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Effect of short and long sleep duration in predicting obesity among various racial groups of a large multi ethnic organization.

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Background

- ❖ Obesity is a preventable chronic condition, and its distribution is diverse across age, gender, race, culture, and various socioeconomic groups of populations.
- ❖ Obesity is now recognized as a national epidemic in the United States, as about 36% of US adults are obese.
- ❖ Obesity is an established risk factor for many chronic health problems, including heart disease, stroke, type 2 diabetes, and various cancers.
- ❖ As the prevalence of obesity has increased over time, average sleep duration in the United States has declined considerably, with an increasing proportion of persons who sleep less than 6 hr a day.
- ❖ Self-reported sleep duration is influenced by a number of factors, particularly race/ ethnicity and socioeconomics.
- ❖ Studies have shown that African Americans and other racial minorities are more likely to report both short and long sleep durations.

Objectives

- ❖ Literature shows strong relationship of abnormal sleep duration (especially short) with obesity and increased overall and CVD morbidity and mortality.
- ❖ Less is known how abnormal sleep duration is related to obesity among different racial groups.
- ❖ The purpose of this study is to predict relationship of self-reported sleep duration with obesity across different racial groups.

Methods

- ❖ This cross-sectional study was conducted among employees of Baptist Health South Florida, a large nonprofit healthcare organization based in Miami, Florida, who participated voluntarily in an annual Health Risk Assessment (HRA) in 2014.
- ❖ The data collected from the online health questionnaire included demographic characteristics such as age, gender, ethnic/racial origin, and educational attainment; self-reported lifestyle characteristics such as diet, smoking status, and physical activity, as well as average sleep duration and sleep quality.
- ❖ According to CDC.gov guidelines, we categorized self-reported sleep duration (hrs) as short (<7), reference (≥7-≤9) and long sleep (>9), while obesity (BMI kg/m²) was categorized as class 1 (BMI=30-34.9), class 2(BMI= 35- <40) and class 3 (BMI ≥40).

Table 1: Logistic regression showing odds ratio (with 95% CI) of obesity among racial groups by sleep duration categories (ref sleep 7-9 hours)

		Class 1 Obesity (BMI=30-34.9)	Class 2 Obesity (BMI= 35- <40)	Class 3 Obesity (BMI ≥40)
Hispanic 7-9hrs (Ref)		1	1	1
Hispanic <7hrs	Unadjusted	1.08 (0.93- 1.24)	1.82 (1.49-2.22)	1.81 (1.40-2.33)
	Model 1	1.07 (0.93-1.24)	1.79 (1.46-2.18)	1.86 (1.44-2.40)
	Model 2	1.04 (0.90-1.21)	1.73 (1.41-2.12)	1.73 (1.34-2.25)
Hispanic >9hrs	Unadjusted	1.07 (0.51- 2.23)	1.03 (0.31-3.36)	1.19 (0.29-4.97)
	Model 1	1.14 (0.54-2.39)	1.03 (0.31-3.35)	1.13 (0.27-4.76)
	Model 2	1.12 (0.53-2.35)	1.01 (0.31-3.31)	1.15 (0.27-4.85)
Black <7 hrs	Unadjusted	1.31 (1.08- 1.59)	2.32 (1.80-2.98)	2.97 (2.21-4.00)
	Model 1	1.28 (1.05-1.56)	2.19 (1.69-2.84)	2.88 (2.13-3.89)
	Model 2	1.25 (1.02-1.53)	2.13 (1.64-2.77)	2.63 (1.94-3.57)
Black >9 hrs	Unadjusted	1.71 (0.75-3.91)	6.86 (3.07-15.34)	3.07 (0.91-10.3)
	Model 1	1.51 (0.62-3.66)	5.37 (2.29-12.57)	2.28 (0.67-7.75)
	Model 2	1.46 (0.60-3.53)	5.29 (2.25-12.43)	2.05 (0.60-7.05)
White <7 hrs	Unadjusted	1.22 (0.98-1.53)	1.74 (1.28-2.37)	1.51 (1.00-2.28)
	Model 1	1.08 (0.86-1.36)	1.62 (1.18-2.22)	1.54 (1.02-2.35)
	Model 2	1.06 (0.84-1.33)	1.55 (1.13-2.14)	1.37 (0.90-2.09)
White >9 hrs	Unadjusted	0.61 (0.07-4.50)	4.32 (0.34-15.8)	3.66 (0.44-29.9)
	Model 1	0.65 (0.07-5.40)	3.56 (0.56-13.45)	4.20 (0.51-34.46)
	Model 2	0.67 (0.08-5.55)	3.45 (0.89-16.30)	4.27 (0.50-36.60)
Asian <7 hrs	Unadjusted	0.51 (0.32-0.82)	0.73 (0.37-1.45)	0.42 (0.13-1.33)
	Model 1	0.54 (0.33-0.87)	0.82 (0.41-1.63)	0.51 (0.16-1.64)
	Model 2	0.52 (0.32-0.84)	0.77 (0.39-1.54)	0.44 (0.13-1.41)
Asian >9 hrs	Unadjusted	0.71 (0.08-5.95)	0.89 (0.83-10.05)	0.26 (0.56-15.03)
	Model 1	0.77 (0.09-6.54)	0.99 (0.12-11.18)	0.80 (0.15-18.54)
	Model 2	0.72 (0.08-6.14)	0.82 (0.25-14.23)	0.45 (0.13-19.21)
Other <7 hrs	Unadjusted	1.03 (0.70-1.51)	1.87 (1.15-3.03)	2.05 (1.14-3.71)
	Model 1	0.96 (0.64-1.44)	1.82 (1.10-3.00)	2.10 (1.15-3.82)
	Model 2	0.94 (0.63-1.42)	1.75 (1.06-2.88)	1.91 (1.04-3.50)
Other >9 hrs	Unadjusted	8.58 (0.77-94.7)	7.08 (0.53-98.3)	8.23 (0.63-103.3)
	Model 1	8.90 (0.78-101.31)	7.10 (0.56-111.12)	8.19 (0.78-121.01)
	Model 2	8.79 (0.77-100.15)	8.29 (0.77-114.34)	8.09 (0.77-120.25)

Model 1: Adjusted for age, sex, educational attainment, and ethnicity. Model 2: Adjusted for Model 2 + diet, physical activity, and smoking

Results

- ❖ A total of 9505 participants (mean age 42.6±12 years, 74% females) had complete information on the variables of interest.
- ❖ Racial groups consisted of 57% Hispanics, 16% Black, 17% White, 5% Asian and 5% Non-Hispanic other.
- ❖ In fully adjusted regression model, when compared to Hispanic group sleeping 7-9 hours (reference), odd of class 1 obesity was significantly higher among black sleeping <7hours with OR 1.25;95% CI (1.02-1.53) and significantly lower among Asian group sleep <7 hours with OR 0.52; 95% CI (0.32-0.84)
- ❖ However, the odds of class 2 and class 3 obesity were significantly higher among Hispanic, Black and Non-Hispanic-other sleeping <7 hours.
- ❖ Asian group was the only group that showed decreased odds of obesity across both short and long sleep duration (Table1).

Conclusions

- ❖ This study shows that sleep durations have varied effects on obesity among different racial groups.
- ❖ Short or long sleep duration for one group may not be a better predictor of obesity in another racial group.
- ❖ This study emphasizes the importance of appropriate sleep duration categories among various racial groups. Further studies are required to formulate sleep categories among racial groups.

Disclosures

Presenting author M. Aziz and other authors T. Rajan; D. Morency; M. Penugonda; N. Ross; M. Latif; M. Rouseff, H.Guzman; T. Feldman, E. Aneni. E. Veledar and K. Nasir state that no conflict of interest exists. No off-label or investigational use of a drug was performed as part of this research.