

Paediatrics Oral Presentation

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ASSOCIATION OF ANTHROPOMETRIC AND BIOELECTRICAL IMPEDANCE ANALYSIS MEASUREMENTS WITH METABOLIC PROFILES IN OVERWEIGHT AND OBESE CHILDREN

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INTRODUCTION

Childhood obesity has become a global epidemic. Waist circumference (WC) measures abdominal fat but cannot distinguish between subcutaneous and visceral fat. Bioelectrical impedance analysis (BIA) measures visceral fat area (VFA) and percentage body fat (PBF), but its effectiveness in children is unclear. We aim to evaluate the relationship of anthropometric and BIA measurements with the metabolic profiles of overweight and obese children.

METHODOLOGY

Eighty-two overweight and obese children aged 7 to 18 years were recruited over a one-year period at the Paediatric Endocrine Clinic. Sociodemographic and lifestyle factors were collected. Anthropometric measurements i.e., body mass index (BMI), waist circumference (WC), and waist-to-height ratio (WHR) were taken. BIA measurements (PBF and VFA) were also performed using Inbody S10 (BioSpace, Seoul, Korea). The relationship of anthropometric and BIA parameters with obesity-related clinical factors i.e., blood pressure (BP), fasting blood sugar, HOMA- index, HbA1c and fasting lipid profile were evaluated.

RESULT

The majority of the patients were female 43/82 (52.4%) with mean age of 11.21±2.70 years. The median BMI z-score was 1.95 (1.71, 2.34). The predominant ethnicity was Malay 72/82 (87.8%) and 57/82 (69.5%) of mothers completed tertiary education. 47/82 (57.3%) patients engaged in physical activity less than three days per week and the majority (82.9%) had more than one hour of recreational screen time.

On multiple linear regression of the association of anthropometric and BIA measurements with metabolic profiles, only WC had significant positive association with systolic BP ($\beta = 0.33$, 95% CI 0.167-0.498, $p < 0.001$) while VFA had a positive association with diastolic BP ($\beta = 0.058$, 95% CI 0.024-0.092, $p = 0.001$). Only VFA was positively associated with HOMA index ($\beta = 0.011$, 95% CI 0.002-0.021, $p = 0.02$). WC was associated with higher TG when adjusted for PBF ($\beta = 0.015$, 95% CI 0.005-0.025, $p = 0.004$).

CONCLUSION

While VFA measurement by BIA was better than BMI measurement, it was not superior to WC in predicting hypertension, insulin resistance, and hypertriglyceridemia in overweight and obese children.