

## PP-03

**Obesity and Metabolic Syndrome Increase Risk Of Non-Alcoholic Fatty Liver Disease (NAFLD) in Patients With Sleep Apnea**

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**INTRODUCTION**

Obstructive sleep apnea (OSA) has been closely associated with non-alcoholic fatty liver disease (NAFLD), with some shared features of metabolic syndrome. We aimed to study the effect of various components of metabolic syndrome on development of NAFLD in OSA patients.

**METHODOLOGY**

This was a cross-sectional study conducted at UiTM Medical Faculty. 110 subjects between 18 to 65 years of age with confirmed OSA were recruited, with exclusion of patients with Hepatitis B or C, and significant alcohol intake. Anthropometric measurements were taken, and liver ultrasonography performed for diagnosis of NAFLD. Apnea-hypopnea indices (AHI) were categorized as mild AHI $\geq$ 5-<15, moderate AHI $\geq$ 15- $\leq$ 30, and severe AHI $>$ 30/hr based on polysomnography.

**RESULTS**

The prevalence of NAFLD within our study population was 81.8% (95%CI: 74.5-89.1) (n=90). Mean weight in the NAFLD group was significantly higher compared to the non NAFLD group (94.77kg $\pm$ 21.85 vs 74.67kg $\pm$ 16.80, p<0.001), with 82.2% of NAFLD group being obese (p<0.001). The prevalence of NAFLD was 81.8% (n=90). Subjects with NAFLD had significantly higher weight compared to those without NAFLD (94.77kg $\pm$ 21.85 vs 74.67kg $\pm$ 16.80, p<0.001). There were statistically significantly higher mean systolic blood pressure, waist circumference, hip circumference, waist hip ratio and severity of OSA (AHI) among the NAFLD and vs the non NAFLD groups (143.23 mmHg $\pm$ 16.33 vs 129.35 mmHg $\pm$ 19.96 mmHg, p=0.001; 109.44cm $\pm$ 16.26 vs 91.45cm $\pm$ 15.61, p<0.001, 113.11cm $\pm$ 14.58 vs 100.30cm $\pm$ 12.46, p<0.001, and 0.97 $\pm$ 0.08 vs 0.91 $\pm$ 0.07, p=0.002, mild AHI 24.4%vs70%, moderate AHI 31.2%vs25% and severe AHI 54%vs5%, p<0.001), respectively. Patients with BMI $>$ 27.5 had the highest risk of NAFLD (OR: 17.27, CI: 4.18-71.25, p<0.001), followed by hypertension (OR: 4.33, CI: 1.56-12.06, p=0.005), and diabetes (OR: 3.00, CI: 1.01-8.95, p=0.049).

**CONCLUSION**

This study highlights the increased risk of NAFLD in patients with OSA and components of metabolic syndrome, prompting the need for increased surveillance and modification of risk factors in this group of patients.

## PP-04

**Comparison of Diagnostic Performance and Clinical Utility of Different HbA1c Criteria against Oral Glucose Tolerance Test (OGTT) in Screen Detection of Diabetes in Penang, Malaysia**

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**INTRODUCTION**

Glycated haemoglobin (HbA1c) cut-off of 6.5% has been recommended for diagnosing diabetes mellitus. However, HbA1c levels can vary due to functional glucose-independent attributes like ethnicity, which could influence diagnostic performance across different populations. The Malaysian Clinical Practice guideline advocates a lower HbA1c diagnostic cut-off of 6.3% based on one large national study. This study compared the diagnostic performance and clinical utility of HbA1c cut-offs of 6.5% and 6.3%, against the gold standard OGTT in diagnosing diabetes.

**METHODOLOGY**

A total of 298 subjects without diabetes aged  $\geq$ 30 years old were purposively sampled across general hospitals, health clinics and community centers in Penang between February 2016 and December 2017. HbA1c cut-offs of 6.3% and 6.5% were validated against the 2-hour OGTT results. Sensitivity, specificity and predictive values were analyzed using SPSS version 22.0. Likelihood ratios (LR) with 95% CIs for diagnostic accuracy were yielded using MedCalc statistical software.

**RESULTS**

The sample constituted of 175 (58.7%) women and 123 (41.3%) men with mean age (50.9 $\pm$ 11.5 years) and mean BMI (26.4 $\pm$ 5.50 kg/m<sup>2</sup>). The prevalence of diabetes was 21.8% using OGTT, 22.8% using an HbA1c cut-off of 6.5% and 30.2% using an HbA1c cut-off of 6.3%. At HbA1c level of 6.5%, the sensitivity was 72.3% and specificity was 91% with positive and negative predictive values of 69% and 92%. Likelihood ratios (LR+ and LR-, 95% CI) were 8.0 (5.2-12.39) and 0.3 (0.2-0.5), respectively. In contrast, HbA1c cut-off of 6.3% yielded a sensitivity of 84.6%, specificity of 85% with positive and negative predictive values of 61% and 95%. Likelihood ratios (LR+ and LR-, 95% CI) were 5.6 (4.1-7.8) and 0.2 (0.1-0.3), respectively.

**CONCLUSION**

HbA1c cut off of 6.5% demonstrated better diagnostic performance and clinical utility compared to 6.3%. Larger studies are needed to identify the optimal HbA1c diagnostic criteria for multiethnic Malaysia.

**PP-05**

### The Relationship between Nutritional Status, Glucose and Lipid Levels in Pulmonary Tuberculosis and Multi-Drug-Resistant Tuberculosis in Patients with Diabetes Mellitus

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**INTRODUCTION**

Diabetes mellitus (DM) poses a significant risk for development of active tuberculosis (TB) and a higher risk of developing multi-drug-resistant tuberculosis (MDR-TB). The purpose of this study was to analyze the correlation between nutritional status, glucose and lipid levels in pulmonary tuberculosis and multi-drug-resistant tuberculosis in persons with diabetes.

**METHODOLOGY**

The study was designed as a cross-sectional study of 69 patients with DM at Haji Adam Malik Hospital, divided into group 1 (n=37) for patients with TB and group 2 (n=32) for patients with MDR-TB, from the internal medicine ward from January to December 2018. Data included the patients' demographic characteristics, history of illness, and clinical examination (BMI). Laboratory tests for evaluation of glucose (FPS, PPS, HbA1C), albumin, lipids (Total Cholesterol, TG, LDL-C and HDL-C). Spearman and Pearson correlation tests were used to correlate numerical variables.

**RESULTS**

The average age for group 1 was 56,16±8,55 years old, and 52,41±8,38 years old for group 2. Diabetes duration, BMI, albumin, HbA1C and HDL-C were significantly different between group 1 and group 2 (p<0,005). In group 2, the duration of diabetes, HbA1C, BMI and albumin were significantly higher compared to group 1. A significant correlation was found between HbA1C and BMI (r=-0.357, p=0.030), HbA1c with albumin (p=0.037, r=-0.315) but no correlation with lipids (p>0.05).

**CONCLUSION**

In diabetes mellitus with TB and MDR-TB, HbA1C correlated significantly with BMI and albumin.

**PP-06**

### Association Between Neck Circumference and Dyslipidemia in Obesity Patients

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**INTRODUCTION**

Obesity remains a major health issue in Malaysia with increasing prevalence each year. Obesity is associated with metabolic syndrome and increased mortality due to cardiovascular disease. Metabolic syndrome is a group of conditions which includes central obesity; plus 2 metabolic parameters such as raised blood pressure, raised fasting plasma glucose, raised triglyceride (TG) level and reduced high density lipoprotein (HDL) levels. Neck circumference is a measure of visceral adiposity and is associated with obesity and metabolic syndrome.

**METHODOLOGY**

We performed a retrospective analysis of patients who were attending the University Teknologi MARA (UiTM) Weight Management Clinic. We studied the patient records and assessed association between neck circumference and dyslipidemia. We performed Pearson's Correlation to determine relationship between TG and HDL levels and various parameters such as weight, BMI, waist circumference and neck circumference.

**RESULTS**

A total of 92 patients attended the clinic with a median BMI of 43.2±9.6 kg/m<sup>2</sup>. Median weight was 118±26 kg. There was a negative correlation between waist circumference and HDL level (r=-0.251; p=0.02). This negative correlation is also seen with neck circumference and HDL (r=-0.469; p 0.00). Neck circumference also has a positive correlation with TG levels (r=0.422; p=0.00) but no statistically significant correlation between waist circumference and TG. There was also no statistically significant correlation between both weight and BMI with TG and HDL levels.

**CONCLUSION**

Neck circumference is associated with high TG levels and low HDL which is consistent with metabolic syndrome. Waist circumference and neck circumference is a more direct measure of obesity and seems to be a better predictor of development of metabolic syndrome, especially dyslipidemia compared to weight and BMI.