Extremes in sleep duration are related to increases in abdominal fat in minority young adults

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A study in the March 1 issue of the journal *Sleep* shows that African-American and Hispanic young adults with short or long sleep durations had greater increases in belly fat over a five-year period compared with those who reported sleeping six to seven hours a night.

Results show that in participants younger than 40 years of age, both short and long sleep durations were associated with significant increases in body mass index (BMI), as well as in subcutaneous adipose tissue (SAT) and visceral adipose tissue (VAT) fat accumulation. Compared with people who reported a nightly sleep duration of six to seven hours, those with a self-reported sleep duration of five hours or less per night had an average BMI increase over a five-year period that was 1.8 kg/m2 higher, and greater accumulations of SAT (42 cm^2) and VAT (13 cm^2); and those who reported sleeping eight hours or more had a BMI increase that was 0.8 kg/m2 higher, as well as greater accumulations of SAT (20cm^2) and VAT (6 cm^2). No significant relationship existed between sleep duration and abdominal fat change in participants older than 40 years of age.

Lead author Kristen G. Hairston, M.D., assistant professor of internal medicine at Wake Forest University School of Medicine in Winston-Salem, N.C., said that obtaining a sufficient amount of sleep is important for people of all races and ethnicities. However, ethnic minorities disproportionately report extremes in sleep duration, putting them at risk

for negative metabolic outcomes such as obesity and type 2 diabetes.

"Appropriate amounts of sleep are important for maintenance of healthy weight," said Hairston. "In a group of African-American and Hispanic participants, those who slept less than this had greater increases in belly fat over a five-year period."

Information was obtained from 1,107 people in the IRAS Family Study, an extension of the Insulin Resistance Atherosclerosis Study (IRAS). Data were collected from 332 African-Americans and 775 Hispanics with a mean age of 41.7 years at baseline and an age range from 18 to 81 years. Sixty-two percent of participants were female. Mean sleep duration at baseline was 6.7 hours in response to the question, "On average, about how many hours of sleep do you get a night?" Seventeen percent of the sample reported sleeping five hours or less per night, 55 percent slept six to seven hours per night and 28 percent averaged eight or more hours of sleep per night.

Abdominal computed tomography (CT) scans and BMI were obtained at a five-year interval. Dietary intake was assessed using a short, retrospective, one-year, semi-quantitative food-frequency interview. An estimate of usual frequency of participation in vigorous activities also was obtained. Generalized estimating equations using linear regression models assessed the association between sleep duration and five-year fat accumulation with adjustment for age, race, gender, study site, baseline fat measure, physical activity, total calorie intake, smoking status and education.

In those younger than 40 years old, a short sleep duration of five hours or less was most frequently reported by Hispanic men (30 percent), and a long sleep duration of eight or more hours was most frequently reported by Hispanic women (53 percent). Participants reporting five hours of sleep or less consumed more total calories (2,224 kcal) than those

reporting six to seven hours (1,920 kcal) or eight or more hours (2,199 kcal).

The authors proposed that short sleep may impact fat accumulation by promoting increased caloric intake via increased hunger, or by reducing energy expenditure via altered thermoregulation and increased fatigue. Both increased caloric intake and decreased vigorous activity were observed in the short sleep group.

The authors also suggested that it is just as important for doctors to encourage patients to get adequate sleep as it is for them to promote a healthy diet and physical activity. This is particularly relevant when young adults make transitions involving college, marriage and childbearing, because these life stages often are associated with sleep deprivation.

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