

# Correlation of visceral fat area with waist-hip ratio, waist circumference and body mass index in healthy adults

**Mohd Noor Juliana<sup>1</sup>, Jamil Mohd Fadzly Amar<sup>1</sup>, Ganasegeran Kurubaran<sup>1</sup>, Marshall Delis Suzan<sup>1</sup>, Suppiah Purnima Devi<sup>1</sup>, Yuen Kah Hay<sup>2</sup>, Ang Hock Aun<sup>3</sup>, Looi Irene<sup>1,4</sup>**

<sup>1</sup>Clinical Research Centre, Seberang Jaya Hospital, Ministry of Health Malaysia, Penang, <sup>2</sup>Universiti Sains Malaysia, Penang, <sup>3</sup>Bagan Specialist Centre, Penang, <sup>4</sup>Medical Department, Seberang Jaya Hospital, Ministry of Health Malaysia, Penang, Malaysia

## ABSTRACT

**Introduction:** The accumulation of visceral fat (VF) is highly correlated with metabolic abnormalities that contribute to high-risk type 2 diabetes mellitus and cardiovascular diseases. VF can be estimated by using instrument such as Bio Impedance Analyzer (BIA). Measurement of Waist-Hip Ratio (WHR) can be used as a proxy for VF. The aim of this study was to find correlation of Visceral Fat Area (VFA) with (WHR), Waist Circumference (WC) and Body Mass Index (BMI) in healthy adults. **Methods:** This is a cross-sectional study that obtained baseline data from "TOCOVIF" trial which involved 60 healthy subjects in Penang. Data was analyzed by using SPSS version 22.0. **Results:** Majority were males (83%, n=50) and 17% were females. The subjects with high VF were selected for this study. Majority of males (84%) had WHR >0.9 and all females had WHR >0.8. We found a significant correlation between WHR and VFA ( $r=0.359$ ,  $p<0.05$ ) among males while no significant correlation among females ( $r=0.519$ ,  $p=0.124$ ). There was a significant correlation between WC and VFA ( $r=0.768$ ,  $p<0.05$ ) for males and no significant correlation for females ( $r=0.482$ ,  $p=0.159$ ). As for BMI and VFA, there was a significant correlation for males ( $r=0.934$ ,  $p<0.05$ ) and females ( $r=0.755$ ,  $p<0.05$ ). **Conclusion:** Correlation was found between WHR and VFA in males but not in females. A larger study needs to be conducted as the measurement of WHR is simple and inexpensive tool to use as a surrogate to measure VF.