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Optimal Cut-off Values for Anthropometric Adiposity Measures of Sri Lankan Adult Women

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Background: Anthropometric adiposity measures (AAMs); body-mass-index (BMI), waist-circumference (WC) and waist-to-hip-ratio (WHR) are used to evaluate the obesity status. Defining country specific cut-off values for obesity surrogates are imperative since cut-off values developed elsewhere would provide wrong estimation of prevalence of obesity.

Objectives: This cross-sectional study was designed to determine the optimal cutoff values for AAMs for Sri Lankan adult women and to compare the prevalence of obesity determined with the World Health Organization (WHO) cutoff values for Asians and newly defined Sri Lankan cutoff values.

Methodology: The study was conducted in Galle, Sri Lanka with 350 healthy, randomly selected community-dwelling middle-aged women aged 30-60 years. They were divided into two groups (Group A, n=175 and Group B, n=175) based on their primary health care division. Total-body-fat-percentage (TBFP, kg) was measured with DXA. Body weight (kg), height (m), WC and hip-circumference (HC) (cm) were measured. BMI (kg/m²) and WHR were calculated. Optimal cutoff values were determined by Area Under Curve (AUC) in ROC curve analysis with Youden Index using TBFP as the criterion (presence of generalized or central obesity was considered if TBFP>30%). Cutoff values were developed using Group A and prevalence of obesity was determined with Group B.

Results: Significant positive correlations were observed between TBFP and AAMs; BMI (r; 0.76), WC (r; 0.64) (p<0.001) and WHR (r; 0.14) (p=0.04). ROC curves indicated the following cutoff values [AUC (95% CI), sensitivity, and specificity] BMI = 22.5 kg/m² [0.92 (0.87-0.96), 0.82, 0.86] WC = 78 cm [0.87 (0.81-0.93), 0.77, 0.86] WHR = 0.84 [0.69 (0.58-0.80), 0.60, 0.73] Prevalence of obesity (number, %) according to the WHO (Asian) and newly defined cutoff values for Sri Lankans were significantly different (p<0.001). BMI = 120 (68.6%), 129 (73.7%) WC = 106 (60.6%), 123 (70.3%) WHR = 140 (80.0%), 94 (53.7%)

Conclusions: The observed cutoff values of AAMs in this study were somewhat different from those described by the WHO for Asian populations. The BMI and WC cutoff values of WHO (Asians) underestimated the prevalence of obesity while WHR overestimated.

Keywords: Anthropometry, Cut-off values, Obesity, Sri Lanka, Women

Acknowledgement: National Research Council (Grant no – 15-023)