Weight Gain and Decreased Sleep Duration in First-Year College Students: A Longitudinal Study

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Weight Gain and Decreased Sleep Duration in First-Year College Students: A Longitudinal Study

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Learning Objective: Participants will be able to explain how both decreased diet quality and decreased sleep duration additively contribute to weight gain in first-year university students.

Background: Among college students, alterations in sleep and diet quality are common, and the propensity for weight gain is well established. The role of sleep duration during periods of rapid weight gain is understudied.

Objective: This study explored the relationships between sleep duration, diet quality, and body composition in college freshmen.

Design: A longitudinal, observational design was used. Laboratory testing occurred during the beginning of the fall and spring semesters. Anthropometric measures included weight, height, and percent body fat (%BF). Survey questions assessed sleep and diet quality.

Results: As a group, participants (N = 61) gained weight (1.9 ± 2.2 kg) over the 4.5-month period of study. The amount of weight gained did not differ by sex, so data were pooled. Participants were grouped into quartiles based on weight change at follow-up. No differences between weight, BMI, %BF, sleep duration, or diet quality existed at baseline. Sleep duration decreased (6.9 ± 0.9 to 6.5 ± 1.2 h, p = 0.047) among those in the top quartile of weight gain (4.8 ± 1.7 kg); whereas, no changes were noted in the other quartiles. Diet quality decreased among participants in the top two quartiles compared to baseline (p < 0.046 for both).

Conclusions: Participants who gained the most weight slept significantly less compared to baseline reports and also experienced decreases in diet quality. These combined changes were not observed in other quartiles. Combining diet and sleep education may increase effectiveness of interventions designed to mitigate weight gain in this high-risk population.

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Weight Gain and Decreased Sleep Duration in First-Year College Students: A Longitudinal Study

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Abstract

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Introduction

Few longitudinal studies have examined relationships between sleep duration and weight or body composition in college students, and findings are mixed. Differences in study duration and design could explain discrepant findings.

Purpose of the study: to examine relationships between self-reported sleep duration, diet quality, and body composition over the course of an academic semester in first-year university students (late August/early September – January).

Primary hypothesis: students reporting the lowest amount of sleep would gain the most weight and most body fat over the study’s time course.

Secondary hypothesis: diet quality would decrease in those who gained the most weight, given the associations between poorer diet quality and obesity.

Methods

Participant Recruitment

Newly enrolled first-year students living on campus

Anthropometric Testing

Height, weight, % body fat

Sleep Behavior

Self-reported sleep duration for the night and week prior to testing

Dietary Intake

Starting the Conversation (STC) food frequency questionnaire

Results

• Participants: N = 61, 82.0% female; average age 18.1 ± 0.3 years.

• Majority reported sleeping ≥ 7 h per night the week prior to testing (N = 42, 68.9%), and a similar number reported sleeping ≥ 7 h the night before testing (N = 41, 67.2%).

• No differences in sleep duration or diet quality by sex at baseline (Table 1).

• Participants in the top two quartiles compared to baseline reported weight gain in this high-risk population.

• Reduced sleep duration and decreased diet quality resulted in the largest increase in body weight and body fat over a 4.5-month period.

• The greatest amount of weight gain occurred among those not meeting national recommendations for sleeping at least 7 h/night over the previous week.

• To prevent significant weight gain, protecting sleep time and maintaining diet quality should be emphasized by nutrition and public health professionals working with this vulnerable population.

References & Acknowledgements


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