Abstracts

Wednesday 30th June, 10.30-12.00

<https://stmarys.zoom.us/j/82095152022?pwd=aGRPYTcwck5GUnMxUGl4R1lNcVFTUT09>

**Theme 5: Health Research and Practice (Session Chair: Silvia Riva)**

**Talk 1: Leta Pilic:** Collaborative research on salt-sensitive hypertension in Zambia

**Talk 2: Elisabetta Canetta:** Orthotic management in stroke rehabilitation

**Talk 3: Yiannis Mavrommatis:** The association between genetics, diet and Type 2 Diabetes risk in healthy adults

Title: Collaborative research on salt-sensitive hypertension in Zambia

Presenter: Leta Pilic

High dietary salt intake is associated with development of high blood pressure (BP), kidney disease and cardiovascular disease (CVD).  In most countries around the world, including Zambia, estimated intake of salt is on average 9 –12 g per day, exceeding the World Health Organisation recommended intake of less than 5 g per day.  The BP response to dietary salt is heterogenous; while some individuals display a salt-induced change in BP and are considered salt-sensitive, salt-resistant individuals do not exhibit such change. Salt sensitivity is an independent risk factor for high BP and CVD. High BP is more prevalent among people living with HIV when compared with HIV-negative persons. Prevalence of HIV is high in Zambia, with approximately 11 % diagnosed in 2019. Although there appears to be an association between salt sensitivity of BP and HIV, research is scarce in sub-Saharan Africa where both high BP and HIV burden are high.  The aim of this project was to explore the associations between salt sensitivity, HIV and hypertension status in a cohort of adult Zambian population.  This was a crossover intervention study among 43 HIV-positive and 42 HIV-negative adults matched for age and sex. Study participants were instructed to consume a low (4 g) dietary salt intake for a week followed by high (9 g) dietary salt intake for a week. Salt resistance and salt sensitivity were defined by a mean arterial pressure difference of ≤5 mmHg and ≥ 8 mmHg.  HIV positive individuals with hypertension exhibited a higher BP sensitivity to salt (95 %) compared with the HIV negative hypertensive (71 %) and HIV-negative normotensive (29 %) groups, respectively (p < 0.05).  HIV positive individuals with hypertension should be particularly advised to reduce their salt intake to prevent adverse health effects associated with hypertension.

Title: Orthotic management in stroke rehabilitation

Presenter: Elisabetta Canetta

Stroke is a life-threatening illness that occurs when the blood supply to the brain is either interrupted due to a blockage in the blood vessels (ischaemic stroke) or is reduced because of the rupture of blood vessels in the brain (haemorrhagic stroke).

According to the National Institute for Health and Care Excellence (NICE), “there are more than 100,000 strokes in the UK each year”1. About 67% of the stroke survivors are left with life-long disabilities that affect body movement, thinking, emotions, and communication. Although survival rate has improved in the past decade, the age for someone to have a stroke has decreased with about 35% of cases in adults aged 40 to 69, and about 15% of cases in young adults. This decrease in age has dramatic economic impacts on a single individual and society at large, due to the severity and extent of the disabilities that stroke patients have to live with. It is, therefore, pivotal to ensure that stroke survivors have access to effective and robust stroke rehabilitation programmes; at this end, orthotics can play a fundamental role.

Orthotic devices can assist patients to overcome post-stroke motor impairments; hence, to regain control of the joints of the affected limbs so that useful movements can be again produced. The orthoses currently available are for upper limbs (e.g. wrist and hands), and lower limbs (e.g. ankle).

The paper will focus on ankle foot orthosis (AFO). In particular, the biomechanical principles associated with orthotic intervention will be described. This will be followed by a discussion of how AFOs can help stroke patients to stand and to walk. The latest developments in the design of AFOs and their effects on joint kinematics in stroke survivors will also be briefly discussed.

and engagement in rehabilitation.

Title: The association between genetics, diet and Type 2 Diabetes risk in healthy adults

Presenter: Yiannis Mavrommatis

Background: Type 2 diabetes (T2D) is a leading cause of global mortality. Although many factors contribute to T2D risk, diet and genetics are considered amongst the most significant. Recently, studies have identified a single polymorphism of the TCF7L2 polymorphism rs7903146 as the most important genetic variant in relation to diabetes. However, no studies have explored these findings in a healthy population and  glycated haemoglobin (HbA1c), which is a reliable long-term indicator of glucose management.

Aim: This study investigates the association of the genetic polymorphism rs7903146 and dietary intake with T2D risk in a healthy population.

Method: T2D risk was assessed using HbA1c plasma concentrations and dietary intake via a validated food frequency questionnaire in 73 healthy participants. Results: T allele carriers had higher HbA1c levels than the CC group (32.4 ± 7.2 mmol/mol vs. 30.3 ± 7.6 mmol/mol, P= 0.005). Multiple regression reported associations between diet, genotype and HbA1c levels accounting for 37.1% of the variance (adj.R2= 0.371, F(16,53)= 3.540, P<0.001).  The following macronutrients,  expressed as a percentage of total energy intake (TEI), were associated with HbA1c concentration: carbohydrate (≥ 39% TEI, P<0.005; 95% CI 0.030/0.130, B= 0.080), protein (≥ 21% TEI, P<0.005, 95% CI 0.034/0.141), monounsaturated (≥ 15 % TEI P<0.05, 95% CI 0.006/0.163, B= 0.084) and saturated fatty acids (≥ 13 % TEI; P<0.05, 95% CI 0.036/0.188, B= 0.112). Standardised regression coefficients suggest a larger role for diet than genetics in overall risk (ß= 1.068 and ß= 0.382, respectively).

Conclusion: Carriers of the T allele showed significant increase of HbA1c levels. The effects of dietary intake affect T2D risk to a greater extent than the genetic effects of TCF7L2 rs7903146 genotype. The focus  on healthy individuals increases the applicability of the findings for T2D screening purposes.