

## OP\_A002

### OBESITY AND INSULIN THERAPY AS PREDICTORS OF ENDOTHELIAL DYSFUNCTION IN TYPE 2 DIABETES MELLITUS WITH EARLY CKD

Nursyahirah Ishak<sup>1</sup>, Nur' Aini Eddy Warman<sup>1</sup>, Rohana Abd Ghani<sup>1</sup>

<sup>1</sup>Universiti Teknologi MARA (UiTM)

#### INTRODUCTION

Endothelial dysfunction (ED) is an early marker of atherosclerosis and plays a role in the pathophysiology of cardiovascular complications in type 2 diabetes mellitus (T2DM). Metabolic factors such as adiposity and insulin resistance contribute to early vascular dysfunction, particularly in patients with preserved kidney function. This study aimed to identify factors associated with ED in T2DM and early-stage chronic kidney disease (CKD).

#### METHODOLOGY

This study was conducted at Universiti Teknologi MARA (UiTM), Sungai Buloh, and involved 107 adults with T2DM and estimated glomerular filtration rate  $\geq 60$  mL/min/1.73 m<sup>2</sup> (CKD stages 1–2). Endothelial function was assessed using ultrasound-based brachial artery flow-mediated dilation (FMD), with  $\leq 7.1\%$  defining ED. Clinical, anthropometric, metabolic, and renal parameters were compared between groups. Logistic regression analyses were performed to identify independent predictors, with  $p$ -values  $< 0.05$  considered statistically significant.

#### RESULTS

Of the cohort, 48.6% ( $n = 52$ ) had abnormal FMD. They tended to have higher BMI (31.36 vs 28.38 kg/m<sup>2</sup>,  $p = 0.020$ ), larger waist circumference (100.48 vs 94.53 cm,  $p = 0.026$ ), and were more likely to be on insulin therapy (71.2 vs 49.1%,  $p = 0.020$ ). The total daily insulin dose was higher in the abnormal FMD group (0.48 vs 0.35 U/kg), but this difference did not reach statistical significance ( $p = 0.140$ ). There were no significant differences in hemoglobin A1c, blood pressure, or renal parameters. In multivariate analysis, BMI (adjusted OR 1.07, 95% CI 1.00–1.14,  $p = 0.037$ ) and insulin therapy (adjusted OR 2.43, 95% CI 1.07–5.51,  $p = 0.034$ ) remained independently associated.

#### CONCLUSION

In patients with T2DM and early CKD, higher BMI and insulin therapy are independently associated with ED. These findings highlight the role of obesity and insulin resistance in early vascular dysfunction, emphasizing the importance of weight-targeted strategies alongside glycemic control and further identifying high-risk individuals to reduce cardiovascular risk.