WAIST CIRCUMFERENCE AND WAIST-TO-HIP RATIO AS INDICATORS OF FAT LOCATION IN BLACK, WHITE, AND MULATTO BRAZILIAN MEN

Objective: To assess whether skin color classification as White, Mulatto, and Black is associated with abdominal fat location among healthy Brazilian men.

Design: Cross sectional study of men aged 20–59 years attending the Cuiabá Blood Center during August 1999 to January 2000. Skin color was defined by interviewer judgment. Body fat was estimated through electrical bioimpedance, and anthropometric measures were obtained by trained antropometrists.

Setting: Cuiabá, Brazil

Participants: Data refer to 1235 healthy men. Only 29 men refused to participate.

Main Outcome Measures: Waist circumference and waist-to-hip ratio (WHR).

Results: No differences were seen in body mass index according to race, but fat location was statistically smaller among Blacks and Mulattos compared to Whites, mainly among the middle aged. After adjustment for age, percent body fat, smoking, alcohol intake, physical activity, income, and schooling, Blacks compared to Whites had smaller waist (≈2 cm) and smaller WHR (P< .01 for waist for both age groups and P = .05 for WHR). Mulattos were in an intermediate position, but the association was statistically significant only among middle-aged men.

Conclusions: In this healthy population with high admixture of Blacks and Whites, abdominal adiposity was highly associated with race, and Whites had a greater risk of abdominal fat location. (Ethn Dis. 2007;17:256–261)

Key Words: Brazilian Men, Race, Waist Circumference, Waist-to-Hip Ratio

INTRODUCTION

Visceral adipose tissue is the body fat depot most strongly related to the metabolic abnormalities of obesity. 1,2 Although waist circumference is commonly used as surrogate marker for intraabdominal fat, waist circumference was not a more suitable predictor of lipid profile in Brazilian men. 3 These inconsistent results may be partially explained by the race admixture that characterizes the Brazilian population.

Brazil has the largest population of African ancestry in all of South and North America. 4 Race in the Brazilian census refers to skin color. The 2004 census showed that, with a total population of 182 million, 51.4% Brazilians self-assessed themselves as “White,” 42.1% as “Mulatto,” 5.9% as “Black,” and 6% as “Yellow” or “Indigenous” (http://www.ibge.com.br, last accessed on July 2006).

Much of the information regarding obesity has been derived from investigations of populations that are mainly of European descent. In recent years, many studies have shown that the World Health Organization cutoff values for the various indices of obesity and fat distribution vary according to race. As an example, a number of studies have reported that Asian descendants have a higher percentage of body fat at a similar or lower body mass index (BMI) than do Caucasians. 5–8

In Brazil, despite the high admixture of the population, race has been related to health outcomes in many studies. 9–11 Studies conducted in other countries have also shown racial differences in the frequency of obesity-related health problems. 12–15 Among Blacks living in

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METHODS

Study Population

All blood donors of the Blood Center Navantino Borba, in Cuiabá City, Brazil, from August 1999 to January 2000, were invited to participate (n=2316). Women were excluded (n=249) because most blood donors were men. Of the study population aged 20–59 years (n=1485), 250 men were excluded—12 were on medication, 15 were being treated for dyslipidemia, 15 reported weight loss in the last two months, 15 had BMI <18.5, 164 had BMI >30 kg/m², and 29 refused to participate—leaving 1235 men for study. The study was approved by the ethical committee of the Júlio Muller University Hospital, and informed consent was obtained from all participants.