Effects of a Four-Week Sleep Hygiene Intervention on Academic Performance in Undergraduate Students: A Randomized Controlled Trial

Abstract

Background: Insufficient sleep is common among university students and is associated with poorer attention, memory consolidation, and academic outcomes. Few randomized trials have tested whether brief, low-cost behavioral interventions can improve both sleep and academic performance in this population.

Objective: To evaluate whether a four-week sleep hygiene program improves sleep quality and end-of-term exam performance among undergraduates.

Methods: We randomly assigned 240 first- and second-year students at a public university to an intervention group (n = 120) or a waitlist control group (n = 120). The intervention consisted of weekly 30-minute workshops on consistent sleep schedules, caffeine and screen-time reduction, and sleep environment optimization. Sleep quality was measured with the Pittsburgh Sleep Quality Index (PSQI) at baseline and week four. Academic performance was measured by standardized exam scores at the end of term. Data were analyzed using linear mixed-effects models, adjusting for baseline sleep quality, age, and prior GPA.

Results: Of the 240 participants, 218 (91%) completed the study. The intervention group showed significantly greater improvement in PSQI scores than the control group (mean difference = −2.4, 95% CI [−3.1, −1.7], $p < .001$). Exam scores were also higher in the intervention group (mean difference = 4.8 points, 95% CI [1.9, 7.7], $p = .001$), corresponding to a small-to-moderate effect size (Cohen's $d = 0.42$).

Conclusions: A brief, scalable sleep hygiene intervention improved self-reported sleep quality and was associated with better exam performance. Universities may consider integrating such programs into student support services. Longer-term follow-up and objective sleep measures (e.g., actigraphy) are needed to confirm durability and mechanisms.

Keywords: *sleep hygiene, academic performance, undergraduate students, randomized controlled trial, behavioral intervention*