Results from the North West Adelaide Health Study
Which measure of central obesity is best?

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Introduction

Central obesity is recognised as a risk factor for a number of chronic conditions including increased risk of cardiovascular disease. Waist hip ratio and waist circumference are measures of central obesity, where excess body fat is distributed in the abdominal region. This analysis examines the prevalence of different measures of central obesity by sex and age groups.

Methods

The North West Adelaide Health Study (NWAHS) used a representative random population sample of adults living in the north western region. All households within this region with a telephone connected and the telephone number listed in the Electronic White Pages were eligible for selection. Within each household, the person who had their birthday last and was aged 18 years or older, was selected for interview and invited to attend the study clinic. Of those who were eligible, n=4060 attended the clinic, resulting in a participation rate of 71.2%.

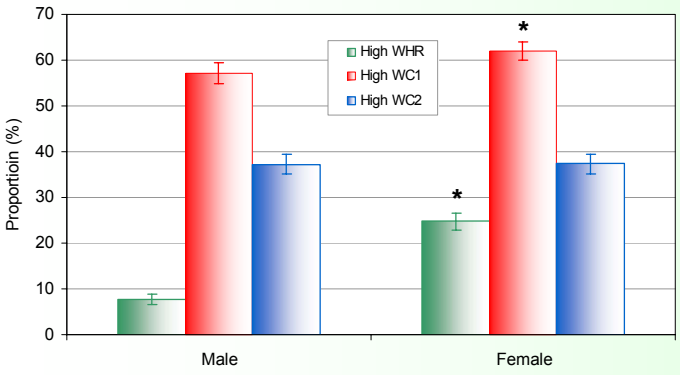
Study participants had their waist and hip measurements taken at the clinic using a standard inelastic measuring tape.

Definitions of central obesity:

- High Waist Hip Ratio (WHR) Males > 1.0; Females > 0.85
- High Waist Circum 1 (WC1) Males ≥ 94cm; Females ≥ 80cm
  (International Diabetes Federation - for metabolic syndrome)
- High Waist Circum 2 (WC2) Males ≥ 100cm; Females ≥ 90cm
  (Level at which weight reduction should be recommended)

Results

Overall, 16.4% (95% CI 15.3-17.6) of study participants were found to have a high WHR, 59.6% (95% CI 58.1-610.1) had a high WC1 and 37.2% (95% CI 35.8-38.7) had a high WC2. Figure 1 shows the prevalence of high WHR, high WC1 and high WC2 by sex. Females were statistically significantly more likely the have a high WHR and high WC1 than males. No statistically significant differences were found between males and females for high WC2.



**statistically significantly higher than males (p<0.05)*

Figure 1: High WHR, high WC1 and high WC2 by sex

When stratified by age, females were statistically significantly more likely than males to have a high WHR in all ages groups (Figure 2). When using high WC1 the only statistically significant differences were in the age groups of 18-24 years and 75+ years, with females more likely than males to have a high WC1 in both age groups (Figure 3). No statistically significant differences were found for high WC2 between male and female age groups (Figure 4).

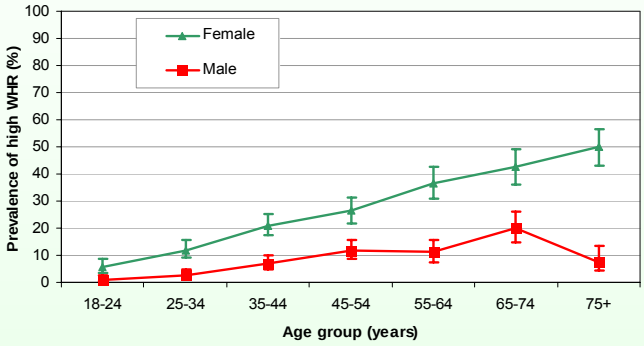


Figure 2: High WHR by sex and age groups

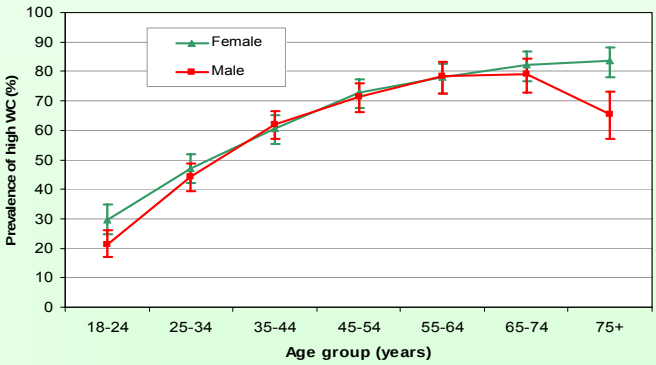


Figure 3: High WC1 by sex and age groups

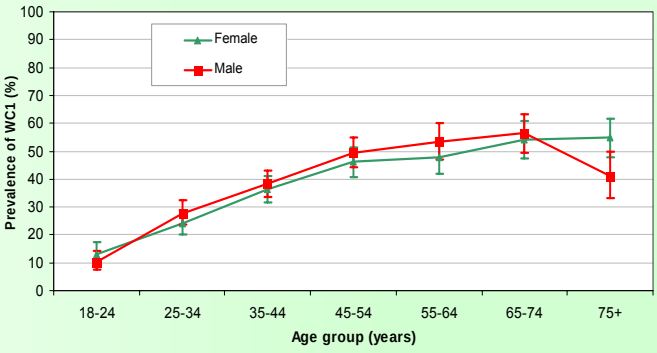


Figure 4: High WC2 by sex and age groups

Conclusion

Prevalence of obesity is very different depending on the measure of central of obesity used. These results show that the prevalence of central obesity is distributed differently by age and sex depending on the measure of central obesity used and highlights the importance of using different measures of central obesity to examine population characteristics.