Ethnic bias in anthropometric estimates of DXA abdominal fat: the TIGER study.

BACKGROUND/INTRODUCTION: The purpose of this study was to examine the race/ethnicity bias of using waist circumference (WC) to estimate abdominal fat.

METHODS: A total of 771 females and 484 males (17-35 yr) were tested one to three times during a prescribed 30-wk aerobic exercise program. The race/ethnicity distribution for women was non-Hispanic white, 29%; Hispanic, 25%; African American (AA), 35%; Asian Indian, 3%; and Asian, 8%. The distribution for men was non-Hispanic white, 37%; Hispanic, 26%; AA, 22%; Asian Indian, 5%; and Asian, 10%. Abdominal fat (L1-L5) was estimated from whole-body scanning using dual-energy x-ray absorptiometry (DXA Abd-Fat).

RESULTS: DXA Abd-Fat varied by race/ethnicity after accounting for WC and height in both women and men. The increase in DXA Abd-Fat per increase in WC was lower in the Asian and Asian-Indian women than that in the other women. The increase in DXA Abd-Fat per increase in WC was higher in the AA men and lower in the Asian-Indian men than that in the other men. These differential race/ethnicity effects were most notable when WC exceeded ≈90 cm in the women and ≈100 cm in the men, values which are consistent with current definitions of abdominal obesity in the United States.

CONCLUSIONS: Prediction equations for...
abdominal fat using WC that do not account for race/ethnicity group provide biased estimates. These results may affect assessment of disease risk from abdominal obesity among racial/ethnic groups.

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