DETERMINATION OF WAIST CIRCUMFERENCE CUTOFF VALUES PREDICTIVE OF OBESITY IN APPARENTLY HEALTHY NIGERIANS: A MULTI-CENTRE STUDY.

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Introduction/Background

Waist circumference (WC) is recommended as a simple clinical tool for determining obesity. Ethnic specific cutoff values have been proposed but for regions with insufficient data, values from other regions were recommended to be used for them [1]. This is applicable to Nigeria which belongs to the sub Saharan Africa which currently uses European cutoff values.

Objective:

To determine the Waist Circumference cutoff values for predicting obesity in Nigerian subjects.

Method:

A cross-sectional descriptive survey was carried out in at least one urban city in four geopolitical zones of Nigeria. Apparently healthy subjects (subjects not known to have hypertension or diabetes) were selected using multi-stage random sampling techniques. Data collection was done using the WHO Steps instrument [2]. Variables were measured as recommended in the WHO steps instrument. BMI was used to categorize the subjects into obese and non-obese subjects using BMI ≥30 kg/m² [3]. Performances of WC and Cutoff values were derived from Receiver-Operating Characteristic (ROC) analysis using the area under the curve (AUC) and maximization of sensitivity (Sn) and specificity (Sp) respectively. Data were expressed as mean (SD). Pearson's correlation and ROC statistical tools were used in SPSS version 20 software. Level of significance was set at <0.05.

Results:

4,258 subjects consisting of 2,292 (53.8%) males and 1,966 (46.2%) females were involved in the study. The mean (SD) of age, waist circumference ((and)) BMI were 41.1 (15) years, 85.2 (13) cm and 24.7 (5) kg/m² respectively. WC was well correlated with BMI (r=0.73; p<0.0001). WC was higher in females (86.6 (13.6) vs 84 (12.2) cm); p<0.0001). 624 (14.7%) subjects were classified as obese subjects using BMI. The area under the curve (AUC) with 95% CI in ROC analysis for WC showed that WC was a good tool for predicting obesity in the males (0.88 (0.85 – 0.90)) and females (0.89 (0.87 – 0.91)); p<0.0001). WC cutoff values selected for males and

females were 97cm (Sn: 73.1%; Sp: 90.7%) and 95cm (Sn: 83.3%; Sp: 84.8%) respectively. The Sn and Sp of already existing cutoff values in use are: IDF (males: WC – 94cm (Sn: 76.6%; Sp: 86%), females – 80cm (Sn: 96%; Sp: 43.5%), ATP –III (males: WC – 102cm (Sn: 49.8%; Sp: 95.7%), females: 88cm – (Sn: 91.6%; Sp: 67.5%).

Conclusion:

Waist circumference is a good tool for predicting obesity. Using the selected criterion that maximizes sensitivity and specificity we propose WC cutoff values of 97cm and 95cm for Nigerian males and females respectively.

Keywords:

Waist circumference, cutoff levels, obesity, Nigerians