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Journal of the National Medical Association

Volume 104, Issues 3–4, March–April 2012, Pages 164–171

Original Communications

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[https://doi.org/10.1016/S0027-9684\(15\)30141-3](https://doi.org/10.1016/S0027-9684(15)30141-3)

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### Keywords

body weight; obesity; diabetes mellitus; cholesterol

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#### O R I G I N A L C O M M U N I C A T I O N

## Characterization of Metabolically Unhealthy Overweight/Obese African American Women: Significance of Insulin-Sensitive and Insulin-Resistant Phenotypes

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**Funding/Support:** The grant was supported by National Institutes of Health National Institute of Diabetes and Digestive and Kidney Diseases DK48127 (Dr Osei), KO8 and R03 (Dr Schuster), National Institutes of Health General Clinical Research Center RR0034, and an unrestricted research grant from GlaxoSmith-Kline Pharmaceutical Inc, Philadelphia, Pennsylvania.

**Background:** Obesity is often associated with high cardiovascular disease risk factors. Obesity is common in African

**Conclusion:** We concluded that: (1) despite obesity, metabolically healthy African American women appear to be less prone to type 2 diabetes and cardiovascular disease and (2) in view of the higher prevalence of metabolic syndrome, metabolically unhealthy African American women should be targeted for primary prevention of type 2 diabetes and cardiovascular disease.

American women. We investigated the characteristics of metabolically healthy and metabolically unhealthy overweight/obese African American women based on the presence of insulin resistance.

**Materials/Methods:** We studied 196 apparently healthy overweight/obese African American women with family history of type 2 diabetes. Waist circumference, fasting glucose, insulin, c-peptide, lipids and lipoproteins, and systolic and diastolic blood pressure were obtained in each subject. In addition, insulin sensitivity was calculated using Bergman's Minimal Model Method. We defined insulin-sensitive metabolically healthy African American women as individuals with insulin sensitivity greater than  $2.7 \times 10^{-4} \times \text{min}^{-1} (\text{UU/mL})^{-1}$  and insulin resistant, metabolically unhealthy as insulin sensitivity less than  $2.7 \times 10^{-4} \times \text{min}^{-1} (\text{UU/mL})^{-1}$ .

**Results:** Thirty-three percent of our subjects were metabolically healthy African American women, while 67% were metabolically unhealthy African American women. The metabolically healthy subjects were significantly younger and less obese than the metabolically unhealthy subgroup. Mean fasting serum glucose, insulin, and c-peptide were significantly lower ( $P = .001$ ) in the metabolically healthy than in metabolically unhealthy subjects. However, the mean blood pressures were within normal in both subgroups. Mean serum cholesterol ( $p < .05$ ) and triglyceride ( $p < .001$ ) levels were significantly lower, whereas high-density lipoprotein cholesterol ( $p < .03$ ) was significantly higher in the metabolically healthy than in the metabolically unhealthy subjects. We found 25.5% of our subjects had metabolic syndrome (30.3% metabolically unhealthy and 15.6% metabolically healthy).

**Keywords:** body weight ■ obesity ■ diabetes mellitus ■ cholesterol

*J Natl Med Assoc.* 2012;104:164-171

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## INTRODUCTION

African Americans have increased cardiovascular morbidity and mortality compared to white Americans.<sup>1-4</sup> The health outcome disparities in African Americans and whites have been attributed to several factors, including genetic, metabolic, and socioeconomic differences. A major comorbid condition in African Americans is obesity. Recent studies have shown that 50% to 60% of African American women are overweight or obese.<sup>5-7</sup> The metabolic consequences of obesity on total health of African American women remain debatable. However, it is well known that obese African American women have higher prevalence of hypertension, type 2 diabetes, stroke, and congestive heart failure than their white counterparts. Other racial/ethnic differences have also been demonstrated in recent metabolic studies in blacks and whites. For example, we<sup>8-11</sup> and others<sup>12-15</sup> have shown that African American women are more insulin-resistant than white women. However, not all obese African Americans are insulin-resistant. Banerji et al found insulin-resistant

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