

## **A descriptive study on the relationship between selected physiological parameters and visceral adiposity index among non-diabetic hypertensive patients attending medical clinics, Teaching Hospital, Jaffna**

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**Background:** Visceral adiposity is a form of fat deposition in the abdominal viscera, omentum and internal organs. It doesn't include the subcutaneous fat. Visceral adiposity index plays a key role in diagnosing some of the major diseases regarding metabolic syndrome including hypertension. The effect of selected physiological parameters on Visceral Adiposity Index (VAI) was studied among non-diabetic hypertensive adult patients.

**Methodology:** It was a descriptive cross sectional study on non-diabetic hypertensive adult patients attending Medical Clinics, Teaching Hospital Jaffna. The study was carried out among the patients between the ages of 18 and 80 and they were selected by random sampling method. The selected physiological parameters such as body weight, height and waist and hip circumferences of all the subjects were measured. The skeletal muscle mass (kg) and fat mass (kg) were measured using Bio Impedance analyzer. The Body Mass Index (BMI), Waist Hip ratio (W/H ratio) and Visceral Adiposity Index (VAI) were calculated. Ethical Review Committee (Faculty of Medicine, University of Jaffna) approval was obtained. Statistical analysis was carried out with SPSS (version 21.0).

**Results:** Of the 55 non-diabetic patients (age between 30 and 80 years), 43.6% (n=24) were males. Mean BMI of males and females were 24.5 ( $\pm 4.11$ ) & 26.1 ( $\pm 4.98$ ) kg m<sup>-2</sup> respectively. Mean W/H Ratio and Fat mass of males and females were 0.9 ( $\pm 0.06$ ) & 0.9 ( $\pm 0.07$ ) and 17.7 ( $\pm 6.82$ ) & 25.1 ( $\pm 9.28$ ) kg respectively. Mean VAI values of males and females were 1.8 ( $\pm 0.99$ ) and 2.7 ( $\pm 1.46$ ) kg m<sup>-3</sup> respectively. Among the participants, 66% of males 93.5% of females had high W/H ratio; 33.3% of males and 35.5% of females had high fat mass content. Among the males & females 37.5 & 51.6% were obese, 29.1 & 19.4% were overweight respectively. VAI was high (>1) in 78.18% (n=43) of the study population [58.3% (n=14) of males and 93.54% (n=29) of females]. When the Hypertensive patients were grouped based on the age in 10 year interval, it was observed that, there were females in the age group of 31 -40 years had the highest BMI [36.3 ( $\pm 5.0$ ) kg m<sup>-2</sup>] and second highest VAI [3.67 ( $\pm 1.72$ ) kg m<sup>-3</sup>]. Such odds were not observed among the males. In females the highest BMI, W/H Ratio, fat mass and VAI were seen in the age group of 31-40 years and the lowest values in the age group of 41-50 years. There was no such significant observation in males. Highest number of obese males (5 nos.) and females (9 nos.) were of the same age group (51– 60 years). Highest W/H Ratio was observed among

those belong to the age group of 31–40 years (males 0.95 and females 0.97) and the same age group females showed highest fat mass (44.45 kg) while among the males highest fat mass (21.7 kg) was observed in the age group of 51–60 years and highest VAI was observed among those of 41–50 years.

Among the females (71–80 years) those who had the second highest BMI ( $27.85 \text{ kg m}^{-2}$ ), W/H ratio (0.945) and fat mass (26.6 kg) showed highest VAI ( $5.34 \text{ kg}^{-1} \text{ m}^3$ ) with lowest skeletal muscle mass (17.7kg). Males of 51-60 years had highest BMI ( $36.5 \text{ kg m}^{-2}$ ), W/H ratio (0.965) and fat mass (44.95 kg) with the second lowest VAI ( $1.42 \text{ kg}^{-1} \text{ m}^3$ ). Among the males highest BMI [ $27.44(\pm 5.17) \text{ kg m}^{-2}$ ], VAI [ $2.24(\pm 0.44) \text{ kg}^{-1} \text{ m}^3$ ], levels were observed among those of 51-60 and 41–50 years age group respectively. Among the males lowest BMI [ $22.56(\pm 2.4) \text{ kg m}^{-2}$ ], VAI [ $1.39(\pm 0.0) \text{ kg}^{-1} \text{ m}^3$ ], levels were observed among those of 71-80 and 31-40 years age group respectively. While classifying the subjects as normal, overweight and obese individuals based on BMI, highest values for mean W/H Ratio, fat mass, skeletal muscle mass and VAI were observed in obese males and females. Fat mass levels increased with increase in BMI values. Increase in BMI (Pearson correlation  $\leq 0.256$ ,  $p \leq 0.059$ ), increase in fat mass (Pearson correlation  $\leq 0.314$ ,  $p \leq 0.019$ ) and increase in W/H ratio (Pearson correlation  $\leq 0.228$ ,  $p \leq 0.094$ ) increase VAI independently.

**Conclusion:** Females had higher VAI than males. Females showed a direct correlation between VAI and BMI, W/H ratio and fat mass. Similar correlation was not observed among males.

**Key Words:** Visceral Adiposity Index, Hypertension, Waist hip ratio, Body mass index, fat mass