

ORAL PRESENTATION • DISCOVERY SCIENCE

[OPS1]

ACUTE EXPOSURE OF RAT RETINAS TO LOW DOSE ENDOTHELIN-1 RESULTS IN SUPPRESSION OF THE CLASSICAL RAAS AXIS AND ACTIVATION OF THE ALTERNATIVE AXIS

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ET1 is the most potent vasoconstrictive peptide and there is evidence suggesting its important role in retinal degeneration. It is hypothesised that ET1-induced vascular changes may lead to ischemia and excitotoxicity, important pathophysiological factors in glaucoma. Remarkably, almost all components of renin-angiotensin-aldosterone system (RAAS) are expressed in retina and may play a crucial role in the fate of the ischemic retinal tissue; however, the effect of ET1 on RAAS expression remains unclear. The objective of current study was to investigate effect of ET1 at a dose of 200 pmol on the protein expression of glutamate and RAAS components in rat retinas.

Sprague Dawley Rats of either sex (150-300 g) were randomly allocated into two groups of 54 animals each: control group received PBS while the other group received ET1, intravitreally. Seven days after injections, the rats were sacrificed, and their retinas were harvested. The retinal samples were homogenised and subjected to ELISA to estimate the angiotensinogen, renin, angiotensin I (Ang I), angiotensin-converting enzyme (ACE), angiotensin II (Ang II), angiotensin type 1 receptor (AT1R), angiotensin-converting enzyme 2 (ACE2), angiotensin 1-7 (Ang 1-7), aldosterone and glutamate expression.

The expression of Ang I, Ang II, glutamate and aldosterone were significantly decreased in ET1-exposed retinas compared to the control group, whereas the expression of ACE2, Ang 1-7 and AT1R were significantly upregulated. It suggests that retinal ischemia caused by ET1 at a dose of 200 pmol stimulates a response by upregulating the protective ACE2/Ang 1-7/Mas receptor and downregulating the classical ACE/Ang II/AT1R pathway.

Acute exposure of rat retinas to ET1 at a dose of 200 pmol results in activation of endogenous protective mechanisms via suppression of the classical RAAS axis, formed by ACE, Ang II, and AT1R, and activation of the alternative axis comprising ACE2 and Ang 1-7.

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[OPS2]

ROLE OF RENIN-ANGIOTENSIN ALDOSTERONE SYSTEM IN EXCITOTOXIC RETINAL DAMAGE IN RATS

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Glaucoma is the second leading cause of blindness globally. Retinal ganglion cell loss is the hallmark of glaucoma. Current treatment strategies for glaucoma focus on decreasing intraocular pressure. Despite normal intraocular pressure, retinal ganglion cell loss can continue. Ocular Renin-Angiotensin Aldosterone-System (RAAS) could be a potential therapeutic target for neuroprotection. N-methyl-d-Aspartate (NMDA) receptors are the main mediators of the excitotoxic effects of glutamate. This project aimed to investigate whether retinal RAAS expression was altered by excitotoxic injury. The objective of the study was to determine the role of RAAS in excitotoxic retinal damage by measuring the effect of NMDA on the expression of retinal renin, angiotensin II – 1 receptor (AT1R), angiotensinogen, angiotensin II (Ang II), angiotensin-converting enzyme (ACE), ACE-2, Ang-(1-7) and aldosterone, using enzyme-linked immunosorbent assay.

Adult Sprague Dawley rats weighing between 150g-300g were randomly divided into 2 groups: negative control (group 1, n=54) and NMDA (group 2, n=54). The rats were injected intravitreally with phosphate buffer saline (PBS) for control and NMDA for the second group. After seven days, the rats were sacrificed, their eyes were enucleated, and retinas were extracted and subjected to ELISA for the measurement of the above parameters.

Exposure to NMDA enhanced the expression of classical RAAS and suppressed the alternate RAAS in rat retina as reflected by significantly greater expression of angiotensinogen ($p<0.001$), renin ($p<0.05$), ACE ($p<0.001$), Ang II ($p<0.001$), AT1R ($p<0.001$) and significantly lower expression of ACE-2 ($p<0.05$) and angiotensin 1-7 ($p<0.001$).

The classic pathway of RAAS is activated by NMDA in rat retinas while the alternate pathway is suppressed, which has a protective role. This may contribute to the pathogenesis of glaucoma and could be considered an important therapeutic target. Further studies can be done regarding the role of drugs affecting the RAAS system as neuroprotective agents in glaucoma.

ORAL PRESENTATION • DISCOVERY SCIENCE

[OPS3]

IN VITRO ANTIOXIDATIVE, ANTI-CHOLINESTERASE, ANTI- α -GLUCOSIDASE AND ALBUMIN DENATURATION INHIBITORY ACTIVITIES OF GELATIN-PHENOLIC ACID CONJUGATES*Kar Wei Ng¹, Ing Hong Ooi², Sook Yee Gan²**¹School of Medicine, International Medical University
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Oxidative stress is a culprit of many age-related diseases (ARD), including Alzheimer's disease, diabetes mellitus, and inflammation. The objective of the study was to prepare conjugates of gelatin-2,3-dihydroxybenzoic acid (Ge-2,3-DHBA) and gelatin-2,5-dihydroxybenzoic acid (Ge-2,5-DHBA) to investigate their antioxidant, anti-cholinesterase, anti- α -glucosidase and albumin denaturation inhibitory activities.

The conjugates were synthesised by the reaction between Ge and 2,3-DHBA and between Ge and 2,5-DHBA, through a simple one-step reaction in the presence of water-soluble redox initiators (H_2O_2 and ascorbic acid) via radical mediated reaction at room temperature. The antioxidant activities of Ge-2,3-DHBA and Ge-2,5-DHBA were measure with 2,2-diphenyl-1-picrylhydrazyl radical (DPPH) assay, superoxide assay, hydrogen peroxide assay and hydroxyl assay. The enzymatic activities of Ge-2,3-DHBA and Ge-2,5-DHBA were determined using the anticholinesterase inhibitor screening kit, anti- α -glucosidase inhibitor screening kit and albumin denaturation inhibitor screening kit.

Ge-2,3-DHBA had significantly higher DPPH and hydroxyl radical scavenging activity than Ge-2,5-DHBA ($p < 0.0001$), while Ge-2,5-DHBA had significantly higher superoxide and hydrogen peroxide radicals scavenging activity than Ge-2,3-DHBA ($p < 0.001$ and $p < 0.05$, respectively). Ge-2,3-DHBA showed stronger inhibition towards acetylcholinesterase and α -glucosidase enzyme, as well as albumin denaturation, at all concentrations, in comparison to Ge-2,5-DHBA, but no significant differences were found between these two conjugates at all concentrations ($p > 0.05$).

Ge-2,3-DHBA and Ge-2,5-DHBA conjugates synthesised exhibited antioxidant activities, anti-cholinesterase, anti- α -glucosidase and albumin denaturation inhibitory activities. These results indicated that Ge-2,3-DHBA and Ge-2,5-DHBA could be beneficial in preventing oxidative stress and treating ARD. However, further in-vitro and in-vivo studies should be conducted to determine their stability and pharmacokinetics for future drug development.

ORAL PRESENTATION • DRUG DISCOVERY AND DEVELOPMENT

[OPD1]

NEUROPROTECTIVE EFFECTS OF BETA-SITOSTEROL AGAINST BETA-AMYLOID-INDUCED MICROGLIA-MEDIATED NEUROINFLAMMATION AND NEUROTOXICITY***Agilandiswari Arumuga Jothi*^{1,2}, *Agnes Gwenhure*³, *Jia Hao Ng*³, *Sook Yee Gan*⁴, *Elaine Wan Ling Chan*⁵**¹*School of Medicine, International Medical University, Jalan Jalil Perkasa 19, Bukit Jalil, 57000, Kuala Lumpur, Malaysia*²*School of Medicine, University of Glasgow, G12 8QQ Glasgow, Scotland, United Kingdom*³*School of Postgraduate Studies, International Medical University, Jalan Jalil Perkasa 19
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Recent studies have shown that neuroinflammation plays a bigger role in the pathogenesis of Alzheimer's Disease (AD). β -sitosterol, a naturally occurring phytosterol has been shown to exhibit anti-inflammatory properties. However, the anti-neuroinflammatory effects of β -sitosterol have yet to be investigated. The research question for this study is "does β -sitosterol exhibit neuroprotective effects against A β -induced microglia-mediated neuroinflammation and neurotoxicity?". Hence in this study, the effects of β -sitosterol on A β -induced microglia-mediated neuroinflammation and neurotoxicity were investigated.

The β -sitosterol cytotoxicity on microglia and neuronal cells was determined using diphenyl-2H-tetrazolium bromide (MTT) cell viability assay. Effects of β -sitosterol on the production of pro-inflammatory cytokines (IL-1 β and TNF- α) were assessed using enzyme-linked immunosorbent assay (ELISA) kits. Subsequently, Promega Cell Viability Assay kit was used to evaluate the neuroprotective effects of β -sitosterol on neuronal cells against microglia-mediated neurotoxicity. Western blot analysis was conducted to investigate the regulation of inflammasome expression, tau production, and mitogen-activated protein kinase (MAPK) signalling pathway. Data were analysed using one-way analysis of variance (ANOVA) followed by Tukey's post-hoc test.

Our data showed that β -sitosterol down-regulated production of pro-inflammatory cytokines (IL-1 β and TNF- α). Furthermore, β -sitosterol increased cell viability of neuronal cells in comparison to conditioned media containing A β alone, thus conferring a neuroprotective effect on neuronal cells. These findings corresponded to the inhibitory effects of β -sitosterol on production of pro-inflammatory cytokines. Besides that, it downregulated the p38 MAPK signalling, and NLR family pyrin domain containing 3 (NLRP3) expression induced by A β in microglia. In addition, β -sitosterol exerted neuroprotective effects by downregulating the levels of phosphorylated p38 MAPK, phosphorylated Tau and NLRP3 in A β -induced neuronal cells.

In conclusion, the present study suggests that β -sitosterol could be a potential candidate for AD drug development due to its ability to reduce neuroinflammation via reducing production of pro-inflammatory cytokines and confer neuroprotective effects on neuronal cells.

ORAL PRESENTATION • DRUG DISCOVERY AND DEVELOPMENT

[OPD2]

PREDICTING DNA/RNA APTAMER DESIGN FOR TARGETING GRAM-NEGATIVE BACTERIA PROTEINS USING A GENETIC ALGORITHM*Ian Lim¹, Lim Chern Hong², Tan Hock Siew^{1,3}*¹*School of Science, Monash University Malaysia, 47500 Bandar Sunway, Selangor Darul Ehsan, Malaysia*²*School of Information Technology, Monash University Malaysia, 47500 Bandar Sunway
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Recent medical research has focused on producing binding agents for small molecules and protein targets, of which antibiotics are a popular method. Antibiotic-resistant bacteria continuously pose a global threat, meanwhile the antibiotic industry is costly and hosts a challenging manufacturing process. Hence, there is an urgent need for alternative, sensitive, and rapid-developing diagnostic and therapeutic agents. Lately, studies have touted aptamers as an efficient and promising alternative. Aptamers are short single-stranded DNA, RNA molecules which bind, with high affinity and selectivity, to several biological targets such as cells, viruses, and proteins. Coupled with Systematic Evolution of Ligands by EXponential enrichment (SELEX) technology, generating a multitude of unique aptamers is possible. But as SELEX is restrictive and labour-intensive, in silico methods have attempted to improve the enrichment rate. Fortunately, advanced machine-learning models have shown promise in predicting the binding abilities within target-ligand complexes, though research is limited.

Thus, this project expands upon this endeavour by utilising a genetic algorithm (GA) with an affinity predictor fitness function to predict in silico design of DNA aptamers. As a case study, aptamer datasets were used to train the GA to elucidate rules for the antibacterial design of the b-barrel assembly machine complex protein. Firstly, Discovery Studio and CASTp 3.0 were employed to identify active sites and differentiate high- and low-affinity features toward the target protein. Then, 103 aptamers were used to conduct molecular docking via Haddock. Eight aptamers were identified with the highest binding scores; thus, six attributes were chosen (e.g., Haddock score, electrostatic energy) as vectors in building the GA's fitness function. Thus, it is predicted that the best-performing aptamer would mirror its in silico results through in vitro validation. This proposed method could provide a relevant, simplified contribution to aptamer-protein interaction design, using machine-learning techniques to potentially accelerate aptamer screening.

ORAL PRESENTATION • DRUG DISCOVERY AND DEVELOPMENT

[OPD3]

AN *IN VITRO* STUDY ON THE NEUROPROTECTIVE EFFECT OF TGF- β R1 INHIBITOR (REPSOX) AGAINST BETA-AMYLOID-INDUCED NEUROTOXICITY*Shao Qin Tiong¹, Elaine Wan Ling Chan², Sook Yee Gan¹*¹*School of Pharmacy, International Medical University, Kuala Lumpur 57000, Malaysia*²*Institute for Research, Development & Innovation, International Medical University, Kuala Lumpur 57000, Malaysia*

Alzheimer's disease (AD) is characterised by the manifestation of extracellular beta-amyloid (A β) plaque accumulation and intracellular neurofibrillary tangles (NFTs) consisted of hyperphosphorylated tau. Notably, hyperphosphorylation of tau is increasingly evident to contribute to A β -induced neurotoxicity and phosphorylated tau (p-Tau) is highly associated with cognitive decline. Recently, dysregulation of transforming growth factor- β (TGF- β) signalling is shown to play a significant role in AD pathogenesis while increased TGF- β 1 level was observed in AD patients. The silencing of the *TGFBR1* gene resulted in neuronal survival from A β -induced neurotoxicity. Therefore, in this study, the neuroprotective effect of RepSox (selective TGF- β receptor type 1 (TGF- β R1) inhibitor) against A β -induced neurotoxicity and its modulation on the expression of A β -induced tau hyperphosphorylation were investigated on human SH-SY5Y neuroblastoma cells.

The cytotoxicity effect of RepSox on SH-SY5Y cells was determined using methyl thiazolyl tetrazolium (MTT) assay. Next, the neuroprotective effect of RepSox against A β -induced neurotoxicity was investigated at three different concentrations (50 nM, 100 nM and 150 nM) over 72 h using RealTime-Glo™ MT Cell Viability Assay. Western blotting was used to examine the expression of phosphorylated tau (pT231) and total tau proteins (Tau-5) in treated SH-SY5Y cells.

RepSox at the tested concentration range of 1.5625 ng/mL to 200 ng/mL showed no cytotoxicity effect on SH-SY5Y cells. Furthermore, RepSox exhibited neuroprotection on SH-SY5Y cells against A β -induced neurotoxicity by significantly increased the cell viability in comparison to SH-SY5Y cells treated with A β only. Importantly, the pT231 expression was significantly attenuated by RepSox in A β -induced SH-SY5Y cells while the Tau-5 expression remained unchanged. In conclusion, this study demonstrates that treatment with RepSox, a selective TGF- β R1 inhibitor, exhibits the neuroprotective effect on SH-SY5Y cells against A β -induced neurotoxicity by attenuating A β -induced tau hyperphosphorylation. Hence, RepSox could be a potential therapeutic agent for AD.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC1]

KNOWLEDGE, ATTITUDE, AND AWARENESS OF RESEARCH ETHICS AMONG UNDERGRADUATE STUDENTS: A CROSS-SECTIONAL STUDY

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Research ethics provides a benchmark for the responsible conduct of research. It is crucial to adhere strictly to the ethical principles to protect the welfare and rights of research participants. Hence, a holistic comprehension of research ethics is key in this medical profession. We conducted a cross-sectional study to assess the knowledge, attitude, and awareness of research ethics among the undergraduate students at Manipal University College Malaysia. We used purposive sampling and selected students from the pre-clinical and clinical years of Bachelor of Medicine & Bachelor of Surgery (MBBS) course in May 2022, as well as those who provided informed consent. The questionnaires were distributed via social media, it included the demographic data, experiences about research and research ethics, 14 questions regarding knowledge, 14 questions about attitude, and 4 questions in regard to awareness towards research ethics. The data was analysed using descriptive statistics, independent t-test, and one-way ANOVA via Epi Info software version 7.2.5.0. It was observed that the knowledge and attitude towards research ethics is not up to par. This study also showed that ethnicity is significantly associated with knowledge of research ethics, whereas gender is significantly associated with attitude towards research ethics. The awareness of research ethics among the respondents is adequate but can be improved. Therefore, medical schools and their curricula play a crucial role in improving the knowledge, attitude, and awareness of research ethics among undergraduate medical students.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC2]

KNEE JOINT ENDOPROSTHETIC RECONSTRUCTION FOR ADOLESCENT PATIENT WITH OSTEOLASTIC OSTEOSARCOMA OF DISTAL FEMUR

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Osteoblastic osteosarcoma is the most prevalent malignancy among bone tumors and is more common in adolescent patients. Usual locations for osteosarcoma are distal femur and proximal tibia. Surgical treatment of osteosarcoma generally involves amputation of the limb, however nowadays alternative methods of treatment, such as limb-salvage procedure with endoprosthetic reconstruction, have been practised more often and been successful. No case of knee joint endoprosthetic reconstruction in an adolescent patient with osteosarcoma was performed before in Children's Clinical University Hospital, Latvia.

A 15-year-old girl presented with dynamically progressing pain in right knee joint. A lump was palpated above the right knee joint with local heat and swelling. Radiological findings showed pathological 63.8 x 22.0 x 54.9 mm formation. Histopathological examination of the biopsy material revealed osteoblastic osteosarcoma of distal third of the right femur, that has grown into the epiphyseal plate. Presence of multiple pulmonary metastases was proved by histopathologist.

The patient had neoadjuvant chemotherapy according to EURAMOS-1 protocol for three months, followed with a 4 hour 40 minute long limb salvage procedure with total resection of the tumor, knee-joint reconstruction and endoprosthesis implantation. Reconstruction was done by performing osteotomy of tibial and femoral channels. Margin of resection was 2 cm from the tumor. MUTARS Distal Femur hybrid prosthesis with cement and non-cement parts was implanted.

Knee joint arthroplasty is possible and effective surgical treatment combined with chemotherapy for patients with osteoblastic osteosarcoma. The main purpose upon conducting the procedure was to provide the patient with a better quality of life, while preserving limb function and mobility.

This study presents a case of surgical arthroplastic knee joint treatment manifestation in a pediatric patient with distal femur metastatic osteoblastic osteosarcoma combined with scheduled chemotherapy courses and resection of pulmonary metastases.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC3]

**DETECTION OF ARRHYTHMIA BY HOLTER ECG
– A SINGLE-CENTRE EXPERIENCE**

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Arrhythmia is an abnormal or irregular heartbeat. Untreated arrhythmia can lead to life-threatening complications. Diagnosis of arrhythmia is challenging due to its short-lasting and intermittent characters. Ambulatory electrocardiography (Holter ECG) allows long-term continuous ECG monitoring to increase the diagnostic yields. This single-centre retrospective study aimed to determine the detection rate of arrhythmia among patients monitored with Holter ECG monitor in a private hospital in Kuching, Sarawak.

A total of 182 patients who were on a Holter ECG patch monitor from September 2019 to March 2021 were recruited into this study. Data were extracted from patients' digital ECG reports and medical records.

Almost all the patients were adults (99.5%) with male predominance (61.5%). Majority were Chinese (73.6%), followed by Sarawak Bumiputera (10.0%) and Malays (7.7%). Overall detection rate of arrhythmia by Holter ECG monitoring was 95.6%. Ectopic heartbeats and heart blocks were the most common arrhythmia types. Atrial fibrillation (78.6%) was the most common atrial arrhythmia found. Averagely, arrhythmic events were detected at 1.21 ± 0.53 days of ECG monitoring, with no significant difference between types of arrhythmias. Arrhythmia occurred more commonly in older patients above 60 years old, with no significant difference between genders. Interestingly, atrial arrhythmia was significantly more common among females ($p=0.039$).

Holter ECG patch monitor demonstrated high sensitivity in detection of arrhythmia by extending the monitoring period to 48 hours. As the risk of arrhythmia increases with age, early detection of paroxysmal arrhythmia by Holter ECG patch monitor among the older population is recommended, if budget permits. This can prevent its progression to life-threatening complications, such as stroke that can lead to high consumption of healthcare resources.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC4]

ANCA ASSOCIATED GLOMERULONEPHRITIS: CLINICAL CHARACTERISTICS, TREATMENT AND OUTCOMES – A SINGLE-CENTRE STUDY

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ANCA-Associated Vasculitis (AAV) is associated with pauci-immune necrotizing small vessel vasculitides, and commonly presents with rapidly progressive glomerulonephritis (RPGN). The aim of this study is to determine the clinical characteristics, treatment, and outcomes of ANCA associated glomerulonephritis in local settings.

This is a retrospective observational study which aimed to recruit all ANCA associated glomerulonephritis from 1st January 2017 until 31st December 2021. Patients with incomplete data were excluded. Patients' basic demographics, clinical presentations, laboratory data, renal biopsy findings, treatment and outcomes were collected from the review of electronic medical records.

A total of the 44 patients were included, with mean age of 64.86 ± 15.38 years and 65.9% were female. Majority were Chinese (56.5%), followed by Malay (26.1%) and Indian (13.0%). The commonest clinical presentation was acute kidney injury (AKI) on chronic kidney disease (CKD) (61.4%), followed by RPGN (43.2%) and nephrotic syndrome (29.5%). Up to 32 (72.7%) patients were MPO positive while 10 (22.7%) were PR3 positive. Renal biopsy was done in 26 patients, with crescents being present in 14 (63.6%). Renal replacement therapy was required by 22 (47.8%) patients. Among the 35 patients who received immunosuppressants, 33 (71.7%) received steroids, 17 (37%) received rituximab, and 15 (32.6%) received cyclophosphamide. Up to 26.1% of patients succumbed to the disease, 6.5% had end stage kidney disease and 32.6% developed CKD.

We observed a pattern of AAV associated glomerulonephritis that was inclined to female, Chinese and older persons in our study cohort. Most common presentation was AKI on CKD associated with pauci-immune crescentic glomerulonephritis. MPO-AAV was the predominant serotype, which is different from reported literature. Despite the use of intense immunosuppressants, AAV associated glomerulonephritis was associated with high risk of mortality and CKD.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC5]

GENETIC ANALYSIS ON THE EMERGING HIGH VIRULENT K1 AND K2 SEROTYPES IN ESBL-PRODUCING *Klebsiella pneumoniae* CLINICAL ISOLATES

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Klebsiella pneumoniae is an encapsulated, gram-negative bacterium that is responsible for many life-threatening community-acquired and nosocomial infections. It produces extended spectrum beta lactamase (ESBL), an enzyme that causes resistance against most beta-lactam antibiotics. Due to this multidrug resistance, hypervirulent *K pneumoniae* began to emerge, predominantly in K1 and K2 capsular serotypes. Therefore, the study aims to determine the genetic association between K1 and K2 serotypes in ESBL-producing *K pneumoniae* by sequencing and phylogenetic analysis.

A total of 194 *K pneumoniae* isolates were collected from Hospital Sultanah Aminah Johor Bahru and Hospital Pengajar UPM. Antibiotic susceptibility test was conducted for ESBL screening. Multiplex polymerase chain reaction (PCR) was conducted to detect the presence of *magA* and *K2A* genes in the *K pneumoniae* isolates that classifies them into K1 and K2 serotypes, respectively. Isolates that were found to be positive for ESBL phenotype and K1/K2 serotypes were selected for DNA sequencing and multilocus sequence typing (MLST). Finally, phylogenetic analysis was used to characterise the genetic association between the K1 and K2 serotypes among ESBL-producing isolates.

Among the 194 isolates, AST revealed that there are 89 ESBL and 105 non-ESBL producing *K pneumoniae* isolates. A total of 12 out of the 89 ESBL-producing *K pneumoniae* isolates were detected positive for *magA* or *K2A* gene (K1, $n = 4$; K2, $n = 8$). Following phylogenetic analysis, the result showed two distinct clusters (Cluster A = All K1 serotype; Cluster B = All K2 serotype).

In conclusion, the study showed that K1 and K2 serotypes were not associated to each other based on the phylogenetic analysis of the housekeeping genes. This was explained by the formation of two distinct clusters separating the serotypes from each other. Cluster A and Cluster B comprised of K1 serotype and K2 serotype isolates, respectively.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC6]

CAFFEINE INTAKE AND SMOKING HISTORY IN PATIENTS WITH PARKINSON'S DISEASE AND THEIR ASSOCIATION WITH CLINICAL SEVERITY AND AGE AT ONSET

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Caffeine and cigarette smoke exposure are associated with reduced Parkinson's disease (PD) risk. However, whether they influence age at onset (Aao) or severity of PD remains unclear. Our study aimed to address this knowledge gap.

The Mini Environmental Risk Questionnaire for PD (MERQ-PD-B) was self-administered by patients with PD, and included seven items on past (before PD diagnosis) and current exposure to caffeine and smoking. Disease severity was scored by PD neurologists using the Clinical Impression of Severity Index for PD (CISI-PD), covering motor signs, disability, motor complications, and cognition.

686 patients were recruited (55.2% male; median age=67[11] years; 82.7% were late-onset PD[LOPD] with Aao≥50years). Prior to PD diagnosis, 77.6% of patients consumed ≥1cup/day of caffeinated beverage, 13.7% were smokers, and 21.4% lived with a smoker. Prior history of caffeine intake or smoking exposure, as well as the amount of past caffeine intake or cigarette pack-years did not correlate with Aao in the overall cohort, and in the LOPD subgroup. 59.3% were current caffeine drinkers and 0.9% current smokers. Current caffeine drinking status correlated, albeit weakly, with better CISI total ($r_s=-0.17$, $P<0.001$) and subscores: motor signs ($r_s=-0.13$, $P=0.001$), disability ($r_s=-0.17$, $P<0.001$). However, among current caffeine drinkers, the amount of caffeine intake did not correlate with disease severity measures. About a quarter of past caffeine drinkers stopped drinking after PD diagnosis; these patients had similar disease severity scores as patients who never consumed caffeine before or after PD diagnosis. Current or past smoking status and quantity did not correlate with disease severity.

The association between current caffeine intake and better disease scores in this large cohort are consistent with the findings of small interventional studies suggesting beneficial symptomatic effects of caffeine in PD. Further studies are required to elucidate the roles of these lifestyle habits in PD.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC7]

SELF-REPORTED HISTORY OF EXPOSURE TO ENVIRONMENTAL TOXINS AMONG PATIENTS WITH PARKINSON'S DISEASE AND ASSOCIATION WITH AGE AT ONSET AND DISEASE SEVERITY

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Exposure to environmental toxins has been linked to increased risk of developing Parkinson's disease (PD). However, their impact on PD age at onset (Aao) and severity remains unclear. We aimed to investigate the pattern of lifetime exposure to environmental toxins, and their clinical correlates in PD.

Patients were recruited via convenience sampling from an urban tertiary neurology clinic. Lifetime exposure to environmental toxins (pesticides, chemical solvents, heavy metals, and other chemicals/fumes) was evaluated using the self-administered Mini Environmental Risk Questionnaire for PD (MERQ-PD-B). Clinical Impression of Severity Index (CISI-PD), covering motor signs, disability, motor complications, and cognition, was assessed by PD neurologists.

Of 686 patients (55.2% male; median age:67.0[11] years), 307 (45.0%) reported previous exposure to environmental toxins, including pesticides (37.3%), chemical solvents (10.6%), heavy metals (6.7%), and other chemicals or fumes (8.9%). Patients exposed to ≥ 2 categories of toxins (12.8%) had earlier Aao compared to those with only one category or no toxin exposure (medians:57.5[15.8] vs. 63.0[15.0] vs. 62.0[14.0] years, respectively, $p=0.001$). Patients exposed to chemical solvents (median:56.0[15.5] vs. 62.0[14.0] years, $p=0.001$) or heavy metals (median:55.0[16.0] vs. 62.0[14.8] years, $p=0.003$) also had earlier Aao vs. those without these exposures. We discovered significant, albeit weak, correlation signals between heavy metal exposure with worse motor complications ($r_s=0.12$, $p=0.003$), cognition ($r_s=0.08$, $p=0.031$) and total CISI scores ($r_s=0.08$, $p=0.039$), and between chemical solvent exposure with worse motor complications ($r_s=0.09$, $p=0.031$). No significant correlations were found with pesticides or other chemicals or fumes.

This large study among Malaysian PD patients documented substantial self-reported rates of exposure to environmental toxins, particularly pesticides. There appeared to be associations between heavy metal and chemical solvent exposure with earlier Aao and PD severity. Further studies accounting also for other environmental and genetic influences will improve our understanding of factors impacting the heterogeneous clinical presentation of PD.

ORAL PRESENTATION • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC8]

RENAL OUTCOME IN ADULT IGA NEPHROPATHY CATEGORISED BY INTERNATIONAL IGA NEPHROPATHY RISK PREDICTION TOOL – A SINGLE CENTRE EXPERIENCE*Zhu Shi Wong¹, Hui Chin Ting¹, Nur Raziana binti Rozi², Soo Kun Lim¹**¹Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia**²Nephrology Unit, Department of Medicine, University Malaya Medical Centre, Kuala Lumpur, Malaysia*

IgA nephropathy (IgAN) is the most prevalent primary glomerulonephritis worldwide, with 30 to 50% of patients progressing to ESRD within 30 years. The International IgAN Risk Prediction Tool (IgAN-RPT) has been utilised to predict the renal outcome for up to 7 years from biopsy, to estimate the risk of developing a 50% decline in estimated glomerular filtration rate (eGFR) or end-stage renal disease (ESRD). Herein, we intend to describe the renal outcome among the adult IgA nephropathy patients in our centre, who are categorised based on IgAN-RPT risk score.

This observational, retrospective study involved patients aged 18 and above with biopsy-proven IgAN diagnosed between 2010 and 2016. Each patient's 5-year risk score was identified via IgAN-RPT and eGFR change at 5-year follow-up was recorded.

A total of 21 patients were included in the final analysis. Most patients were of Chinese ethnicity (47.6%) followed by Malay (33.3%) and Indian (19%). 57% of them were female. The mean patients' age at time of biopsy was 40 years old. Two of the patients were diabetic. The median for baseline eGFR level and urine PCR was 53.6 ml/min/1.72m² and 174 mg/mmol respectively. Based on IgAN-RPT threshold at 5 years, 1 (4.8%) patient was categorised as low risk (< 4%) while 15 (71.4%) of patients were at high risk (> 11%). Of the latter, the median risk score was 21%. In the high risk group, 3 patients developed ESRD while 9 of them had decrement in eGFR ranging from 0.98 to 38.23%; the others had an improvement instead.

IgAN-RPT is a useful, discriminative tool for identifying patients at high risk of developing ESRD or losing 50% of eGFR. The trajectory of renal outcome observed is, however, underestimated, likely due to the small sample size and hence warrants a further, larger study.

ORAL PRESENTATION • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH

[OPE1]**A REVIEW OF TRADITIONAL AND COMPLEMENTARY MEDICINE (T&CM)
CLINICAL RESEARCH OF OBSERVATIONAL STUDIES IN MALAYSIA:
A BIBLIOMETRIC ANALYSIS***Angela Ziing Chan, Huey Ming Chan, Kim Sia Sng**Department of Chinese Medicine, Centre for Complementary and Alternative Medicine, International Medical University,
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The steady rise in the popularity of traditional and complementary medicine (T&CM) in Malaysia has sparked a great interest in diving deeper into its past and present which will potentially affect its future whereabouts. The main objective of this study is to identify the quality and quantity of existing T&CM observational clinical research in Malaysia.

A comprehensive search was done on PubMed, Embase and Web of Science to gather relevant publications published only in the English language. These publications comprised of case reports, case series, case-control studies, cohort studies and cross-sectional studies, limited only to the Malaysian population setting. Our analyses included the quantity of existing published T&CM observational clinical research in Malaysia, ranking the top 10 productive institutions from Malaysia on T&CM-related publications. Quality was measured by employing the use of h-index on various institutions.

A sum of 274 research publications were included after fulfilling the stringent inclusion criteria. Results identified the Medical Journal of Malaysia (Q3 of Medicine-miscellaneous), BMC Complementary Medicine and Therapies (Q3 of Complementary and Alternative Medicine (CAM)), and Complementary Therapies in Clinical Practice (Q2 of CAM) as the top three journals actively publishing T&CM observational clinical publications in Malaysia. Meanwhile, the University of Science Malaysia, University of Malaya and Ministry of Health were the top three institutions publishing such publications with h-index of 20, 22 and 11, respectively. Results showed that cross-sectional study holds the greatest number of publications, followed by case reports and case series. Cohort studies and case-control studies hold the least number of publications.

The advocate for a greater future need to reinforce on the inadequacy of proper documentation of T&CM-related publications. This study provided some guidance to practitioners interested in T&CM observational research regarding institutions that are active in this field and where they may consider submitting their T&CM-related research.

ORAL PRESENTATION • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH

[OPE2]

EFFECT OF INHALED YLANG-YLANG ESSENTIAL OIL ON PHYSIOLOGICAL PARAMETERS AND SHORT-TERM MEMORY OF MEDICAL STUDENTS IN MANIPAL UNIVERSITY COLLEGE MALAYSIA (MUCM), MUAR CAMPUS: A RANDOMISED CONTROL TRIAL

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Usage of essential oil has been rising in the community including the medical students' population. Thus, we need to know the benefits and side effects of essential oils currently available in the market. This study was a randomized controlled trial to determine the effect of ylang-ylang essential oil on short-term memory, respiratory rate, heart rate and blood pressure of medical students in MUCM. Sample was calculated with the help of Epi info sample size calculator. A total of 70 medical students were recruited for this study. The participants were randomly assigned into intervention (35) and control group (35). The respiratory rate, heart rate, blood pressure of participants were measured before they entered the intervention or control room and were recorded in a form. The intervention group participants were exposed to the Ylang-ylang essential oil whilst the control group participants were exposed to water vapor without any ylang-ylang scent. After 10 minutes of exposure in both intervention and control groups respectively, the outcome parameters were measured again and recorded in the same form as before. The study data was analysed using Epi Info software version 7.2.5. The mean memory score of essential oil group was slightly higher than the mean memory score of control group. However, P value was more than 0.05 when t-test was applied thus we cannot prove the benefits of Ylang-Ylang oil. The changes in physiological parameters were not significantly different in intervention and control group. Thus, this study cannot identify the benefits nor side effects of the essential oil. Further study with larger sample size, higher dosage of essential oil and longer duration of exposure is recommended.

ORAL PRESENTATION • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH

[OPE3]**UNDERGRADUATE MEDICAL STUDENTS' SELF-PERCEIVED KNOWLEDGE AND ATTITUDE TOWARDS HEALTH DISPARITIES**

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Good health and well-being for all is the third sustainable development goal established by the United Nations which aims to ensure healthy lives and promote well-being for everyone at all ages. The basic idea is to achieve universal health coverage (UHC), as well as access to quality health care. However, health disparities are a rampant yet often neglected issue in many nations across the world. Race, gender, disability and socioeconomic status are the factors which contribute to individuals' ability to achieve good health. We aimed to determine medical students' self-perceived knowledge and attitude towards health disparities, as well as the associations between gender, ethnicity and family income and health disparities. A cross-sectional study was conducted among medical students of Manipal University College Malaysia. Google form questionnaires were distributed and responses were collected. The data was statistically analysed using Epi Info version 7.2, specifically Chi-Squared test and Fisher's Exact test were used to analyse the data. Findings revealed that medical students agreed that doctors like all individuals have prejudices. Medical students agreed and strongly agreed that they would be able to demonstrate empathy towards multiple difficulties faced by patients from underserved populations. The highest percentage of self-perceived area of knowledge was an assessment of health literacy of the patient. The most significant associations obtained were between family income and comfort of addressing health issues in six underserved populations mainly the immigrants and refugee, the LGBTQ community, the homeless, incarcerated individuals, those who are mentally ill or those with substance abuse and veterans. In summary, most students seemed to have adequate knowledge, positive attitudes and a good holistic self-perception towards health disparities. We recommend institutes to provide learning environments for student exposure to underserved populations which will help to strengthen medical students' attitudes and commitment to underserved communities.

ORAL PRESENTATION • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH

[OPE4]

ACCEPTANCE OF COVID-19 VACCINE BOOSTER DOSES AMONG PATIENTS WITH COMORBIDITIES IN THE PRIMARY CARE CLINIC OF UNIVERSITI MALAYA MEDICAL CENTRE***Chiu Yee Teo¹, Lynette Khor¹, Zhen Xuan Chong¹, Yuan Heng Lim¹, Wei Leik Ng²****¹Faculty of Medicine, University of Malaya, Jalan Professor DiRaja Ungku Aziz, 50603 Kuala Lumpur, Malaysia**²Department of Primary Care Medicine, Faculty of Medicine, University of Malaya
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Vaccination is crucial to control the COVID-19 pandemic and endemic. Booster doses of COVID-19 vaccine have been introduced to ensure continual immunity against COVID-19. However, limited data were available on acceptance of booster doses, especially the second booster, among people with comorbidities in Malaysia. We intended to study the actual uptake and willingness to receive booster doses among this group of people.

A cross-sectional study was conducted on patients with comorbidities in a primary care clinic in Universiti Malaya Medical Centre (UMMC) from 20th July 2022 to 5th August 2022. A self-reported questionnaire was used, which included questions on demographic and clinical profiles, actual uptake of and willingness to receive COVID-19 vaccine booster doses, and perception of COVID-19 vaccine booster doses.

391 patients participated in this study with median age of 65 years old (interquartile range 16). Approximately 70% (n=272) of our participants had never been infected with COVID-19 before. 99.7% (n=390) had completed the primary two doses of COVID-19 vaccination. 78.3% (n=306) had taken the first booster dose for COVID-19 vaccine but only 11.2% (n=44) had taken the second booster dose. Out of the 347 patients who had not received the second booster dose, only 34% (n=118) were willing to take the second booster dose while another 35.7% (n=124) remained undecided. Positive perceptions on efficacy (adjusted odds ratio, AOR = 9.028, p = 0.001) and safety (AOR = 36.910, p = 0.002) of second booster dose were associated with willingness to receive the second booster dose.

Actual uptake and willingness to receive the second booster dose of COVID-19 vaccine were low in our cohort with sizeable number of undecided patients. Interventions to improve public's perception on the efficacy and safety of booster doses of COVID-19 vaccine may help to improve their acceptance of booster doses.

[OPE5]

DEVELOPMENT AND VALIDATION OF THE HEALTH BELIEF MODEL QUESTIONNAIRE TO PROMOTE SMOKING CESSATION FOR NASOPHARYNGEAL CANCER PREVENTION: A CROSS-SECTIONAL STUDY

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The risk factors for nasopharyngeal cancer driven on by lifestyle choices are substantial yet preventable. The purpose of the study was to establish a robust questionnaire of health belief model (HBM) with a focus on smoking cessation. A cross-sectional study was conducted in urban and suburban areas in Sarawak, Malaysia.

A literature review was utilised to construct a preliminary set of questionnaire items. This was followed by translation to Malay version using the forward-backward approach. Content and face validity were assessed by a panel of experts and local smokers, respectively. Construct validity of the instrument was explored via exploratory and confirmatory factor analyses (EFA and CFA). In phase 1 of the EFA, 100 smokers participated, whereas 171 smokers participated in phase 2 of the CFA. By employing Cronbach's alpha coefficients, internal consistency and dependability were assessed.

Each item's factor loading stayed within the recommended bounds in the exploration phase. An adjusted seven-factor model allowed for an establishment of a desirable fit: Chi Square: 641.705; df=500; P: 0.001; CFI = 0.953; TLI: 0.948; RMSEA: 0.041. With the exception of one paired construct, acceptable divergent and convergent validity were demonstrated. With Cronbach's alpha ≥ 0.7 , phases 1 and 2 both demonstrated a high level of internal consistency.

Six HBM components and a health behavioural intention are represented by the final questionnaire's 34 items. The result confirmed the validity and reliability of the questionnaire in assessing tendency to quit smoking to reduce cancer risk. This is a vital first step in uncovering the smoking cessation strategies that are instrumental in preventing different smoking-related malignancies in distinct susceptible populations and environments.

[OPE7]

A REVIEW OF TRADITIONAL AND COMPLEMENTARY MEDICINE (T&CM) CLINICAL RESEARCH OF INTERVENTIONAL STUDIES IN MALAYSIA: A BIBLIOMETRIC ANALYSIS

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Traditional and complementary medicine (T&CM) has made its presence known in the healthcare system as seen in the incline of T&CM usage in Malaysia. In Malaysia, evidence-based publications of T&CM will greatly influence the perspective of T&CM. The core component of this research study is to identify the quantity and quality of the existing published T&CM clinical research of interventional studies in Malaysia.

PubMed, Embase and Web of Science were used in this research study. The findings excluded reviews, in-vivo and in-vitro, conference articles, non-Malaysian study population and non-English articles. From the search results, the journals and leading institutions actively publishing such papers were identified based on the publication numbers, h-index, and average citation. The top 10 cited journal articles were identified and an analysis of recognised practice areas and areas of interest and characteristics of different types of T&CM interventional clinical research publications was performed.

A total of 56 interventional studies were winnowed out from the search results. The interventional studies of T&CM in Malaysia consisted of pre-post studies, non-randomised controlled trials, and randomised controlled trials. With all the data discovered, the top three journals were identified to be Evidence-Based Complementary and Alternative Medicine, Complementary Therapies in Medicine, and Cerebrovascular Diseases, while the top three institutions are the University of Science Malaysia, the Ministry of Health, and the University of Malaya. The recognised practice areas to have the most publications, which happens to be Traditional Chinese Medicine first, followed by Traditional Malay Medicine and then Traditional Indian Medicine. Additionally, the eminent area of interest was oncology and gynaecology.

This study acts as a tool for verifying the amount of existing published clinical research of interventional studies of T&CM in Malaysia in terms of quality and quantity.

EPOSTER • DISCOVERY SCIENCE

[PPS 1]

INVESTIGATING THE EFFECT OF PERONEAL NERVE STIMULATION ON THE TRANSMISSION OF SENSORY AFFERENTS TO THE CONTRALATERAL LIMB

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Activation of sensory afferents in one leg has been known to elicit motor responses on the opposite side of the body. This is a type of reflex movement defined as crossed reflex, and it has been examined extensively using cat and human models. Interneurons known as commissural interneurons, whose axons cross the midline of the spinal cord to the contralateral side, also have been described using cat models. However, the role of these commissural pathways and the type of sensory signals they transmit during the crossed reflex remain obscure in mice. This research aimed to present a detailed analysis of the mechanisms underlying sensory signal transmission to the contralateral limb in mice using electrophysiological approach. This was done by using *in vivo* stimulations of the left peroneal nerve combined with simultaneous electromyogram recordings from multiple muscles of the right leg. We show that left peroneal nerve stimulation evoked motor responses in all recorded muscles of the right leg. These responses are mediated by a combination of proprioceptive and cutaneous sensory afferents. Furthermore, we also conducted bilateral stimulations of the left peroneal and right sural nerves to look for inhibitory crossed pathway, which was found previously using different nerves (Laflamme and Akay, 2018). We provide evidence for an inhibitory pathway in the crossed reflex controlling the activity of some, but not all recorded muscles. The cutaneous sensory afferents possibly mediate these inhibitory pathways. Overall, this research project provides a detailed analysis for excitatory, as well as inhibitory crossed reflex pathways transduced by sensory signals from peroneal nerve stimulations. The data presented contribute to the understanding of crossed reflexes in wild-type mice, and will pave the way for future studies to use transgenic mice in an effort to map out the spinal circuitries involved in such processes.

EPOSTER • DRUG DISCOVERY AND DEVELOPMENT

[PPD 1]

SMALL-MOLECULE PERK INHIBITORS AS A NOVEL TREATMENT STRATEGY AGAINST PRIMARY OPEN-ANGLE GLAUCOMA*Julia Barczuk, Wioletta Rozpedek-Kamińska, Grzegorz Galita, Natalia Siwecka, Ireneusz Majsterek**Department of Clinical Chemistry and Biochemistry, Medical University of Lodz, Narutowicza 60, Lodz, Poland 90-136*

Endoplasmic-Reticulum (ER) stress and protein-kinase RNA-like endoplasmic reticulum kinase (PERK)-mediated Unfolded Protein Response (UPR) signaling pathway play a crucial role in the primary open-angle glaucoma (POAG) pathogenesis and progression. Therefore, in this study we investigated the cytotoxicity and activity of a small-molecule PERK inhibitor, which could be used in POAG treatment.

PERK enzyme activity was evaluated, using Western Blot technique, by the level of phosphorylated form of eIF2 α -the main substrate of PERK. Primary human trabecular meshwork (HTM) cells were pretreated for 1 h with the investigated PERK inhibitor at a concentration range of 3–50 μ M, 0.1% DMSO, and subsequently treated for 2 h with the thapsigargin (Th) (500 μ M), as an ER stress inducer. Cells incubated for 2 h only with Th (500 nM) constituted a positive control, whereas cells cultured only in complete medium were the negative control. The investigated inhibitor's cytotoxicity was determined using the Pierce™ LDH Cytotoxicity Assay Kit. HTM cells were treated with the investigated PERK inhibitory compound in a concentration range 0.75 μ M- 50 mM or 0.1% DMSO and were incubated for 16, 24 and 48 h. Obtained results demonstrated that tested PERK inhibitor significantly reduced ER stress-dependent phosphorylation of the eIF2 α with the highest activity at concentration of 25 μ M. No significant cytotoxicity was observed in HTM cells at any applied concentration of the PERK inhibitor or incubation time via the LDH assay.

According to the gathered data, the studied small-molecule PERK inhibitor did not show any significant cytotoxicity, while it efficiently down-regulated PERK. Therefore, this PERK inhibitor might provide an innovative treatment strategy against POAG.

EPOSTER • DRUG DISCOVERY AND DEVELOPMENT

[PPD 2]

COMBINED ATEZOLIZUMAB AND NAB-PACLITAXEL IN THE TREATMENT OF TRIPLE NEGATIVE BREAST CANCER: A META-ANALYSIS ON THEIR EFFICACY AND SAFETY*Sharmni Vishnu K¹, Thin Thin Wi², Saint Nway Aye², Arun Kumar²*¹*BMed Science, International Medical University, 126, Jalan Jalil Perkasa 19, Bukit Jalil, 57000 Kuala Lumpur, Malaysia*²*Department of Pathology, School of Medicine, International Medical University
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Triple-negative breast cancer (TNBC) is a clinically aggressive breast cancer with a poor prognosis. Approximately 20% of TNBC has been found to express programmed death ligand 1 (PD-L1), making it a potential therapeutic target. As PD-L1 inhibitor, atezolizumab, is a recently approved immunotherapeutic drug for TNBC, this meta-analysis (MA) was aimed to review the randomised controlled trial studies (RCTs) of combined atezolizumab and nab-paclitaxel in the treatment of TNBC and synthesise the evidence-based results on its effectiveness and safety.

We searched PubMed, Embase, EBSCOhost and ClinicalTrials.gov for the eligible RCTs which compared the efficacy and safety of atezolizumab and nab-paclitaxel combined with nab-paclitaxel alone. The outcomes analysed included overall survival (OS), progression-free survival (PFS), objective response rate (ORR) and treatment-related adverse effects (AEs).

A total of six RCTs were included in this MA. For efficacy, although OS was not significantly prolonged with combined atezolizumab and nab-paclitaxel (HR 0.90, 95% CI [0.79, 1.01], $p=0.08$), this combination therapy significantly improved PFS (HR 0.72, 95% CI [0.59, 0.87], $p=0.0006$) and ORR (RR 1.25, 95% CI [0.79, 1.01] $p<0.00001$). For safety, any AEs, haematological, gastrointestinal and liver AEs showed no statistically significant differences between the atezolizumab and nab-paclitaxel combination group and nab-paclitaxel alone group. However, serious AEs, high grade, dermatological, pulmonary, endocrine and neurological AEs were significantly lower with nab-paclitaxel alone compared to atezolizumab and nab-paclitaxel combined (p value range from <0.00001 to 0.02).

Atezolizumab combined with nab-paclitaxel was associated with improved outcomes in the treatment of TNBC; however, this combination resulted in more toxicity compared to nab-paclitaxel alone. While nab-paclitaxel alone produced chemotherapy related AEs, the combination of atezolizumab with nab-paclitaxel produced AEs, especially immune related AEs such as haematological, pulmonary, endocrine and neurological AEs.

EPOSTER • CLINICAL AND TRANSLATIONAL RESEARCH**[PPC1]****‘USER EXPERIENCE AND USABILITY’ IN COMPLETING A MOOC ON EMERGENCY MEDICINE CORE CONTENT COURSE (IEM/LECTURIO): A CASE STUDY**

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Massive open online courses (MOOC) is incorporated in hybrid learning in higher education. The aim of this study is to evaluate a MOOC in Emergency Medicine for clinical students using ‘user experience and usability’ heuristics for suitability of its application in the medical curriculum.

Six junior-clinical MBBS students (researchers) volunteered to complete a four-week course i.e., iEM Education Project and Lecturio in Emergency Medicine, available free to medical students online (<https://iem-course.org/courses/emergency-medicine-cc/>) which has eleven lessons covering 37 topics in Emergency Medicine (EM) to be completed in 4 weeks. After completion of the certified course, subjects evaluated cognitive, affective and functional components of usability of the course using a validated checklist independently. The results were then consolidated using the ‘shout-aloud’ method to assign pooled scores ranging from 1-5, five being the highest score to reflect on user experience and issues that would affect learners completing the course as self-directed learning online.

In cognitive connections, ‘interactivity, content and resources, media use and instructional assessment’ scored more than 4/5. However, for components like learner guidance and support, and instructional feedback, mean was < 3/5, as the course did not provide clear instructions on how learners can get support or feedback from professionals when encountering problems in the course. With regards to affective connection and functional connection, all components obtained a high overall mean score of 4/5.

This study reflects on how user experience and usability of MOOC would assist in improving the quality of MOOC in Emergency Medicine. The subjects feel that this course could be recommended for inclusion in the clinical rotation of EM in Semester 7 MBBS program, after improvements are made to ‘feedback and support’ components in the MOOC.

EPOSTER • CLINICAL AND TRANSLATIONAL RESEARCH

[PPC2]

**SALIVARY MICROBIOME PROFILE IN WATER PIPE USERS:
A CROSS-SECTIONAL STUDY*****Nikitha Lalindri Mareena Senaratne¹, Chong Chun Wie², Divya Gopinath³***¹*School of Medicine, International Medical University, 57000 Kuala Lumpur, Malaysia*²*School of Pharmacy, Monash University, 47500 Selangor, Malaysia*³*Clinical Oral Health Sciences, International Medical University, 57000 Kuala Lumpur, Malaysia*

Smoking is a risk factor for oral disease and systemic health and a cause of oral dysbiosis. Whilst this has been evaluated for major forms of tobacco smoking such as cigarettes, there is limited data on the effect of water pipe smoking on the oral microbiome. This study aims to compare the salivary microbiome between water pipe smokers and non-smokers.

Unstimulated saliva samples were collected from 60 participants, with 30 smokers and 30 non-smokers in the areas of Kuala Lumpur and Klang Valley, Malaysia. DNA extraction was performed using the Qiagen DNA mini kit and the 16s rRNA bacterial gene was amplified using next generation sequencing Illumina Miseq platform. Sequencing reads were processed using DADA2 and phylogenetic placement method was used to perform taxonomical classification.

There was no difference in alpha diversity between water pipe smokers compared to non-smoking controls. However, a significant compositional change (beta diversity) between the two groups was detected ($P < 0.05$). It was observed that the levels of phyla *Firmicutes* and genus *Streptococcus* was relatively increased in smokers whereas genus *Haemophilus* and *Lautropia* was depleted in comparison to non-smokers. In addition, *Proteobacteria* was significantly abundant in non-smokers. At species level *Streptococcus oralis*, *Streptococcus salivarius* and *Streptococcus gingivalis* were enriched in smokers.

A taxonomic profile of the salivary microbiome in water pipe smokers compared to healthy controls exhibited a paradigm shift in microbial composition towards anaerobes thus implying an alteration in the homeostatic balance of the oral cavity.

EPOSTER • CLINICAL AND TRANSLATIONAL RESEARCH

[PPC3]

READINESS TOWARDS ARTIFICIAL INTELLIGENCE AMONG UNDERGRADUATE MEDICAL STUDENTS IN MALAYSIA

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Artificial Intelligence (AI) technology is growing at a fast pace and permeates many aspects of people's daily lives. Medical students' readiness towards AI in medical field increases the probability of successful AI adoption and its value in medical field. This study was conducted to evaluate the medical AI readiness among the undergraduate medical students. Undertaking this study among the undergraduate students would provide useful comprehension on student's readiness on AI and eventually smoothen the path of AI usage in Malaysia in future. A cross-sectional study was conducted from March 2022 till April 2022 in a private medical institution in Malaysia. A non-probability purposive sampling method was used to enrol students and questionnaire was distributed online via Google forms. Medical Artificial Intelligence Readiness for Medical Students (MAIRS-MS) questionnaire was used for the data collection. The analysis included frequency tables, percentages, standard deviation, unpaired t-test, and ANOVA test. Out of 105 participants, 67.62% scored 53-83 marks, followed by 24.76% scored 84-114 marks, and 7.62% scored 22-52 marks in the medical artificial intelligence readiness scale. The mean of the total score of medical AI readiness obtained was 75.04. Majority of the students reported a broad and deep AI topic interest and optimistic towards AI applications in medicine. There were significant associations between age and study year with the ability, vision, and ethics domains of the medical AI readiness. Significant association was observed between previous training with all four domains of the medical AI readiness. The policy makers and educational sector should set up more AI training centre to provide AI training courses to introduce and provide a basic course on AI. More AI courses should be provided to younger populations to engage into the AI digital information earlier, thus having more confidence interacting with AI technology in future.

[PPE1]

COMMUNITY PHARMACISTS AND COMPLEMENTARY MEDICINES: KNOWLEDGE, ATTITUDES, AND PRACTICES TOWARD PROVIDING COUNSELLING SERVICE ON VITAMINS AND DIETARY SUPPLEMENTS IN MALAYSIA

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There has been a surge in the consumption of vitamins and dietary supplements (DS) among consumers in Malaysia. Hence, community pharmacists play a vital role in providing counselling to ensure optimal health outcomes. However, the professional services and advice provided by community pharmacists are inadequate. Thus, the current study aimed to assess and evaluate the knowledge, attitudes, and practices of community pharmacists in providing counselling services on vitamins and DS in Malaysia.

A cross-sectional study was conducted among community pharmacists in Malaysia using a validated survey from February to April 2022. 260 participants were recruited online and SPSS was used for data analysis.

Most of the participants had average knowledge, positive attitude and practice towards providing counselling services on vitamins and DS to patients. Pharmacists reported that vitamin C was the best-selling supplement in their pharmacy (91.9%), while vitamin D was the least (28.8%). Majority of the pharmacists were well known of the effects of overdosing of dietary supplements. However, most of them were unaware that St John wort should be stopped at least two weeks before scheduled surgery to prevent risk of heart complications. Approximately 35% of the pharmacists expressed their belief that it is safer for patients to take vitamins and supplements to prevent and cure illness as compared to taking conventional medication and around 32% of them claimed that vitamins and supplements can replace certain medications such as cholesterol-lowering medications. There was a significant difference between demographic data and the mean score of knowledge and attitude.

The average knowledge score of pharmacists did not reach the patient's expectations. Therefore, it is necessary to improve the pharmacy course curriculum in all universities in Malaysia. Additional structured training about vitamins and DS should be implemented for optimal patient care in the community setting.

[PPE2]

PERCEPTION OF CHIROPRACTORS IN MALAYSIA IN THE MANAGEMENT OF PAIN AMONG PATIENTS WITH CANCER

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Cancer is the second leading cause of death and a major cause of burden to the patients and the country. The advancement in healthcare has led to a shift from pure cancer treatment to treatment that focuses on improving the quality of life of patients with cancer. Many studies have been investigating how allopathic medicine and other Traditional and Complementary Medicine can help patients with cancer, yet limited studies have been done on chiropractic care. Chiropractors being the neuromusculoskeletal (NMSK) experts, are well trained to manage pain in the NMSK system, and this suggests that chiropractors may play a role in managing pain among patients with cancer, hence indicating the need to conduct this study. The study aims to identify the concerns of chiropractors and their treatment approaches when managing pain among patients with cancer in Malaysia.

This is a qualitative study that involves a pre-assessment survey to recruit participants, and an interview to collect the data. The data collected are analysed using thematic analysis.

A total of seven themes are formulated, which include the thoughts of chiropractors on this topic, their concerns, their methods to overcome the concerns, their treatment approach, their thoughts on performing manual manipulation, their opinion on integrating chiropractic into multidisciplinary care, and their recommendations.

In conclusion, the results show that chiropractors do play a role in managing patients with cancer, however, some concerns have to be addressed, and some treatment methods have to be modified before chiropractors can manage patients with cancer safely.

[PPE3]

MATERNAL BEHAVIOURS AND CONSIDERATIONS OF BREASTFEEDING PRACTICES IN MALAYSIA DURING THE COVID-19 PANDEMIC

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Breast milk is an ideal food for infants to ensure their survival and immediate health. Since the COVID-19 outbreak in late 2019, a few studies regarding the impacts of lockdown during the COVID-19 pandemic on breastfeeding have been reported globally. However, none of this study has been done in Malaysia. Therefore, a cross-sectional study was performed in this study among Malaysian mothers with children aged less than two years old ($n=107$) during the COVID-19 pandemic. This was to explore the association of infant feeding practices and changes with the periods of delivery. Additionally, this study was aimed to investigate the association between changes in breastfeeding practices and three aspects which included maternal demographic characteristics, perceived effects of COVID-19 lockdown and perception towards possible reasons of changing breastfeeding practices.

In this study, the actual breastfeeding practices for the first six months of babies had moderately changed (17.8%) from the mothers' initial feeding intention before giving birth, in which the rate of exclusive breastfeeding was slightly decreased (4.6%) while the partial breastfeeding was moderately increased (12.1%) from the initial breastfeeding intention. The Fisher's exact test indicated a significant association between the feeding intention before delivery and periods of delivery ($p=0.002$). Besides, significant associations between changes of breastfeeding practices and four aspects such as maternal educational level ($p=0.007$), total number of children ($p=0.026$), perception of insufficient milk ($p=0.047$) and embarrassment ($p=0.047$) were observed based on Fisher's exact test. However, no association was found between any of the perceived effects of COVID-19 lockdown and changes of breastfeeding practices ($p>0.05$).

Therefore, in summary, future breastfeeding-promoting interventions in Malaysia should be focused more on the aspects that are significantly associated with the changes in breastfeeding practices as observed in this study.

[PPE4]

ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) SYMPTOMS, ACADEMIC OUTCOMES AND MENTAL HEALTH OF MEDICAL STUDENTS

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Students with attention deficit hyperactivity disorder (ADHD) experience poorer academic and psychosocial outcomes. We aimed to describe ADHD symptoms among medical students and explore its association with their academic performance and mental health.

An online survey was completed by 161 medical students (3rd to 5th year) from International Medical University. Information on student demographics, academic performance, ADHD symptoms, childhood ADHD symptoms and mental health status were collected. Students' ADHD symptoms were measured using Conners' Adult ADHD Rating scales (CAARS). T-score above 55 generated from the raw scores was considered significant for ADHD. We analysed correlations and effect size between ADHD and other independent variables using chi square and odds ratio. Poor academic performance was established based on a history of failing an assessment in medical school.

One fifth (n=33; 20.5%) of students experienced ADHD, with inattention (n=42; 26.1%) and self-concept (n=53; 32.9%) as the predominant symptoms. Medical students with ADHD were more likely to be female (OR 2.59; CI 95% 1.09-6.17), Malay race (OR 0.18; CI 95% 0.06-0.54), and with childhood ADHD symptoms (OR 47.63; CI 95% 5.78-393.43). Significant positive associations were found between ADHD and depression (OR 6.55; CI 95% 2.86-14.96), anxiety (OR 7.61; CI 95% 3.05-18.94) and stress (OR 6.59; CI 95% 2.79-15.58) but not academic performance.

Medical students presenting with mental health issues should be screened for ADHD symptoms, irrespective of their academic performance.

[PPE5]

AWARENESS, ATTITUDE & PRACTICE OF WEARING FACE MASKS DURING THE COVID-19 PANDEMIC AMONG UNDERGRADUATE STUDENTS

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This study assessed the awareness, attitude and practice of wearing face masks among undergraduate students in Manipal University College Malaysia (MUCM). As the COVID-19 pandemic has affected thousands of individuals across so many countries, several preventive measures have been adopted to improve the healthcare standards. These include avoiding close physical contact with those who are tested positive for COVID-19, regular hand washing, and wearing a face mask in public. A cross-sectional study was conducted from August to November of 2020 in MUCM. The study received a total of 151 participants. Data was collected through an online questionnaire answered in English. Unpaired T-test and ANOVA analysis were used as statistical tools. Using $P = <0.05$ as the level of significance, the mean score was calculated.

In terms of awareness, students had good awareness on proper use of face masks. This was seen in most of the students choosing the answer always or often for the awareness component of the questionnaire. There was no significant association seen in this section. As for the attitude component of wearing face masks, the majority of students were found to have a good attitude. There was no significance found too. Finally, with regards to the practice component of wearing face masks, following a series of questions, the results showed there was a good level of practice among undergraduates. There was a marginally significant association seen with gender (Male & Female) with practice. In this study, it was found that females have higher practice compared to males as the results showed that females tend to follow more steps in practice compared to males. Overall, the awareness, attitude and practice of wearing face masks among medical undergraduates was good and this is something that we expected during these extremely unprecedented times.

EPOSTER • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH**[PPE6]****MEETING THE HEALTHCARE NEEDS OF THE INDIGENOUS COMMUNITY BY OVERCOMING BARRIERS TO ACCESS HEALTHCARE: A QUALITATIVE STUDY EXPLORING HEALTHCARE PROFESSIONAL'S (HCP) PERSPECTIVES**

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Malaysia is a country with multiracial communities. The 'Orang Asli' (OA), who is one of the indigenous communities, have been identified as a minor, vulnerable social group characterised by various socio-cultural and psycho-social-cognitive differences. Despite numerous development programmes undertaken over the past decade, there are ongoing concerns about health equity for the OA. This has sometimes resulted in varying health outcomes and mortality rates for the OA people when compared with others. The aim of the study was to better understand some of the barriers to healthcare access experienced by the Indigenous community and help to identify innovative strategies to improve this.

A cross-sectional qualitative study was conducted to elicit the perspectives of Hospital Orang Asli Gombak (HOAG) healthcare professionals (HCPs) through semi-structured interviews. The recruitment process was through convenience and snowball sampling. Thematic saturation was reached after twenty interviews. Transcripts were made verbatim and translated into English. Data coding was done using NVivo v.12, and thematic analysis was carried out based on previous research models, namely Health Care Access Barriers (HCAB) and Healthcare Access Barriers for Vulnerable Population (HABVP).

The main perceived barriers were as follows: geographical & transportation, cognitive & attitudinal, communication, knowledge, and financial barriers. Transportation issues (75%), societal beliefs in traditional methods (55%) and language differences (50%) were the specific sub-themes highlighted by the HCPs as obstacles to accessing healthcare.

HCPs have proposed resolutions to the cited issues, including the need for external support to motivate and integrate OA communities. This could come in the form of financial, cultural and educational efforts done by multilateral cooperation. Individualised support care plans should also be tailored to meet each of the OA communities' needs.

[PPE9]

NUTRIENT ESTIMATION SKILLS OF UNDERGRADUATE NUTRITION AND DIETETICS STUDENTS IN MALAYSIAN UNIVERSITIES USING FOOD IMAGES WITH AND WITHOUT A FIDUCIAL MARKER (DESSERT SPOON)

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The use of image-based dietary assessment methods has increased rapidly; however, research on the nutrient estimation skills of nutrition and dietetics students is limited. Furthermore, the effect of fiducial marker on nutrient estimation skills remains unclear. This study aimed to determine the nutrient estimation skills using food images with and without fiducial marker (dessert spoon) among undergraduate nutrition and dietetics students in Malaysian universities.

In this cross-sectional study, food images were taken at 45° and 90° angles for each food (nasi lemak, banana leaf meal, char kuey tiao, fish and chips, two types of mixed rice, curry laksa noodles, chicken rice, thosai, kuih lapis, curry puff, brownie, guava, watermelon and papaya) and four set meals. Participants were asked to identify 15 foods and estimate the energy and macronutrients amount using food images without and with dessert spoon on two different days via online questionnaires. The accuracy of nutrient estimation with and without dessert spoon were expressed as median percentage (interquartile range), then compared using Wilcoxon Signed Rank Test.

Fifty-five undergraduate nutrition and dietetics students obtained high accuracy in food identification (86.7%±6.7%) but low accuracy in nutrient estimation (21.1%±7.9%). Nutrient estimation results without and with dessert spoon were not significantly different in all food items and set meals (Z-score=-1.289, p=0.197). However, scores were significantly reduced for carbohydrates (Z-score=-2.677, p=0.007), protein (Z-score=-2.299, p=0.022) and fat (Z-score=-4.439, p<0.001) when the dessert spoon was used. This may be due to participants' limited knowledge of distinguishing between tablespoon, dessert spoon and teaspoon.

Using food images, participants had good food identification skills but not for nutrient estimation skills. Moreover, nutrient estimation with dessert spoon did not improve the skill of nutrition and dietetics students. However, the results were inconclusive, therefore more studies should be conducted to validate the results.

[PPE10]

MENTAL HEALTH OF HOUSE OFFICERS DURING COVID-19 PANDEMIC IN MALAYSIA

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The Covid-19 pandemic most certainly impacted the mental health of healthcare professionals in Malaysia. The aim of our research is to assess the mental health of house officers in Malaysia during the COVID-19 pandemic and to compare this with the pre-pandemic times. 122 house officers from 28 hospitals in Malaysia were recruited into the study and completed an online questionnaire of their demographics, including the Depression, Anxiety and Stress Scale 21 items (DASS-21), Satisfaction with Life Scale and Brief Resilience Scale. Results showed that depression (36.1%), anxiety (33.7%) and stress (23.8%) were all prevalent among house officers with depression being the most prevalent among the three. Majority of the house officers were slightly satisfied with life (30.3%) and most of them had normal resilience (71.3%). We compared our study with 5 other studies from 2010 to 2017 and found similar prevalence in depression, anxiety and stress except for the study in 2017 which showed overall prevalence in depression, anxiety and stress. 8.2% of our subjects recorded extremely severe depression, which is almost twice as much as the two studies we have for comparison. Housemanship training in Malaysia is indeed a stressful period for junior doctors especially in times of the COVID-19 pandemic. More support systems should be made.

EPOSTER • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH**[PPE11]****ASSESSING EFFECTIVENESS OF A TEXT-BASED MENTAL HEALTH COACHING APPLICATION IN IMPROVING MENTAL WELL-BEING IN MALAYSIA**

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Studies have shown that the implementation of several movement control orders with the widespread outbreaks of the COVID-19 virus had a serious negative impact on mental health among the general population. A wide variety of digital mental health interventions have demonstrated efficacy in improving one's mental health status, and digital interventions that involve some forms of human involvement have been shown to be better than self-guided digital interventions. However, studies that demonstrate the efficacy of digital mental health interventions within an Asian context are scarce. The current study aimed to demonstrate the effectiveness of an asynchronous text-based digital mental health application, ThoughtFullChat, in reducing self-reported symptoms of depression, anxiety and stress.

A cross-sectional study was conducted among housemen, students, faculty members and corporate staff in International Medical University (IMU), Malaysia. Convenient sampling was used to recruit participants. Depression, anxiety and stress symptoms were measured using the DASS-21 scale. Measures of life satisfaction and resilience were also included. Randomised controlled trial method was used whilst preintervention and postintervention data (after 3 months of intervention) were collected, compared, and analysed.

Results showed significant reduction in the mean scores of depression, anxiety and stress following usage of the application. In our subpopulation analysis, IMU corporate staff showed significantly greater improvements in depression, anxiety and stress scores. The study also demonstrated that participants had greater improvements in depression, anxiety and stress scores among females as compared to males.

The study demonstrates the effectiveness of an asynchronous text-based mental health coaching application in improving symptoms of depression, anxiety and stress in pre-diagnosed individuals within an Asian context. It also demonstrates an overall positive user experience among participants, suggesting that such applications can be implemented as a new approach in tackling the increasing prevalence of mental health issues especially during this post-pandemic era.

[PPE12]

A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE EFFECT OF ORALLY ADMINISTERED CHINESE HERBAL MEDICINE COMBINED WITH CONVENTIONAL DRUG TREATMENT ON CRP AND ESR IN RHEUMATOID ARTHRITIS

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The focus of this thesis is to compare and evaluate the effectiveness of orally administered Chinese herbal medicine in combination with conventional drug in the treatment of lowering C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) in rheumatoid arthritis.

The study is based on the PRISMA guidelines. Randomised controlled trials (RCTs) studies were collected through literature search on six English and Chinese databases since the establishment of these databases until 30th June 2021. Data screening and quality assessment were implemented independently by two researchers. Discrepancies were resolved through discussion with a co-researcher. All data were analysed utilising Review Manager 5.4.1.

207 RCTs which involved 18923 RA patients fulfilling the criteria were included in this systematic review and meta-analysis. Most of the studies yielded significant findings and with low risk of bias. According to the results, combination treatment of conventional drug and orally Chinese herbal medicine significantly improved the outcome measure including the serum levels of CRP and ESR of participants in the intervention group. Overall, intervention group had better treatment effect compared to control group.

Comparing with conventional drug treatment alone, combined conventional drug and orally Chinese herbal medicine appeared to be significantly more effective for RA treatment.

[PPE13]

IDENTIFYING THE CHINESE HERBAL MEDICINE USED IN TREATING DIABETIC NEPHROPATHY: A DATA MINING ANALYSIS

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This research is aiming to identify the common effective Chinese medicine (CM) herbs and pattern of herb combinations used in the CM formula to treat diabetic nephropathy (DN) for the past ten years.

Clinical randomised controlled trial studies published from 1st January 2012 to 31st December 2021 were retrieved from CNKI, PubMed, Springer Link and Science Direct databases. The articles were screened strictly according to the inclusion and exclusion criteria designed. By extracting data from the articles included, the common effective CM herbs with respective frequency and herb combinations or association rules were generated using Microsoft Excel and IBM SPSS Modeler respectively.

A total of 650 articles were found using the search strategy. After three consecutive screenings, 185 articles were left and included in the study. A total of 231 CM herbs were extracted and classified into 16 groups according to their medicinal efficacies in CM. The top 10 frequently used herbs are *HuangQi*, *DanShen*, *FuLing*, *ShanYao*, *ShanZhuYu*, *ShengDiHuang*, *DaHuang*, *BaiZhu*, *ZeXie* and *DangGui*. Among them, *HuangQi*, *ShanYao*, and *BaiZhu*, are classified under *Qi* tonic; *DanShen* is classified as blood activating herb; *FuLing* and *ZeXie* are classified as dampness-resolving herbs; *ShanZhuYu* is under Kidney tonic; *ShengDiHuang* is classified as heat-clearing medicine; *DaHuang* is a purgative; and *DangGui* is a blood and *Yin* tonic. Association rules analysis showed the highly associated herb combination used in treating DN as follows: *DanShen*→*HuangQi*, *FuLing*→*HuangQi* *ShanYao*→*FuLing* and *ShanYao*→*HuangQi*, etc.

The study revealed the functions of the frequently used herbs, including herbs that can activate blood, tonifying *Qi* and *Yin*, resolve dampness and so on. These showed a close relationship between the medicinal efficacies of herbs with the main pathogenesis of DN which are *Qi* and *Yin* deficiency, and blood stasis as shown in most of the DN patients.

LIGHTNING TALK • CLINICAL AND TRANSLATIONAL RESEARCH

[LTC1]

ASSOCIATION OF OMPK36 PORIN VARIANTS AND THE ANTIMICROBIAL RESISTANCE PATTERN OF *Klebsiella pneumoniae* ESBL AND NON-ESBL PRODUCERS***Tee Sze Ni¹, Hazmin Hazman¹, Siti Norbaya Masri², Nurshahira Sulaiman¹***¹*Department of Biomedical Sciences, Faculty of Medicine and Health Sciences
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Klebsiella pneumoniae has caused a wide-spectrum of nosocomial infections and is becoming a significant issue in the healthcare services worldwide due to its evolving resistance to multiple antimicrobial agents including cephalosporins. This is mainly due to the rapid spread of extended spectrum beta-lactamase (ESBL) strains among *K pneumoniae*. Studies have shown that one of the major outer membrane porins of *K pneumoniae*, ompK36 may also play an important role in the antimicrobial resistance by acting as the channel for the entry of certain antimicrobial agents. Based on ompK36 genotyping, *K pneumoniae* isolates can be classified into four major groups (Group A, B, C and D). However, studies on the antimicrobial resistance effects for each variant are still lacking. The study aims to determine the association of ompK36 porin variants of *K pneumoniae* clinical isolates and the antimicrobial resistance patterns of β -lactam antimicrobial agents.

A total of 163 clinical isolates were collected from Hospital Sultanah Aminah Johor Bahru (HSAJB) from April 2021 to 2022. Antibiotic disc diffusion test was conducted to detect the isolates possessing ESBL-producing phenotype and the antimicrobial resistance patterns. Genotyping using PCR was carried out to classify *K pneumoniae* isolates into OmpK36 Group A, B, C and D. Statistical analyses were performed using chi-square test.

In this study, 137 *K pneumoniae* isolates were classified into four ompK36 variants, designated groups A (23), B (20), C (60), and D (34), respectively. ESBL-producing *K pneumoniae* were shown to express high resistance rates for aztreonam, ceftriaxone, ceftazidime and cefotaxime in comparison to non-ESBL isolates ($p < 0.001$). Group D isolates were shown to possess high resistance rate only against aztreonam ($p < 0.05$).

In conclusion, ompK36 porin variants of ESBL and non-ESBL *K pneumoniae* were not associated with the antimicrobial resistance of β -lactam antimicrobial agents with an exception for Group D with aztreonam.

LIGHTNING TALK • CLINICAL AND TRANSLATIONAL RESEARCH

[LTC2]

THE RELIABILITY OF SKETCHANDCALC™ AREA CALCULATOR SOFTWARE IN EVALUATING THE OBTURATED SURFACE AREA OF MANDIBULAR PREMOLARS AND MOLARS

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The measurement consistency of an assessment tool in biomedical research is important for validation of data. This study aims to determine the reliability of SketchAndCalc™ Area Calculator software in evaluating the obturated surface area of mandibular premolars and molars between two examiners and compare to the previous studies.

30 scanning electron microscopy (SEM) images of extracted single rooted mandibular premolars and 30 SEM images of mandibular molars were obtained from previous studies. The extracted teeth were previously obturated with GuttaFlow Bioseal. Calibration between two examiners was done prior to start of the study. SketchAndCalc™ Area Calculator software was used to evaluate the volumetric percentage of obturated surface area. Inter-examiner reliability was determined between two examiners and compared to the previous studies using Intraclass Correlation Coefficient (ICC) with the following categories; ICC <0.50: poor reliability, ICC 0.50-0.75: moderate reliability, ICC 0.75-0.90: good reliability, ICC >0.9: excellent reliability.

The ICC values between two examiners were 0.979 in mandibular premolars and 0.918 in mandibular molars. Meanwhile, the ICC values between two examiners and to the previous studies were 0.844 in mandibular premolars and 0.962 in mandibular molars.

Excellent inter-examiner reliability was observed in premolars and molars; however, when compared to the previous studies, good and excellent inter-examiner reliability were observed in premolars and molars, respectively.

LIGHTNING TALK • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH**[LTE1]****IMPACT OF TRANSITION TO ONLINE TEACHING ON LECTURERS' WORK LIFE BALANCE AND MENTAL HEALTH IN A MEDICAL UNIVERSITY**

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COVID-19 pandemic is an ongoing global pandemic caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS CoV-2). Lecturers for healthcare professions have been tasked with substituting practical training with online content for students. We collected data on demographic characteristics, experience of online teaching, work-life balance, and mental health status. More than two thirds (78.5%) of the surveyed lecturers were of middle aged and younger with majority of them were from the faculty of medicine. Almost all (91%) had previous experiences with the conventional way of conducting the teaching before the crises of covid-19. This institution has done well in providing the necessary training for teaching online and only a handful have not received any training at all. The training has resulted in 77.1% of the respondents achieving satisfactory knowledge to conduct classes online. Most lecturers reported having extended hours of work due to preparing teaching materials for online classes but had more flexibility with their working hours. Most lecturers responded that they had overall good physical health despite some disturbances to the sleep. Unfortunately, many also reported having their mental and emotional wellbeing affected.

The results of this study also compared different age groups of university lecturers and the impact of online teaching on their mental health status. Interestingly, senior lecturers had lower stress levels compared to their younger counterparts. Most lecturers had low depression and anxiety scores but had high levels of stress. The levels of depression, anxiety, and stress levels among those in the generation Y age group were higher in contrast to the Baby Boomers age group. Generation X also had higher stress levels compared to Baby Boomers. Staff not in the school of medicine (NSOM) had higher scores in both PHQ9 and PSS compared to staff in the school of medicine (SOM).

LIGHTNING TALK • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH**[LTE2]****PREVALENCE AND FACTORS OF PUBLIC SPEAKING ANXIETY AMONG MEDICAL STUDENTS IN UNIVERSITI PUTRA MALAYSIA*****Fong Yan Bin¹, Nuraina Shahirah¹, Vishnu Venugopal¹, Zawiah Mansor¹, Siti Aisah Mokhtar²****¹Faculty of Medicine and Health Science, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia**²Department of Community Health, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia*

Public speaking anxiety (PSA) is fear of speaking in front of others and can be accompanied by physical symptoms such as an elevated heart rate, shortness of breath and/or panic attacks. It is a highly prevalent condition and important for medical students as it may have negative effects of public rapport, confidence level and credibility of future doctors. However, there was very limited evidence among medical students especially in Malaysia. Therefore, this study aims to study the prevalence and factors associated with PSA among medical student in University Putra Malaysia (UPM).

A cross-sectional study was conducted among medical students in UPM in year 2022. A simple random sampling was performed according to the year of study and public speaking anxiety level was assessed using Personal Report of Public Speaking Anxiety (PRPSA) questionnaire which was self-administered and factors associated such as sociodemographic, behavioural and skill factors. Descriptive statistics, chi-square test, Mann Whitney test and logistic regression were conducted to identify the prevalence and associated factors.

A total of 362 respondents were included in the analysis. Prevalence of moderate to high public speaking anxiety was 49.3%. There were significant associations between psychological flexibility, public speaking experience and public speaking training ($p < 0.05$). Indian respondents were found to have significantly lower percentage of public speaking anxiety compared to other races (OR:0.219, 95%CI: 0.054;0.893).

A surprisingly high percentage of PSA among medical students compared to available studies in Malaysia warrants further action to ensure production of high quality future doctors who can communicate better with patients and public. PRPSA questionnaire can be used by faculty to screen for PSA among medical students for further intervention. Public speaking training to increase psychological flexibility by university can benefit all medical students especially those suffered with PSA.

LIGHTNING TALK • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH**[LTE3]****THE RELATIONSHIP BETWEEN PAIN AND ACTIVITIES OF DAILY LIVING WITH POSTURAL BALANCE IN PRIMARY BILATERAL KNEE OSTEOARTHRITIS PATIENTS***Yuan Heng Lim, Zulkarnain Jaafar**Faculty of Medicine, University of Malaya, Jalan Professor DiRaja Ungku Aziz, 50603 Kuala Lumpur, Malaysia*

Most knee osteoarthritis (OA) patients suffer from pain and functional disability at some point in their disease progression. They are also prone to falls due to impairment of their joint proprioception. In view of these factors, in this study, we wish to determine the relationship between pain and activities of daily living (ADLs) with postural balance in patients with primary knee OA.

A cross-sectional study was done involving twenty subjects with primary bilateral knee OA (15 females and 5 males), with a mean age of 69.2 ± 10.4 years. The pain and ADLs subscales of the Knee Injury and Osteoarthritis Outcomes Score (KOOS) were administered. Postural stability of the subjects was assessed using the Biodex Balance System. The primary outcome was the overall stability index (OSI). Pearson's correlation was used to determine the association between the variables of interest.

There was a significant positive correlation with moderate strength between the KOOS pain score and the OSI ($r=0.40$, $p=0.04$). However, there was no correlation between KOOS ADLs function and OSI ($r=0.10$, $p=0.33$). There was no significant association between both KOOS scores and the other parameters of postural stability (anterior-posterior and medial-lateral stability index). Majority of the knee OA subjects felt unstable (65%) and were afraid of falls (75%). The increased severity of knee OA (Kellgren/Lawrence grade) was also linked to an increased risk of falling.

Subjects with a higher KOOS knee pain score have a poorer dynamic balance, probably due to no compensatory actions being activated at the knee joint as yet. Hence, factors that can be involved in these compensatory actions such as knee joint muscle strength and muscle flexibility should be assessed in future studies.

LIGHTNING TALK • ENVIRONMENTAL, NUTRITION AND POPULATION HEALTH**[LTE4]****ASSESSMENT OF PARENTAL STATURE, PARENTING STYLE, HYGIENE, AND HEALTHY LIFESTYLE AS RISK FACTORS FOR STUNTING AMONG TODDLERS IN INDONESIA: A PROTOCOL OF SYSTEMATIC REVIEW*****Mazaya Putri Amriviana¹, Cut Khairunnisa², Teguh Haryo Sasongko^{3,4}****¹Faculty of Medicine, Malikussaleh University, Lhokseumawe, Indonesia**²Department of Public Health, Faculty of Medicine, Malikussaleh University, Lhokseumawe, Indonesia**³Department of Physiology, School of Medicine, International Medical University, Kuala Lumpur, Malaysia**⁴Institute for Research, Development, and Innovations, International Medical University, Kuala Lumpur, Malaysia*

Reducing prevalence of stunting has been the focus of the current administration in Indonesian government, as delineated in the National Medium-Term Development Plan (RPJMN) 2020-2024. Globally, there are many studies addressing risk factors of stunting, however, we do not know the current research landscape in Indonesia. This systematic review aims at exploring outcomes of stunting research in Indonesia by focusing on four risk factors, namely, parental stature, parenting style, hygiene, and healthy lifestyle.

Studies will be searched through PubMed (MEDLINE), Google Scholar, and Mendeley. We will include Indonesian toddler under five years old, living in Indonesia. The exposure of interests includes parental stature, parenting style, hygiene, and healthy lifestyle. We will include prospective and retrospective cohort, case-control, and analytical cross-sectional studies. We will exclude stunted toddlers with congenital disease, whose parents are having achondroplasia, whose parents are having mental disorders, and evidence of absent biological relationship. We will include mixed studies if they include stunting children in at least 70% of their participants. Quality of the included studies will be assessed using the appropriate JBI (Joanna Briggs Institute) critical appraisal tool. Data will be extracted using a standardised data extraction form and will be analysed using Cochrane's RevMan 5.3. If we identify heterogeneity in the studies, we will do sensitivity analysis and examine subgroups according to social economic status, presence of comorbid disease, parental level of education, ethnicity, race, and religion.

This systematic review is expected to provide a clearer picture about stunting research in Indonesia, especially in the context of parental height, parenting style, hygiene, and healthy lifestyle as risk factors.