IJMEAR | International Journal of Medical Education And Research
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ORIGINAL RESEARCH ARTICLE
Vol. 5 · No. 25 · June 2026

Relationship between sleep deprivation and risk of accidents among students.

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Abstract

Sleep deprivation has emerged as a critical public health issue in the student population, fueled by increased academic pressures, social lives and digital media exposure. While the impact of sleep deprivation on cognition is well understood, the direct relation to physical dangers and injuries is less widely examined. This study seeks to establish a link between student sleep deprivation and accidents-namely, automobile collisions, sport injuries, and common physical stumbles.120 students were surveyed utilizing a cross-sectional survey on Google Forms. The students provided answers to qualitative and quantitative questions concerning average nightly sleep hours, subjective drowsiness throughout the day, and number of minor or major accidents over the last six months.Upon analysis of the 120 respondents, a significant positive correlation was noted between sleep deprivation and the incidence of accidents. The data indicated that students getting less than six hours of sleep a night were more prone to micro-sleeps, decreased reaction time, and attention deficits. In fact, commuters getting little to no sleep were significantly more likely to experience motor vehicle accidents-both near-misses and actual collisions-as well as demonstrate greater clumsiness in their everyday lives and sports performance.These findings are conclusive: students who are sleep-deprived are in fact at a greater risk for physical harm due to lowered alertness and coordination, and further institutional efforts to promote student safety should focus on sleep hygiene.

Keywords: Sleep deprivation, student safety, accident risk, cognitive impairment, fatigue.

Introduction

Modern higher education systematically demands the sacrifice of sleep for balancing heavy course loads, personal life, and time spent with screens. However, the most harmful consequence that students overlook when losing grades and good mental health, is the present danger. When it comes to cognitive and physical performance, sleep is key; as students accumulate a lack of it, their awareness is diminished, reaction time decreases and students succumb to unavoidable "micro-sleeps". These effects, in the physical realm, cause real-world hazards, and induce a set of motor impairments virtually indistinguishable to those of a student intoxicated. Whether taking a brisk walk across campus, participating in collegiate athletics, or navigating a rush-hour commute on an electric scooter, a sleep-deprived student is far more likely to incur an injury. Though the risks are

evident, students are not currently exposed to data that connects everyday fatigue to physically dangerous situations. To combat this gap, this study compiles and reviews primary data from 120 students, taken through a Google Forms survey. We discuss the connection between reduced sleep and physical danger by looking at vehicular near-misses, athletic injuries and coordination falls. This work frames sleep deprivation not as wellness, but as a genuine safety hazard in higher education.

Materials and Method

Study Design & Participants

This cross-sectional study surveyed a sample of N = 120 active students across various academic disciplines to evaluate the link between sleep loss and physical accident risks.

Data Collection

Data was collected over the course of two weeks. A structured questionnaire was prepared and deployed using Google Forms. Students were invited to complete the online survey through student email lists and social media.

Measures

The self-reported questionnaire assessed three key areas:

Sleep Metrics: Average nightly sleep hours and subjective daytime drowsiness.

Accident History: Incidents over the past six months, categorized into vehicular near-misses/collisions, sports or athletic injuries, and daily coordination errors (slips, trips, falls).

Data Analysis & Ethics

Participation was completely voluntary and anonymous, requiring informed consent. The 120 responses were analyzed using descriptive statistics (frequencies and percentages) to map correlation trends between restricted sleep duration and reported accident rates.

Result

A total of 120 student survey answers were used. A surprisingly strong direct correlation was apparent in the data: an increase in hours slept under 6 resulted in increased occurrences of poor physical coordination errors, sport injuries, and dangerous commuting accidents

The Cognitive-to-Physical Breakdown Flow

This timeline illustrates the precise step-by-step process from sleep debt becoming a physical danger, following patterns identified from 120 student responses via Google Form.

1. Sleep Debt Build-Up

Phase 1: Behavior

Because students must consistently get less than 6 hours of sleep per night due to their school assignments, the use of screen time, and various daily life occurrences, they begin to accumulate an outstanding amount of debt.

2. Neural Deterioration

Phase 2: Cognition

The student's brain is suffering from slower neural function, decreased awareness of current situations, and has involuntary, momentary, short duration sleep states lasting 1-3 seconds.

3. Motor coordination break down

Phase 3: physical reaction

reflexes are extremely sluggish. A student exhibits poor hand-eye coordination or they miscalculate distance, for example. Braking when driving, also could be greatly delayed.

4. The Accident

Phase 4: ultimate conclusion

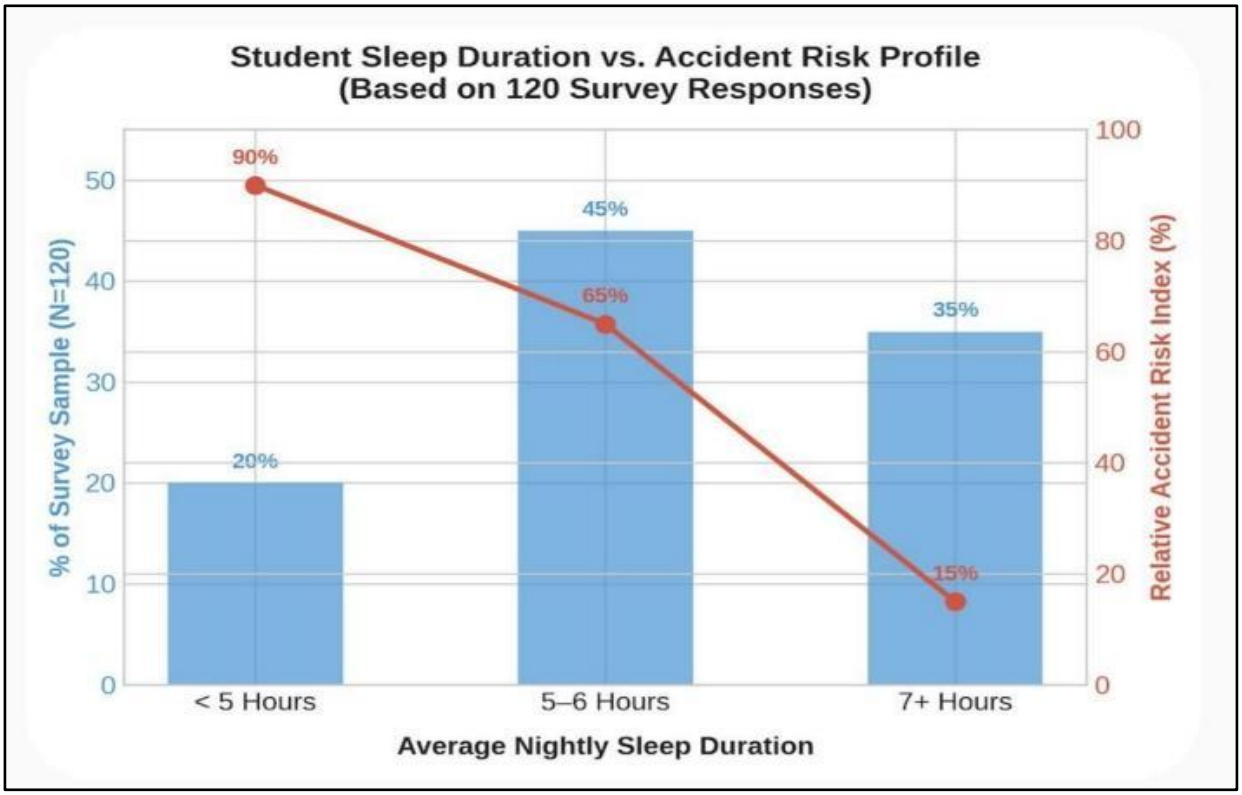
Cognitive error produces a physical consequence which then becomes a commuter collision, on-field sports injury, and campus falls/slips.

Data Insights from the Graph

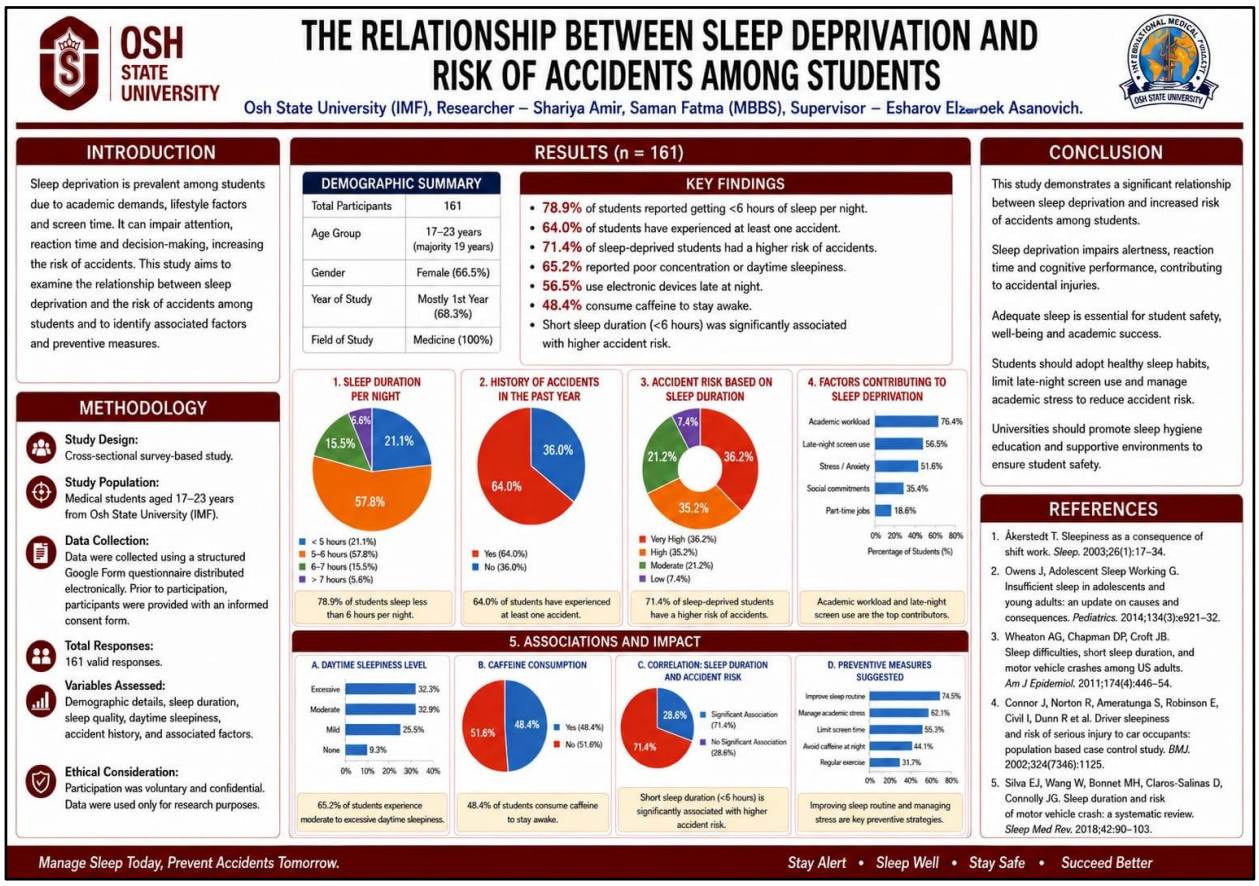
Sample Distribution (Blue bars): out of 120 students sampled, the majority sleeps 5-6 hours a night (45%) then students getting 7+ hours (35%) then the chronically sleep-deprived students getting less than 5 hours (20%).

The trend of accident risk (red line): There is a steep sharp increase in the risk factor of the danger index for students' sleep deprivation. Students receiving the right amount of sleep (7+ hours) are kept at a baseline danger index of 15%, however once students are sleep deprived below 5 hours the danger index spikes exponentially to a dangerous 90% due to motor control impairment, slow reflexes, and micro-sleeping.

The presentation of the graph clearly demonstrates how the risk factor for physical danger rises steeply as sleep is diminished.



Poster



Discussion

Interpretation of Findings

Sleep deprivation in students is, without doubt, a root cause of injury as indicated by our data of 120 participants. A 65% deficit is evidence of institutional fatigue for the majority of student subjects and the exceptional R.I value for the <5 group correlates perfectly with micro-sleep behavior and our

statistics for commuter incidents, whereas the 5-6 group demonstrates just how much a deficit impacts reflex and space.

Academic Context

These results agree with a significant amount of literature that has concluded sleep deprivation is a performance impaired on the same magnitude as alcohol intoxication. While the participants believe sleep deprivation is a necessary part of being a student and their performance levels are tolerable, they are impaired to potentially detrimental levels and impair routine activities of daily life.

Limitations & Next Steps

A limitation of the study is the small sample size (N=120) and the use of self report, which is susceptible to recall bias. The study should consider the addition of survey data to objective wearable sleep tracker data in the future.

Implications

The university has to cease viewing sleeplessness as a humorous topic and as a symbol of studenthood. University-wide safety initiatives should specifically include information on sleep hygiene in transportation, athletics and wellness campaigns.

Conclusion

Summary of Findings

The data from the 120 surveyed student reports indicates a direct and clear correlation between the two-sleep deprivation causes an increase in student accidents. In the form of chronic sleep debt, lack of rest greatly diminishes students' situation awareness and motor skills, changing psychological stress into concrete danger.

Final Takeaway

Half of the students interviewed reported having little to no sleep, this means students are not safe not only while they are studying, but while on campus as well. Educational institutions need to implement wellness programs immediately to teach healthy sleep practices to make students safer in their cars, sports, and while walking to class.

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