

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH**[OPC1]****DIET ADEQUACY, GLYCAEMIC INDEX AND GLYCAEMIC LOAD OF PARTIAL MEAL REPLACEMENT DIETS VERSUS CONVENTIONAL DIETS FOR WEIGHT LOSS IN TYPE 2 DIABETES MELLITUS PATIENTS: A SECONDARY ANALYSIS OF THE TRANSCULTURAL NUTRITION DIABETES ALGORITHM (tDNA) RANDOMISED CONTROLLED TRIAL**

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Little is known about the diet quality of overweight/obese (OW/OB) patients with type 2 diabetes mellitus (T2DM) in weight loss trials. This secondary analysis aimed to investigate the nutritional adequacy; glycaemic index (GI) and glycaemic load (GL) of OW/OB patients with T2DM consuming partial meal replacements (MRPs) compared to conventional diets in the tDNA trial.

Three-day food records of patients (n=192) randomised to receive either usual care (UC) consisting of conventional low-calorie diet (LCD) of 1200 kcal and 1500 kcal for female and male patients, respectively; or tDNA care who received similar conventional LCD along with MRPs were analysed. The tDNA group further received motivational interviewing counselling (tDNA-MI) or conventional counselling (tDNA-CC) while all in the UC group received conventional counselling. All patients were followed up for 6 months. Patients' macro- and micronutrients intake were compared using the Medical Nutrition Therapy Guidelines for T2DM 2013 and Recommended Nutrient Intake for Malaysia 2017, respectively. Patients' dietary GI and GL were evaluated using DietPLUS version 3 and GI compendium of non-western foods.

All groups had energy intake (tDNA-MI: 1059±306kcal vs. tDNA-CC: 1117±338kcal vs. UC: 1504±485kcal, p<0.001) and macronutrient ratios (Carbohydrate:Protein:Fat) within recommendations (tDNA-MI: 57:18:26% vs. tDNA-CC: 56:18:26% vs. UC: 54:18:29%) but consumed insufficient dietary fibre (tDNA-MI:10.9±5.7g vs. tDNA-CC:10.0±4.4g vs. UC:8.5±4.9g, p<0.001) and calcium (tDNA-MI:476±135mg vs. tDNA-CC:483±166mg vs. UC:520±189mg, p=0.256). Sodium (<2300mg) intake among all groups improved (tDNA-MI:1353±572mg vs. tDNA-CC:1491±631mg vs. UC:2223±1089mg, p<0.001). Diets of tDNA groups were of lower GI (tDNA-MI:52±6 vs. tDNA-CC:51±12 vs. UC:62±8, p<0.001) and GL (tDNA-MI:82±24 vs. tDNA-CC:83±28 vs. UC:130±35, p<0.001) compared to UC group.

Despite incorporating MRPs, diet quality within the tDNA groups and UC group was poor. Additional supplementation should be considered to ensure dietary adequacy among Malaysian OW/OB patients with T2DM participating in weight loss trials.

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH**[OPC2]****MONOCYTE CHEMOATTRACTANT PROTEIN-1 AS A BIOMARKER OF VASCULAR FUNCTION IN PATIENTS WITH TYPE 2 DIABETES***William MacDonald, Faisal Khan**Division of Systems Medicine, University of Dundee School of Medicine, Ninewells Hospital and Medical School, Dundee, United Kingdom, DD1 9SY*

Endothelial dysfunction is a key aspect of atherogenesis and has been shown to be strongly associated with cardiovascular disease (CVD) outcomes. CVD risk in diabetes shows heterogeneity and new biomarkers are required to stratify CVD risk in these patients. Current CVD risk calculators do not include measures or biomarkers of endothelial function or arterial stiffness. This study analysed the association of 92 potential bloodborne CVD biomarkers with measures of vascular function in a cohort of 509 patients with type 2 diabetes mellitus. The measures of endothelial function used were laser Doppler imaging (LDI) and peripheral artery tonometry (PAT), and the measure of arterial stiffness used was carotid to femoral pulse wave velocity (PWV).

Several independent associations were found using multivariate and logistic regression. Firstly, the study showed the association of monocyte chemoattractant protein-1 (MCP-1) with vasodilatory response to acetylcholine ($R^2=0.240$, $p=5.02 \times 10^{-10}$) as measured by LDI. Secondly, the study showed the association of MCP-1 with reactive hyperaemia index ($R^2=0.0716$, $p=0.0109$) and Framingham reactive hyperaemia index ($R^2=0.0987$, $p=0.0294$) as measured by PAT. Thirdly, the study showed the association of MCP-1 with PWV ($R^2=0.387$, $p=0.00880$). These associations were independent of Framingham risk factors, diabetes duration, HbA1c and eGFR. The study also showed the independent association of MCP-1 with CVD death (odds ratio (OR)=18.2, $p=0.0487$) and all-cause mortality (OR=4.51, $p=0.0462$) in these patients over a three-year follow-up period. There was no significant improvement to area under receiver operating characteristic curve (AUROC) when MCP-1 was added into risk models for these outcomes.

The study found MCP-1 to be a strong candidate as a biomarker of vascular function in patients with type 2 diabetes mellitus which is likely due to its role in inflammation. Further research in larger cohorts with longer follow-up periods should be conducted to determine its usefulness in improvement of risk models.

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH**[OPC3]****THE JOURNEY OF THE LINGUAL ARTERY FROM THE NECK TO THE ORAL CAVITY: A CADAVERIC STUDY**

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The origin of the lingual artery (LA) has been well studied due to its implication in neck dissection, but the course thereafter to the oral cavity is less described. This cadaveric study traced the journey of the LA from the external carotid artery to its terminal branches in the tongue.

Following bilateral neck dissections in 35 black Kenyan cadavers, the incidence of Beclard's, Lesser's and Pirogoff's triangles, the types of LA origin with its length, relationship to the hyoglossus muscle and anastomosis with other vessels were documented.

Beclard's triangle was found in 64 dissections (91.42%), Lesser's in 46 dissections (65.71%) and Pirogoff's in 39 dissections (55.71%). The LA presented either as a solitary branch (67.15%) or as a branch of either the linguofacial (LFT–24.29%), thyrolingual (TLT–2.72%) or thyrolinguofacial (TLFT–2.86%) trunk. The solitary LA was the longest at 6.93mm, followed by the TLT branch (6.58mm), LFT branch (6.12mm) and TLFT branch (5.65mm). The majority of solitary LA and LA branches of LFT and TLFT passed through the hyoglossus, while all LA branches of the TLT coursed medial to the muscle. All variants of LA have been found to anastomose with the submental artery (SMA) at frequencies that ranged from 11.10% to 100%.

The LA was found in all cadavers and all Beclard's triangles. There is a significant incidence of LFT and TLFT variants in the Kenyan population. The LA passed either through or medial to the hyoglossus with no lateral relationship being observed.

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH

[OPC4]**USABILITY EVALUATION OF MOBILE APPS IN LOW VISION PATIENT MANAGEMENT USING THE MHEALTH APP USABILITY QUESTIONNAIRE: HEALTH CARE PROVIDER PERSPECTIVE*****Han Yin Lei, Mohd Harimi Abd Rahman, Norliza Mohamad Fadzil, Zainora Mohammed****Optometry & Vision Science Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia,
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Mobile applications for the visually impaired person (VIP) provides an alternative to the traditional assistive technology that can be introduced in low vision patient management to be utilised by VIP to perform activities of daily living.

The aim of this study is to evaluate the usability of different types of Android mobile applications for VIP among the graduating Optometry trainees using the mHealth App Usability Questionnaire (MAUQ). A cross-sectional study was conducted on 35 graduating Optometry trainees in Faculty of Health Sciences, Universiti Kebangsaan Malaysia (UKM). Four mobile applications were selected based on the predetermined criteria. Participants were required to perform specific tasks for each of the mobile applications using a provided smartphone. They were then asked to evaluate the usability of each mobile apps using the MAUQ, which consists of 18 items from three domains (ease of use, interface and satisfaction, and usefulness).

Four mobile apps that represent different categories of application were selected namely Ray Vision (interface app), weZoom (magnification app), Supersense (text-to-speech function app) and Google Maps (navigation app). Overall total mean score for weZoom app was significantly higher than Ray Vision app ($z=-4.441$, $p=0.000$) and Google Maps app ($z=-4.146$, $p=0.000$). Supersense app total mean score was also significantly higher than Ray Vision app ($z=-3.253$, $p=0.001$). Similar findings were also found when comparison was made for each domain of the questionnaire. In addition, for usefulness domain, Supersense app total score was also significantly higher than Google Maps app ($z=-2.744$, $p=0.006$).

Different type of mobile applications yielded different usability scores when evaluated by prospective health care providers. Therefore, evaluation of usability score is useful to understand its strengths and weaknesses before the app is introduced to visually impaired patient as a part of patient management.

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH**[OPC5]****DECODING MOTOR CONTROL IDENTIFYING NEUROMUSCULAR ACTIVITY PATTERNS IN FUNCTIONAL UPPER LIMB MOVEMENT FOR RESTORATION OF MOTOR FUNCTION AFTER INJURY***Elijah Chisala^{1,2}, Rafael Aguiar², Samit Chakrabarty²**¹Leeds School of Medicine, University of Leeds, LS2 9JT, United Kingdom**²Faculty of Biological Sciences, University of Leeds, LS2 9JT, United Kingdom*

This project aimed to identify the neuromuscular principles necessary for control of the upper limb. Specifically when undertaking everyday tasks.

Neural pathways involved in controlling the upper limb are well known. However, we do not yet fully understand how the central nervous system (CNS) coordinates these pathways to produce a specific movement or function. Current literature considers the amount of electrical activity of the muscle tissues (measured using electromyography, EMG) to be a reliable measure of muscle performance. However, this approach fails to consider interactions between muscle groups that may lead to variation in outputs.

In our preliminary experiment, we recorded the neuromuscular activity of selected primary muscles of the upper limb in five healthy adults whilst they performed a static force production task. We found that the amount of force generated by each subject was not proportional to the measured muscle activity. Several interactions between different muscles were fundamental to the performance of the task. With data such as this, we can thus make conclusions about how the CNS coordinates movement.

Understanding the role of different interactions allows us to build towards a fully functional and biologically accurate model of upper limb coordination systems using EMG data. Such advances would also provide a reliable platform for more effective use of technology in neurology, rehabilitation, and performance medicine.

With the biomechanics of a movement reliably predicted, the medical domains of neuromuscular dysfunction and physical performance have a new and powerful instrument for diagnosis and clinical assessment. Additionally, the information from such a model can better inform pattern recognition in myoelectric prosthetic devices and other biomechanical devices relating to the loss of motor function, such as in spinal cord or traumatic brain injury affecting the motor cortex.

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH**[OPC6]****EXPRESSION OF GBS VIRULENCE GENES IN HIGH VAGINAL SWABS OF SYMPTOMATIC PREGNANT WOMEN AT HOSPITAL TENGKU AMPUAN AFZAN, KUANTAN**

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During pregnancy, group B streptococcus (GBS) colonization is known as one of the risk factors for preterm birth and consequently neonatal infections. Previous in vitro experiments using human cells and in vivo animal models have portrayed the important roles of these virulence factors including hemolytic pigment (*CylE*), hyaluronidase (*HylB*), serine rich protein (*Srr*) and bacterial surface adhesion of GBS (*BsaB*) in mediating GBS colonization and intrauterine ascending infection, leading to preterm delivery. The aim of this study is to investigate the association between mRNA expression of virulence genes in GBS isolates obtained from symptomatic pregnant women and preterm delivery.

GBS isolates were obtained from high vaginal swabs of pregnant women (n=40) with gestational age less than 37 weeks and symptoms including preterm labour, preterm premature rupture of membrane (pPROM), vaginal discharge and vaginal bleeding. Socio demographic details, obstetric history and delivery outcomes of these women were also enquired. RNA was extracted from these GBS isolates and RT-qPCR was performed to determine the relative mRNA expression of GBS virulence genes including *CylE*, *HylB*, *Srr* and *BsaB*.

Socio demographic details and obstetric history were not found to be associated with delivery outcomes of these women. Women with preterm labour and pPROM who delivered prematurely were demonstrated with higher expression of *HylB* and *CylE* genes, in comparison to women with term delivery. The expression of *Srr* and *BsaB* genes were both similar between symptomatic pregnant women who had term and preterm delivery.

These results suggest that following vaginal colonization, both *CylE* and *HylB* genes possibly contribute to intrauterine ascending infection and inflammation, leading to preterm delivery in humans.

Thus, hemolytic pigment and hyaluronidase may be targeted for the exploratory and pre-clinical stages of vaccine development, which is a good alternative to intrapartum antibiotic prophylaxis in order to prevent neonatal GBS infections.

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH**[OPC7]****ENDOMETRIAL ABLATION AND RESECTION VERSUS
HYSTERECTOMY FOR HEAVY MENSTRUAL BLEEDING:
A SYSTEMATIC REVIEW AND META-ANALYSIS OF
EFFECTIVENESS AND COMPLICATIONS**

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A meta-analysis of randomised controlled trials (RCTs) comparing hysterectomy versus endometrial ablation and resection in the management of heavy menstrual bleeding. To evaluate the clinical efficacy, satisfaction rates and adverse events of hysterectomy compared to minimally invasive techniques in the treatment of heavy menstrual bleeding.

A literature search was performed for all RCTs and quasi-RCTs comparing hysterectomy with either endometrial ablation or endometrial resection. The literature search had no language restrictions and was last updated on February-2021. The primary outcome was patient reported as an objective reduction in heavy menstrual bleeding up to and more than 2 years. Secondary outcomes included satisfaction rates, adverse events, further surgery, quality of life and sexual function. Data was analysed using Revman software.

12 studies and a total of 2028 women were included (hysterectomy: n = 977 women vs endometrial ablation or resection: n = 1051 women). Meta-analysis showed that women in the hysterectomy group were more likely to show improvement in bleeding symptoms (subjective-outcomes) when compared with endometrial ablation or resection up-to and more-than 2 years follow-up respectively. Similarly, objective-outcomes favoured hysterectomy up to 2 years follow-up. Patient satisfaction was also higher after hysterectomy up-to 2-years follow-up. However, there was no significant difference between the two groups at more-than 2 years follow-up. Endometrial ablation or resection had better rates in: sepsis, wound infection and urinary tract infection. Hysterectomy had better rates in: fluid overload and perforation.

This meta-analysis has demonstrated that endometrial ablation and resection are both viable options when compared with hysterectomy for the treatment of HMB. Both procedures had high satisfaction rates with less adverse events. Hysterectomy is associated with better relief of heavy menstrual bleeding, however it has higher rates of adverse events (wound infection, UTI, urinary retention and sepsis).

ORAL PRESENTATIONS • CLINICAL AND TRANSLATIONAL RESEARCH**[OPC8]****PHARMACISTS AS VACCINATION ADVOCATES AND PROVIDERS: A MIXED-METHOD EXPLORATORY STUDY FROM MALAYSIA**

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Pharmacists, one of the highly trusted healthcare professionals who are easily accessible by the public, play their role as frontliners serving the community, especially during this pandemic. However, up to date, pharmacists in Malaysia are not directly involved in any vaccination services, including the COVID-19 National Immunisation Programme launched in March 2021 despite the efforts to convince policymakers to include pharmacists to support the ongoing vaccine drive. This study explored the community pharmacists' perspectives regarding the provision of vaccination service in Malaysia in conjunction with enablers and barriers to its implementation. This study had also gathered community pharmacists' suggestions in overcoming challenges of providing vaccination services and convincing policymakers to include pharmacists in the National Immunisation Programme. Twenty participants took part in the interviews through face-to-face and Zoom meetings for data collection purposes. All qualitative data had been coded and managed using the Nvivo software. Five main themes have emerged following thematic analysis: (1) Pharmacists; (2) Pharmacy setting; (3) Community; (4) Vaccination; and (5) Policymaking. These themes are further split into sub-themes, mainly analysing the facilitators and barriers regarding the inclusion of community pharmacists as vaccine advocates and providers from various aspects. Overall, the findings suggested that most participating pharmacists are generally supportive of this expanded service. Moreover, they have highlighted that the successful implementation of this expanded service requires support from policymakers to expand the current scope of practice in Malaysia. Most importantly, most participants agreed that hygienic areas, proper storage conditions and vaccination training are the main drivers in delivering the vaccination service. Pharmacists are trusted healthcare professionals and as such can offer strong advocacy for building societal trust in vaccinees. The immunisation delivery could be accelerated following inclusion of community pharmacists in the vaccination drive, including annual vaccination and during emergencies, like the current COVID-19 vaccination programme.