INFLUENCE OF OBESITY ASSESSMENTS ON CARDIOMETABOLIC RISKS IN AFRICAN AND EUROPEAN AMERICAN WOMEN

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OBJECTIVES: African American women (AAW) have increased odds of developing cardiometabolic (CME) risks and cardiovascular diseases (CVD) compared with European American women (EAW). The influence of obesity on other CME risks and the CVD disparity is unclear. The purpose of our study was to develop a CME index and evaluate the obesity and CME risk index relationships based on race.

DESIGN: A comparative research design was employed in our study as 213 women (132 AAW; 81 EAW) from the Louisiana Delta were evaluated for CME risk clustering patterns by race, based on BMI, dual energy X-ray absorptiometry (% body fat and waist circumference), fasting glucose, triglyceride (TG), high density lipoprotein cholesterol (HDL-C), systolic (SBP) and diastolic blood pressure (DBP) were the measured CME risks.

FINDINGS: In summary, when the CME indexes were evaluated by obesity classification categories the ones that were CVD risk or near risk for the AAW were SBP and TG. The trend of CME index risk for the EAW was SBP and glucose. The stepwise regression equations indicate that HDL-C and SBP/DBP were the best indicators of the effects of obesity on CME risks in AAW and that SBP/DBP and glucose were the best indicators of CME risks in EAW.

CONCLUSIONS: Our results indicate that CME risks as evaluated based on obesity categories are different for AAW than for EAW. (Ethn Dis. 2014;24[4]:475-480)

KEY WORDS: Cardiometabolic Risks, African American Women, Body Mass Index, Waist Circumference, Body Fat Percentage

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INTRODUCTION

Current American Heart Association data present a bleak picture of health outcomes in African American women (AAW) who have increased odds of developing cardiometabolic (CME) risks and cardiovascular diseases (CVD) compared with European American women (EAW). The prediction of poor health outcomes is related to the prevalence, location and severity of obesity which has grown to epidemic proportions in AAW in the last couple decades.1,2 Based on CME risk criteria, central obesity is more related to CVD than overall body adiposity. The relationship of central and total body fat with other CME risks may be population specific and may provide a better understanding of the role of obesity in developing CVD.1-3

The disparity between AAW and EAW relative to the prevalence of CME risks and subsequently CVD is not clearly understood.2 However, obesity, as estimated by body mass index (BMI) of ≥30 kg/m², has risen for all women during the last couple decades and obesity among AAW is reported to be 43.2% compared to 24% for EAW.3 Obesity is a CME risk that has been linked to increases in CVD morbidity and mortality.1,4 Although BMI is typically used to estimate obesity and is a widely accepted measure of overall body mass, some findings suggest that measures of waist circumference (WC), which estimates central adiposity and body fat % may have stronger associations and more consistent relationships with CVD in multiethnic populations.1,5

Therefore, the purpose of our study was to develop a CME index and evaluate the obesity and CME risks index relationships based on race. The hypothesis evaluated in our study was that the relationship between obesity and CME risk index values would be the same for AAW and EAW with obesity estimated by BMI, WC and body fat %.

METHODS

A comparative research design was employed in our study as 213 women (132 AAW and 81 EAW) from the Louisiana Delta were evaluated for CME risk clustering patterns by race, based on BMI, dual energy X-ray absorptiometry (DXA) body fat % and WC. Cardiometabolic risks include WC (> 88 cm or BMI≥30 kg/m²); triglyceride (TG≥150 mg/dL); high-density lipoprotein cholesterol (HDL-C<50 mg/dL); blood pressure (SBP≥130 mm Hg or DBP≥85 mm Hg or use of medications for hypertension); and fasting glucose (≥100 mg/dL).6 The participants were sedentary, 34% had a family history of heart disease, 43% had abnormal blood glucose values and 92% were overweight or obese. Seventy percent had low aerobic fitness scores and 20% were hypertensive. Prior to participation, the women signed institutional approved informed consent forms and completed health history surveys.

Body composition variables were BMI, WC and body fat %. Height and weight were measured using standardized equipment and weight expressed in kilograms divided by height in meters squared was used to calculate BMI. Body fat % was measured by a Lunar DPX-L dual-energy X-ray absorptiometer (model DPX-L with version 3.6R software, Lunar Radiation Corp, Madison, WI). Waist circumference was measured in duplicate, two centimeters above the naval and the

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