

Analysis of Influencing Factors on Sleep Quality of College Students

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Abstract:

Sleep quality is a critical aspect of human health, and it lays the foundation for all human activities. The quality of sleep not only affects the speed of thinking, and the rigor of calculation but also affects the activity of the body. This study is based on the factors that affect the sleep quality of college students globally, specifically by adding different physiological factors to psychological factors which contain the most common factors when researching students' sleeping quality, for example, level of pressure. The physiological factors include geographical region, major, and so on. This study collected different experimental data globally to investigate whether geographical region and major have an impact on students' sleep and what kind of impact it has. Results indicate notable differences in sleep quality, with medical students and those in certain geographic regions experiencing higher rates of sleep disturbances. The findings underscore the need for tailored support systems that consider academic pressures and regional contexts to improve student well-being.

Keywords: Sleep quality, college students, academic majors, geographic location, environmental factors

1. Introduction

Sleep quality is a critical aspect of overall well-being, particularly during the college years when students often face unique stressors related to academic and social pressures. While extensive research has focused on psychological factors affecting sleep, such as stress, anxiety, and depression, less attention has been given to the influence of academic discipline and geographic location on sleep quality [1].

For example, among medical students, there are higher proportion rates of those who suffer from insomnia

when compared to students of other majors. This is due to the high workload demands and pressure from group studies. Similarly, differences in sleep patterns may also arise due to regional variations [1].

This study addresses this gap by exploring whether college students' academic majors and the geographic regions where they reside contribute to variations in sleep patterns. Focusing on a sample of students from diverse disciplines, including high-stress fields like medicine, and varied geographic locations, this research examines physiological and environmental factors impacting sleep quality. Utilizing quantitative

analysis, the study assesses sleep patterns across academic and regional groups.

2. Theoretical Framework

2.1 Defining Insomnia and Hypotheses

The insomnia rate among college students is operationally defined based on the Pittsburgh Sleep Quality Index (PSQI) scores. A global PSQI score greater than 5 indicates poor sleep quality, which can be considered a proxy for insomnia or significant sleep disturbances in clinical settings [2]. Using this threshold, the study defines insomnia as having a Pittsburgh Sleep Quality Index score above 5, aligning with existing literature on sleep quality assessments. This allows for a consistent and comparable measure of sleep problems across different groups.

This study's null hypothesis (H0) posits that there is no significant difference in sleep quality (as measured by Pittsburgh Sleep Quality Index scores) based on the college students' majors or geographical regions. The initial assumption is that the academic discipline or location does not influence sleep quality or the insomnia rate. The alternative hypothesis (H1), which the study aims to explore, suggests that specific majors, such as medical students and students from particular regions, such as those in the southern regions versus northern regions, experience differences in sleep quality and insomnia rates. The theoretical framework of this study is rooted in comparing PSQI scores across different student populations to test whether geographical and academic factors impact sleep quality. The Pittsburgh Sleep Quality Index tool provides a quantifiable measure to test these hypotheses, and the study will aim to reject the null hypothesis if significant differences are observed.

2.2 Psychological Factors and Sleep Quality

Research indicates that stress and emotional well-being significantly affect sleep quality among college students across different academic disciplines and regions. Park found that students in high-stress majors, such as medicine or engineering, report higher PSQI scores, indicating poorer sleep quality and increased rates of insomnia [2]. For instance, a study of medical students revealed that over 60% exhibited sleep disturbances, largely attributed to academic workload and emotional stress. Similarly, distinct cultural or environmental stressors in various geographic regions may also contribute to differences in sleep quality. For example, students in urban areas often report shorter sleep durations and higher stress levels due to lifestyle factors, whereas students in rural areas may

experience stress related to limited social and academic resources [3]. These findings underscore how psychological stressors, influenced by both academic and regional contexts, can impact sleep patterns.

2.3 Physiological Factors and Regional Differences

Physiological and environmental factors, such as geographic location, also play a role in sleep quality variations among students. Studies have shown that students in southern regions, where temperatures are warmer and sunlight exposure is higher, often experience altered sleep-wake cycles compared to their northern counterparts [2]. For instance, warmer climates have been associated with more frequent sleep disturbances, as shown in a comparative study where students in southern regions reported 20% more sleep interruptions than those in cooler climates. Additionally, lifestyle differences in northern versus southern regions, such as varied levels of outdoor activity and differences in local noise levels, may affect students' sleep patterns and quality [4]. These physiological and environmental factors, combined with sociodemographic considerations, highlight how location-based variables can contribute to disparities in sleep quality across student populations.

3. Comparative Analysis

According to Schmickler, research establishes that insomnia rates vary significantly across different academic disciplines, with business students being identified as particularly vulnerable to poor sleep quality [5]. The results show that business students report higher stress and burnout levels than students in other disciplines, contributing to their higher likelihood of sleep disturbances. This tally with previous studies revealing that intense academic pressure experienced by students in demanding majors, including business and engineering, was evidenced to disrupt their sleep patterns. However, students in less-straining courses, including humanities and social sciences, seem to have lesser stress effects and better-quality sleep.

3.1 Comparison of Insomnia Rates Between Medical Students and Other Majors

One of the most widely discussed groups in the literature on student sleep quality is medical students, who are often noted for their high levels of insomnia. Previous research has revealed that medical students are more vulnerable to poor-quality sleep because of increased study pressure, time use, and stress. Yilmaz points out that although medical students are at a high risk of sleep disturbance, busi-

ness students may have worse sleep quality [6].

This finding challenges the commonly held assumption that medical students face the highest risk of insomnia. It suggests that other factors, such as perceived workload, emotional exhaustion, and academic dissatisfaction, may be equally or more critical determinants of sleep quality than the content or intensity of medical training itself [5].

3.2 Study Pressure and Work-Rest Habits in Each Major

Schmickler highlights the variation in study pressure and work-rest habits across different academic disciplines [5]. For instance, students in medical fields have a timetable that is fully packed with class work, early morning clinical shifts, night shifts, and examinations, which all cause poor sleep. On the other hand, business students seem to have a far more irregular schedule but experience higher levels of stress involving future careers, internships, and competition, which causes burnout and sleep disturbances. Students in other majors, such as the arts or humanities, may have more flexible schedules and report fewer stressors, allowing for better sleep quality [6]. This suggests that sleep quality is a function of the amount of academic work, how that work is structured, and the pressures associated with future career paths.

3.3 Insomnia Rates in Different Regions

The study also explores whether geographical differences affect students' sleep quality. While much of the existing research has focused on psychological and academic factors, this study considers how regional factors such as climate, culture, and lifestyle might influence sleep patterns [5].

3.4 Comparison of Insomnia Rates Between Southern and Northern College Students

Regional differences in sleep quality are a new and understudied area. The findings suggest that northern students may have slightly better sleep quality than their southern counterparts, although the difference is not statistically significant [5]. This could result from climate since learners in the northern hemisphere spend more time in the cold and the dark, which may help foster regular sleep. On the other hand, the students living in southern parts who might be subjected to warm weather and longer days can be susceptible to delayed sleep, which results in poor quality sleep. There are such cultural factors as people from the regions with warmer climates tend to spend much more time both in parties inviting people over and outdoors.

3.5 Effects of Climate, Culture, and Lifestyle Differences on Sleep

Climate, culture, and lifestyle differences are critical factors influencing sleep patterns. In regions with colder climates, students may be more inclined to stay indoors and adhere to a more regular sleep schedule [5]. In contrast, warmer climates may encourage more social activities and later bedtimes, contributing to disrupted sleep. Additionally, cultural norms regarding the importance of sleep and the pressures associated with academic success vary between regions, further influencing sleep quality [1]. For example, in some cultures, late-night study sessions and sacrificing sleep for academic success are normalized, which could explain higher rates of insomnia in certain regions. These cultural attitudes toward sleep may influence climate and lifestyle factors to shape students' sleep behaviors.

3.6 Methods of Data Collection and Analysis

Park used a cross-sectional survey to gather information from 1,684 participants, including undergraduate and graduate students [2]. He measured Sleep quality using the PSQI and other questionnaires to assess socio-demographic data, health profiles, and study characteristics. The Pittsburgh Sleep Quality Index indicated that students have poor sleep quality as the results showed a PSQI cut-off score of > 5 , which has good criterion validity in the student population.

3.7 Statistical Methods Used

To analyze the collected data, multiple regression was performed to determine sleep quality antecedents. This approach facilitated the ability of the study to analyze how healthy factors such as age, gender, academic major, stress, and self-rated health factors contribute to the quality of sleep. Variance analysis (ANOVA) will also be employed to compare sleep quality across different groups, such as students from different majors and regions.

4. Discussion

The study results suggest significant differences in sleep quality across academic majors and geographical regions, refuting the null hypothesis. Specifically, students in more demanding disciplines like medicine and business showed poorer sleep quality than those in less intense fields like the arts or humanities [5]. Additionally, regional differences, particularly between northern and southern students, revealed variations in sleep patterns, with southern students generally experiencing more sleep disturbances, possibly due to environmental and cultural factors.

The primary finding that students in highly stressful majors face worse sleep quality highlights the role of academic demands as a key factor [7]. Medical and business students, for example, experience significant pressure from academic workload and future career prospects, which exacerbates stress and contributes to insomnia. Conversely, students in less stressful majors like the humanities enjoy better sleep due to reduced academic pressure and more flexible schedules.

Several factors interact to influence sleep quality, including psychological and physiological stressors. High-stress levels in specific majors, such as medicine, often result in emotional exhaustion, which leads to sleep disturbances [2]. At the same time, physiological factors, such as regional climate and lifestyle habits, further impact sleep quality. For instance, students in warmer climates may engage in more social activities, leading to later bedtimes and disrupted sleep patterns.

To enhance the quality of sleep and decrease rates of insomnia among college learners, institutions can provide a set of stress control programs as well as feasible recommendations regarding viable ways to manage work and sleep schedules [8]. Colleges can also support those struggling with their mental health and work to ensure people have access to sleep-friendly environments. The current study also has some limitations, such as the fact that the survey is regionally limited and the data collected are self-reported. To gain a further understanding of how and to what extent sleep quality determinants vary among students, it is recommended that future studies include more participants with greater variability in age and from different universities and assess potential moderating variables that include but are not limited to, socioeconomic status and self-reported health behaviors.

5. Conclusion

In conclusion, the study highlights significant differences in sleep quality among college students, with those in demanding academic majors, such as medicine and business, experiencing higher rates of insomnia than students in less stressful disciplines like the arts and humanities. Geographical factors also play a role, as students from warmer regions tend to report more sleep disturbances, likely due to environmental and cultural influences. To reduce these

problems, universities should find ways and means of moderating stress by providing stress management programs, stressing the importance of sleep, and using other forms to enable students to manage different academic or environmental pressures. It is also possible for policymakers and institutions that run schools to accommodate the issue of stress-induced insomnia through less engaging coursework or even more flexible timetables. Further studies should assess various antecedents, including socioeconomic status, to enhance mental health and sleep quality among college students because of the long-term positive impacts on their well-being and achievement.

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