

Adult Oral Presentation

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ONE-HOUR OGTT REVEALS WHAT CONVENTIONAL SCREENING MISSES: A HIDDEN PREDIABETES BURDEN IN MALAYSIA

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INTRODUCTION

Prediabetes or intermediate hyperglycemia (IH) represents a critical phase in the trajectory toward type 2 diabetes mellitus (T2DM). Recent evidence from the International Diabetes Federation (IDF) suggests that 1-hour OGTT (1HOGTT) ≥ 8.6 mmol/L is a more sensitive biomarker for early beta-cell dysfunction, with enhanced detection of IH and future T2DM risk. Conventional screening using hemoglobin A1c (HbA1c) or 2-Hour OGTT (2HOGTT) may delay identification of prediabetes, narrowing the window for early intervention. This study evaluates 1HOGTT as a screening tool for prediabetes among Malaysians.

METHODOLOGY

This cross-sectional study enrolled adults without prior T2DM or prediabetes. Participants underwent 1HOGTT, 2HOGTT, and HbA1c, classified as per the Malaysian Clinical Practice Guideline for T2DM (6th Edition) and IDF 2024 criteria. Agreement between tests was assessed using McNemar's test and Cohen's kappa. Diagnostic accuracy was evaluated via receiver operating characteristic (ROC) curve analysis. Cost-effectiveness was determined using reagent cost only.

RESULTS

The majority of the 310 participants were female (71.6%), Malay (87.1%), with average age of 40. The 1HOGTT identified prediabetes in 21.6% ($n = 67$) compared to 17.1% ($n = 53$) by HbA1c and 2.6% ($n = 8$) by 2HOGTT. McNemar's test confirmed statistically significant discordance between 1HOGTT and 2HOGTT (chi-square = 53.397, $p < 0.001$): 61 participants were prediabetic by 1HOGTT but normal by 2HOGTT, versus only 2 in the reverse direction. No significant discordance was found between 1HOGTT and HbA1c (chi-square = 2.817, $p = 0.093$). 1HOGTT demonstrated excellent discriminatory ability against 2HOGTT (AUC = 0.908; 95% CI: 0.837–0.978), significantly outperforming HbA1c (AUC = 0.664; CI: 0.462–0.867; DeLong $p = 0.012$). In a population-level cost analysis, 1HOGTT achieved lowest cost per prediabetes case detected (RM 5.79) – approximately 8.3 times and 8.1 times more cost-effective than 2HOGTT (RM 48.08) and HbA1c (RM 46.78) respectively.

CONCLUSION

1HOGTT identifies a significant proportion of individuals with prediabetes missed by 2HOGTT and HbA1c. Incorporating 1HOGTT enhances the detection of prediabetes, is cost-effective, and enables timely preventive measures in our population with high diabetes burden.