background and aims: Stethoscopes could serve as potential vehicles for the transmission of pathogenic microorganisms, contributing to hospital-associated infections. This study aimed to examine the association between knowledge, attitudes, and practices and bacterial contamination of stethoscope diaphragms.

Materials and methods: A cross-sectional study with 93 consented medical students was performed. The study focused on 23 clinical students' stethoscopes (9 in Internal Medicine, 14 in Paediatric Ward). Swabs from the stethoscope diaphragms were cultured on blood agar plates at three time points: Day 0, Day 2-3, and Day 7. Colony forming unit (CFU) counts were measured after 48 hours of incubation. Gram staining and biochemical assays were performed.

Results: A total of 64.5% of clinical students were aware of stethoscope hygiene with better knowledge than those who witnessed others cleaning their stethoscopes. A significant association was found between hygiene knowledge and CFU count on Day 2-3 (p=0.035) and Day 7 (p=0.026). Knowledgeable students had lower stethoscope microbial loads. Of those who considered cleaning the stethoscope diaphragm important, their stethoscopes showed significantly lower CFU counts on Day 2-3 (p=0.034). The stethoscope of students in Paediatric rotation showed higher CFU counts compared to Internal Medicine. Additionally, students in Paediatric rotation also showed higher microbial load with 72.78% gamma non-haemolytic colonies and 52.76% alpha/beta haemolytic colonies. Overall, gamma non-haemolytic colonies were most prevalent at 83.34% of the total sample.

Conclusion: A significant relationship between knowledge of stethoscope hygiene and CFU counts among medical students suggests the need for targeted educational interventions and training on stethoscope hygiene from the early years of medical studies. Implementing these measures among medical students and healthcare personnel could reduce the risk of nosocomial infections.

Keywords: Knowledge; attitude; practice medical students; stethoscope contamination

Computer Vision Syndrome Reduces Sleep Quality without Affecting Eye Accommodation in Medical Students of the Islamic University of Malang

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Background and aims: Computer vision syndrome (CVS) is a group of symptoms caused by excessive device use. Medical students use devices very frequently, both during and outside lecture hours. This study aimed to determine the association between CVS and the eye's ability to accommodate, and students' sleep quality.

Materials and Methods: This research was a cross-sectional study using the Computer Vision Syndrome Questionnaire (CVS-Q) and Pittsburgh Sleep Quality Index (PSQI) questionnaires, which have been tested for validity and reliability, and eye accommodation examination. Second and third-year medical students (n=181) were recruited. The Chi-square test was used to analyse the correlation between CVS with eye accommodation ability and sleep quality, while the binary logistic regression test was used to analyse the association between CVS and eye accommodation and sleep quality.

Result: In total, 72.5% of medical students with CVS had poor sleep quality. This was proven with a significant Chi-square test, with p=0.037, and an odds ratio (OR) of 2.275 (95% confidence interval [CI]: 1.044 - 4.960) with p=0.039 from binary logistic regression analysis. Eye accommodation examination showed that 62.1% of respondents with CVS experienced a decrease in eye accommodation ability. This observation was indicated by the Chi-square test with p=0.137 (p>0.05), and OR of 0.569 (95% CI: 0.270-1.199) with p=0.138 from binary logistic regression analysis.

Conclusion: Medical students with CVS experienced a significant decrease in sleep quality but did not experience a significant decrease in eye accommodation. Further study should include a wider age group so that all ages are represented.

Keywords: Computer vision syndrome; eye accommodation; sleep quality

The Correlation between Anaemia in Pregnancy and the Incidence of Preeclampsia at Hospitals in Malang

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Background and aims: Preeclampsia is a syndrome characterised by increasing blood pressure and proteinuria, typically manifesting during the second trimester of pregnancy. Anaemia is one factor that can increase the risk of preeclampsia in pregnancy. This study aimed to analyse the association between maternal anaemia and the risk of preeclampsia in hospitals within Malang City.

Methods: This was a retrospective study to examine the correlation between preeclampsia and anaemia among pregnant women in hospitals in Malang. Secondary data used in this research were medical records from January 2020 until December 2022 using purposive sampling with 55 respondents. In this study, the degree of anaemia was classified as normal (haemoglobin ≥ 11 g/dL), mild (10-10.9 g/dL), moderate (7-9.9 g/dL) and severe (≤ 7 g/dL). Data analysis was conducted using the Chi-square test between the degree of anaemia and the incidence of preeclampsia.

Results: No correlation between anaemia and preeclampsia was observed in pregnant women, although there was a tendency for pregnant women with anaemia to have a 0.5 times higher risk of developing preeclampsia compared to those without anaemia (p>0.05).

Conclusion: Anaemia in pregnancy is not a risk factor for preeclampsia in hospitals in Malang. Future studies should assess other potential contributing factors to improve understanding of preeclampsia.

Keywords: Maternal anaemia; preeclampsia; pregnancy

The Correlation between Anaemia in Pregnancy and the Incidence of Preeclampsia at Hospitals in Malang

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Background and aims: Preeclampsia is a syndrome characterised by increasing blood pressure and proteinuria, typically manifesting during the second trimester of pregnancy. Anaemia is one of the factors that can increase the risk of preeclampsia in pregnancy. This study aimed to analyse the association between maternal anaemia and the risk of preeclampsia in hospitals within Malang City.

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Conclusion: Anaemia in pregnancy is not a risk factor for preeclampsia in hospitals in Malang. Future studies should assess other potential contributing factors to improve understanding of preeclampsia.

Keywords: Maternal anaemia; preeclampsia; pregnancy

Darah Comey, Hidup Molek: Enhancing Knowledge, Attitude, and Practices on Hypertension Through Community Interventions among Hypertensive Adults in Mukim Dalam Rhu

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Background and aims: Three out of 10, or 6.4 million adults in Malaysia, suffer from hypertension, with a prevalence rate of 37.1% in Kelantan. This highlights the need for effective community-based interventions. This study aims to evaluate the effectiveness of community intervention in enhancing knowledge, attitude, and practices towards hypertension among hypertensive residents in Mukim Dalam Rhu, Pasir Puteh, Kelantan.

Materials and methods: This intervention study, conducted in Mukim Dalam Rhu from May to August 2024, involved 55 randomly selected adults with clinically diagnosed hypertension on medication. Pre- and post-intervention surveys were conducted 3 months prior and 1 week after the intervention using the Dietary and Physical Activity Questionnaire for Hypertensive Patients, covering knowledge (20 items), attitudes (20 items), and practices (10 items) about hypertension. The intervention, open to all residents, included a health talk by a local pharmacist and dietitian, exhibitions, exercise demonstrations, screenings, and educational videos. Data was analysed using SPSS, version 28, and cut-off points were set based on the distribution of pre-intervention scores.

Results: The mean age of the 55 respondents was 63 (2.01) years, with the majority being females (67%) and all from B40 households. Around 350 residents attended the main event, likely due to crowd-pulling activities such as potluck, free market, lucky draws, colouring contest, and games. Following the intervention, the proportion of respondents with poor knowledge, attitude, and practices significantly decreased from 48.1%, 44.4%, and 45.2% to 1.9%, 11.1%, and 18.5%, respectively (p<0.001).

Conclusion: This study highlights the effectiveness of community intervention programs in improving knowledge, attitude, and practices towards hypertension among hypertensive residents in Mukim Dalam Rhu. It underscores the importance of extending community-based health education to rural populations to improve hypertension management, raise awareness of hypertension control and overall quality of life.

Keywords: Community intervention; dietary and physical activity questionnaire; hypertension; lifestyle modification

LABORATORY RESEARCH - RAPID ORAL PRESENTATION

Analysis of *Pseudomonas aeruginosa* Level and its Resistance to Antibiotics in the Hospital Wastewater at a Type C Hospitals in Malang

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Background and aims: Hospital wastewater contains various chemical compounds as well as opportunistic and pathogenic microorganisms. There is a possibility that bacteria (like *Pseudomonas aeruginosa*) and chemical compounds may not be eliminated from the wastewater treatment plant and will spread into the environment. This study aimed to analyse the distribution of bacterial profiles and resistance profiles of *Pseudomonas aeruginosa* in hospital wastewater as a preliminary step to prevent environmental pollution caused by *Pseudomonas aeruginosa*.

Materials and methods: This was a laboratory experimental study with an in vitro research design. The research was carried out by culturing bacteria from hospital wastewater samples and testing antibiotic resistance using the Kirby-Bauer method with a confidence level of 80%.

Results: Wastewater samples that had not yet entered the wastewater treatment plan contained *Pseudomonas aeruginosa* at 2.7 x 10^4 CFU/mL while wastewater samples that had entered the wastewater treatment plan contained *Pseudomonas aeruginosa* at 9.07 × 10^2 CFU/mL (P < 0.001). The *Pseudomonas aeruginosa* bacteria found in both samples had a low level of resistance to the antibiotics meropenem, ceftazidime, ciprofloxacin, and gentamicin.

Conclusion: This study's findings may indicate the ineffectiveness of the wastewater treatment system due to the presence of *Pseudomonas aeruginosa* in the samples obtained. Moreover, the level of *Pseudomonas aeruginosa* bacteria in the wastewater released is still above the established standards

Keywords: Antibiotic resistance; hospital wastewater; *Pseudomonas aeruginosa*

The Potential of Ethyl Acetate Fraction of White Galangal Rhizome (*Alpinia Galanga* W) as Antibiofilm Agent

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Background and aims: Biofilms are communities of bacteria that can appear on the surfaces of medical devices and constitute a source of infection, posing a serious risk to the safety and quality of care for patients globally. Management of biofilm requires novel compounds that can inhibit its formation, such as flavonoids from natural sources. *Alpinia galanga* W (white galangal) is a rhizome found in abundance in Indonesia. It has a strong antimicrobial activity against Gram-positive bacteria, but its potential for antibiofilm activity is unknown. This study aimed to find out the potential of *Alpinia galanga* W ethyl acetate fraction as an antibiofilm agent.

Materials and methods: This is a laboratory experimental study with an *in vitro* research design to test the inhibition and destruction of biofilm based on the time of sample administration. *Alpinia galanga* W simplicia was macerated using 96% ethanol and fractionated with ethyl acetate to obtain its ethyl acetate fraction, evaporated, and reconstituted using dimethyl sulfoxide (DMSO). Biofilm was quantified using a crystal violet staining method, which was then measured using a spectrophotometer at 535 nm. The results were analysed using multiple t-tests ($p < 0.05$).

Results: Significant inhibition of *Staphylococcus aureus* biofilm production was not observed in any concentration used. At 1000 ppm, however, preformed biofilm from *Staphylococcus aureus* was significantly inhibited compared to DMSO controls ($p < 0.05$). The inhibition of preformed biofilm was lower with reducing concentrations.

Conclusion: Ethyl acetate fraction *Alpinia galanga* W simplicia at 1000 ppm can destroy preformed biofilm of *Staphylococcus aureus*. Future studies should test its effects in preventing bacteria that can form biofilms on hospital devices.

Keywords: *Alpinia galanga* W; antibiofilm; ethyl acetate; *Staphylococcus aureus*

Distribution of Bacteria and Antibiotic Resistance Profile *Enterobacter Sp* in the Wastewater in One of the Type C Hospital in Malang

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Background and aim: Hospitals are among the places that can pose a risk of disease transmission and environmental pollution through hospital water waste, such as liquid waste, solid waste, and hazardous and toxic substances. The implementation of wastewater treatment plants (IPAL) is a health service effort aimed at reducing environmental pollution and maintaining public health. Hospital wastewater contains pathogenic microorganisms, one of which is *Enterobacter* sp. Based on this description, research is necessary to analyse the distribution of bacterial profiles and resistance profiles of *Enterobacter* sp in hospital wastewater to prevent and reduce infections caused by *Enterobacter* sp.

Material and methods: This research was a laboratory experimental study with an in vitro research design. It was conducted by culturing bacteria from water samples and testing antibiotic resistance using the Kirby-Bauer method.

Results: The results showed that pre-wastewater treatment plant (pre-IPAL) hospital wastewater samples contained *Enterobacter* sp with an average of 2.39×10^5 CFU/mL. Meanwhile, post-wastewater treatment plant (post-IPAL) samples contained *Enterobacter* sp with an average of 1.4×10^3 CFU/mL. *Enterobacter* sp isolated from both types of samples exhibited high levels of resistance to antibiotics, such as ampicillin, ciprofloxacin, gentamicin, and meropenem.

Conclusion: In this study, *Enterobacter* sp bacteria were found in wastewater from a Type C hospital in Malang, both before and after entering the IPAL. *Enterobacter* sp colonies found in the wastewater were mostly still susceptible to antibiotics, except for ampicillin.

Keywords: Antibiotic resistance; *Enterobacter* sp; hospital wastewater

In Silico Evaluation of Cyclooxygenase-2 and 5-Lipoxygenase Inhibition by Active Compounds of Meniran (*Phyllanthus niruri*)

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Background and aims: The methanol extract of Meniran (*Phyllanthus niruri*) shows anti-inflammatory activity, which may occur through inhibition of cyclooxygenase-2 (COX-2) and 5-lipoxygenase (5-LOX). However, the active compounds from Meniran acting upon those targets are still unknown. This study conducts an *in silico* evaluation to determine the multitarget effects of Meniran's active compounds on these targets.

Materials and methods: Test ligands (n=24) from the active compound Meniran and two proteins, COX-2 and 5-LOX, were molecularly docked with the Autodock tools. Then, the results were visualised using the BIOVIA discovery studio. Physicochemical, pharmacokinetic, and toxicological properties of active compounds were predicted using pkCSM.

Results: Based on binding affinity (ΔG), inhibition constant (Ki) and amino acid similarity with a natural ligand inhibitor (% amino acid), epicatechin-3-O-gallate (ΔG -10.2 kcal/mol; Ki 0.033 µM; amino acid 75%), gallocatechin-3-O-gallate (ΔG -9.2 kcal/mol; Ki 0.181 µM; amino acid 62.5%), and betulinic acid (ΔG -8.6 kcal/mol; Ki 0.46 µM; amino acid 75%) had the best anti-inflammatory potential against COX-2. Meanwhile, betulinic acid (ΔG -7.9 kcal/mol; Ki 1.52 µM; amino acid 87.5%), lupeol (ΔG -8.8 kcal/mol; Ki 0.35 µM; amino acid 62.5%), and gallocatechin-3-O-gallate (ΔG -7.6 kcal/mol; Ki 2.65 µM; amino acid 62.5%) showed the best anti-inflammatory potential against 5-LOX. Based on its pharmacokinetic properties, epicatechin-3-O-gallate and lupeol had the best pharmacokinetic values and were not hepatotoxic.

Conclusion: Epicatechin-3-O-gallate, gallocatechin-3-O-gallate and betulinic acid were predicted to inhibit COX-2. Meanwhile, betulinic acid, lupeol, and gallocatechin-3-O-gallate were predicted to inhibit 5-LOX.

Keywords: Anti-inflammatory; *Phyllanthus niruri*; in silico; COX-2; 5-LOX

Distribution of Bacteria and Antibiotic Resistance Profile of *Escherichia coli* in Wastewater Drainage Systems of Type C Hospitals in Malang

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Background and aim: This study investigates the prevalence and antibiotic resistance patterns of *Escherichia coli* in hospital wastewater systems in Malang, focusing on its susceptibility to ampicillin, gentamicin, ciprofloxacin, and meropenem. Given the bacterium's known resistance to certain antibiotics and its ability to thrive in hospital environments, this study aimed to address the potential spread of antibiotic-resistant *Escherichia coli* through medical waste.

Material and methods: This was a laboratory experimental study with an in vitro research design. The research was carried out by culturing bacteria from water samples and testing antibiotic resistance using the Kirby-Bauer method. The sample used was water originating from the wastewater before and after entering waste processing at a type C hospital in Malang.

Results: The research findings indicated that before entering the wastewater treatment plant, samples containing *Escherichia coli* bacteria recorded an average log of 4.132 CFU/mL. Meanwhile, after entering the wastewater treatment plant, samples containing *Escherichia coli* bacteria recorded an average log of 1.580 CFU/mL. *Escherichia coli* bacteria isolated from both types of samples demonstrate a high level of resistance to antibiotics, such as ampicillin, gentamicin, ciprofloxacin, and meropenem.

Conclusion: The results of this study indicate that *Escherichia coli* bacteria exhibit resistance to the disinfectant agents applied in the wastewater treatment plant. Therefore, these bacteria can still be detected in wastewater samples that have undergone treatment at the wastewater treatment plant.

Keywords: Antibiotic resistance; *Escherichia coli*; hospital wastewater

The Potential of White Galangal (*Alpinia galanga* W) Rizhome Aqueous Fraction as an Antibiofilm Agent

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Background and aims: *Staphylococcus aureus* can cause healthcare-associated infections via the formation of biofilms on biotic and abiotic surfaces, necessitating the need for novel antibiofilm agents. *Alpinia galanga* W is one of the herbs that has active compounds in aqueous fractions, such as flavonoids, tannins, and saponins, which may act as antibacterial agents. However, these compounds have not yet been screened for antibiofilm activity. This study aimed to find out the potential of *Alpinia galanga* aqueous fraction as an antibiofilm agent.

Materials and methods: The research was an experimental in vitro study by growing biofilm of *S. aureus* on 96-well plates that had been filled with broth heart brain infusion (BHIB) + 5% sucrose as a bacterial growth medium and incubated for 24 hours at 37°C. Antibiofilm abilities were measured using crystal violet staining of biofilm and measuring its absorbance at 585 nm. Extraction of *Alpinia galanga* using 96% ethanol, continued by fractionation with water, evaporated and reconstituted in dimethyl sulfoxide (DMSO). Bacteria were treated with extract at the same time with inoculation to measure antibiofilm inhibition, and after 24-hour growth to measure biofilm destruction. The between-group differences were determined using multiple t-tests ($p < 0.05$).

Results: The aqueous fraction at 1000 ppm showed insignificant results in inhibiting biofilm formation. Eradication tests comparing the doses of 500 ppm, 250 ppm, 125 ppm and 62.5 ppm showed varying results but had no significant difference compared to DMSO alone.

Conclusion: The aqueous fraction of white galangal ethanolic extract cannot inhibit biofilm formation but has some ability to inhibit preformed biofilm. Further research can be developed by identifying biofilm quality.

Keywords: *Alpinia galanga*; antibiofilm; *Staphylococcus aureus;* water fraction