World Journal of Biology Pharmacy and Health Sciences
eISSN: 2582-5542
Cross Ref DOI: 10.30574/wjbphs
Journal homepage: https://wjbphs.com/

(RESEARCH ARTICLE)

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Sleep quality and determinants of poor sleep among youth across educational streams: A PSQI-based assessment

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World Journal of Biology Pharmacy and Health Sciences, 2025, 23(01), 267-271

Publication history: Received on 02 June 2025; revised on 09 July 2025; accepted on 12 July 2025

Article DOI: https://doi.org/10.30574/wjbphs.2025.23.1.0677

Abstract

Sleep is a vital yet often overlooked aspect of student well-being. This study evaluated sleep quality and its influencing factors among 750 students (ages 15–24) from five academic streams of education (High School, Arts & Science, Engineering, Pharmacy, and Nursing) in Thiruvalla, Kerala, using the Pittsburgh Sleep Quality Index (PSQI). A significant proportion of students experienced poor sleep, with professional course students reporting the highest incidence. Key disruptors included late-night screen use, academic stress, and environmental disturbances. Notably, Nursing students were more affected by academic pressure, while screen time was a major issue across most streams. These findings underscore the need for tailored interventions that promote healthy sleep habits, reduce academic burden, and address environmental challenges to support student health and performance.

Keywords: PSQI; Sleep Quality; High School; Arts and Science; Engineering; Pharmacy; Nursing

1. Introduction

Sleep is a fundamental physiological process marked by a temporary and reversible state of rest, characterized by reduced responsiveness to external stimuli and distinct neurophysiological changes such as regulated brain activity, hormonal fluctuations, and muscular relaxation. It alternates cyclically between non-rapid eye movement (NREM) and rapid eye movement (REM) stages, each fulfilling essential roles in physical restoration, emotional regulation, and memory consolidation [1,2].

Sleep quality is increasingly recognized as a crucial indicator of well-being, encompassing both subjective assessments (perceived restfulness and satisfaction upon awakening) and objective parameters such as sleep latency, duration, efficiency, and nocturnal awakenings. The Pittsburgh Sleep Quality Index (PSQI) is widely used to assess these dimensions. Good sleep quality correlates with improved mood, alertness, and interpersonal functioning, whereas poor sleep is often linked to fatigue, impaired cognition, daytime dysfunction, and increased dependence on stimulants [3,4,5].

Despite the National Sleep Foundation's recommendations that adolescents and young adults obtain 8–10 and 7–9 hours of sleep respectively, a significant proportion fail to meet these targets. This shortfall is often attributed to a complex interplay of psychological (stress, fear, anxiety), biological (fatigue, pain, chronic illness), social (family or peer-related concerns, academic pressure), and environmental (noise, light, uncomfortable sleeping arrangements, temperature fluctuations) factors. With mounting academic demands and lifestyle changes during adolescence and young adulthood, understanding the determinants of sleep quality is essential, particularly across diverse educational streams [3,6,7,8].

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Objective

The objective of this study was to assess the sleep quality and factors causing poor sleep among students studying in high school and various courses like Arts & Science, Engineering, Pharmacy, and Nursing in Thiruvalla taluk, Pathanamthitta district Kerala.

2. Materials and methodology

A community-based prospective interventional study was conducted to assess sleep quality, and factors contributing to poor sleep among 750 students (150 each from High School, Arts & Science, Engineering, Pharmacy, and Nursing) in Thiruvalla, Kerala. The study was conducted from November 2023 to April 2024 and was approved by the Institutional Review Board of Nazareth College of Pharmacy. Students aged 15–24 were included, while shift workers, unwilling participants, those with incomplete responses, and pregnant or lactating females were excluded. After obtaining informed consent, participants completed a questionnaire that included the Pittsburgh Sleep Quality Index (PSQI), a self-rated tool consisting of 19 items across seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction. Each component is scored from 0 to 3, with global scores ranging from 0 to 21; a score >5 indicates poor sleep. Data analysis was performed using Microsoft Excel 2019.

3. Results

3.1. Distribution of Age Group of Subjects

Among the 750 students enrolled in the study in the age group range of 15-24, most were aged 19-20 years (34.4%) followed by 21-22 years (21.87%), 17-18 years (21.6%), 15-16 years (14.93%) and 23-24 years (7.2%).

3.2. Distribution of PSQI components among the various courses

Table 1 Distribution of PSQI components among various courses

S. No.	PSQI components/Courses	S1 N (%)	S2 N (%)	S3 N (%)	S4 N (%)	S5 N (%)
1.	Subjective Sleep Quality					
a.	Good (Very/Fairly)	90 (60)	84 (56)	88 (58.67)	94 (62.67)	98 (65.33)
b.	Bad (Very/Fairly)	60 (40)	66 (44)	62 (44)	56 (37.33)	52 (34.67)
2.	Sleep Latency					
a.	Good (Very/Fairly)	111 (74)	109 (72.67)	112 (74.67)	110 (73.33)	134 (89.33)
b.	Bad (Very/Fairly)	39 (26)	41 (27.33)	38 (25.33)	40 (26.67)	16 (10.67)
3.	Sleep Duration					
a.	>7 hours/night	15 (10)	24 (16)	8 (5.33)	14 (9.33)	2 (1.33)
b.	≤ 7hours/night	135 (90)	126 (84)	142 (94.67)	136 (90.67)	148 (98.67)
4.	Habitual Sleep Efficiency					
a.	> 85%	141 (94)	145 (96.67)	140 (93.33)	140 (93.33)	147 (98)
b.	≤ 85%	9 (6)	5 (3.33)	10 (6.67)	10 (6.67)	3 (2)
5.	Sleep Disturbances					
a.	Score 0-1	121 (80.67)	114 (76)	115 (76.67)	125 (83.33)	150 (100)
b.	Score 2-3	29 (19.33)	36 (24)	35 (23.33)	25 (16.67)	0 (0)
6.	Use of Sleep Medications					
a.	Score 0-1	146 (97.33)	145 (96.67)	148 (98.67)	149 (99.33)	150 (100)

b.	Score 2-3	4 (2.67)	5 (3.33)	2 (1.33)	1 (0.67)	0 (0)
7.	Daytime Dysfunction					
a.	Score 0-1	87 (58)	107 (71.33)	106 (70.67)	117 (78)	125 (83.33)
b.	Score 2-3	63 (42)	43 (28.67)	44 (29.33)	33 (22)	25 (16.67)

S1: HIGH SCHOOL, S2: ARTS & SCIENCE, S3: ENGINEERING, S4: PHARMACY, S5: NURSING

3.3. Distribution of Global PSQI scores among various courses

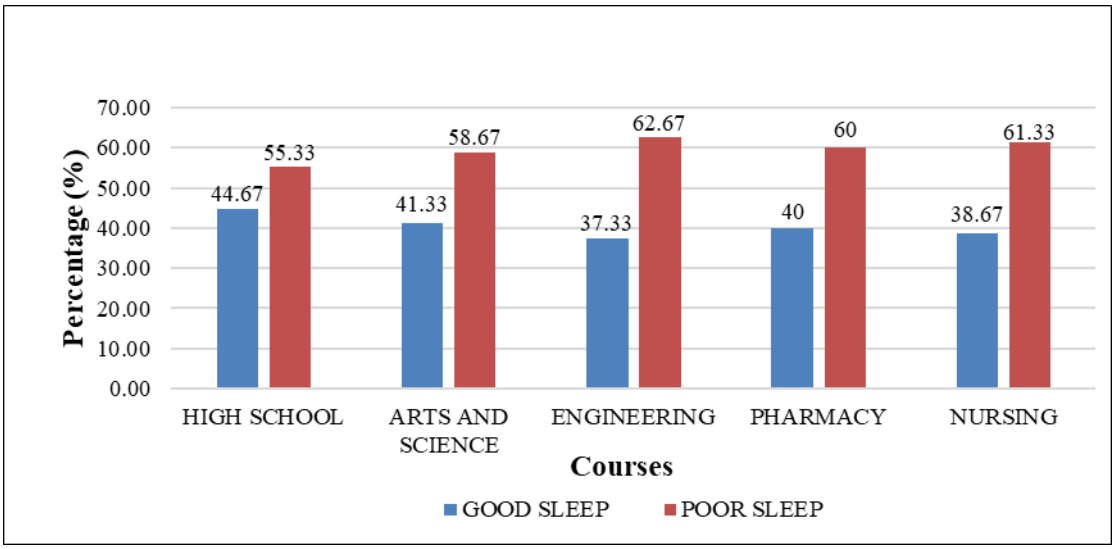

Figure 1 Distribution of Global PSQI scores among various courses

The Pittsburgh Sleep Quality Index (PSQI) highlights clear differences in sleep quality across various academic streams. As shown in the graph, a majority of students across all five groups (High School, Arts & Science, Engineering, Pharmacy, and Nursing) reported poor sleep quality. Engineering students had the highest percentage of poor sleep (62.67%), followed closely by Nursing (61.33%) and Pharmacy (60%) students. High School students showed the highest proportion of good sleep (44.67%), though still less than half. Overall, professional courses appeared to be associated with poorer sleep outcomes. These findings reflect the widespread nature of sleep issues among students and emphasize the need for academic and lifestyle adjustments to promote better sleep quality across disciplines.

3.4. Distribution of factors affecting sleep quality

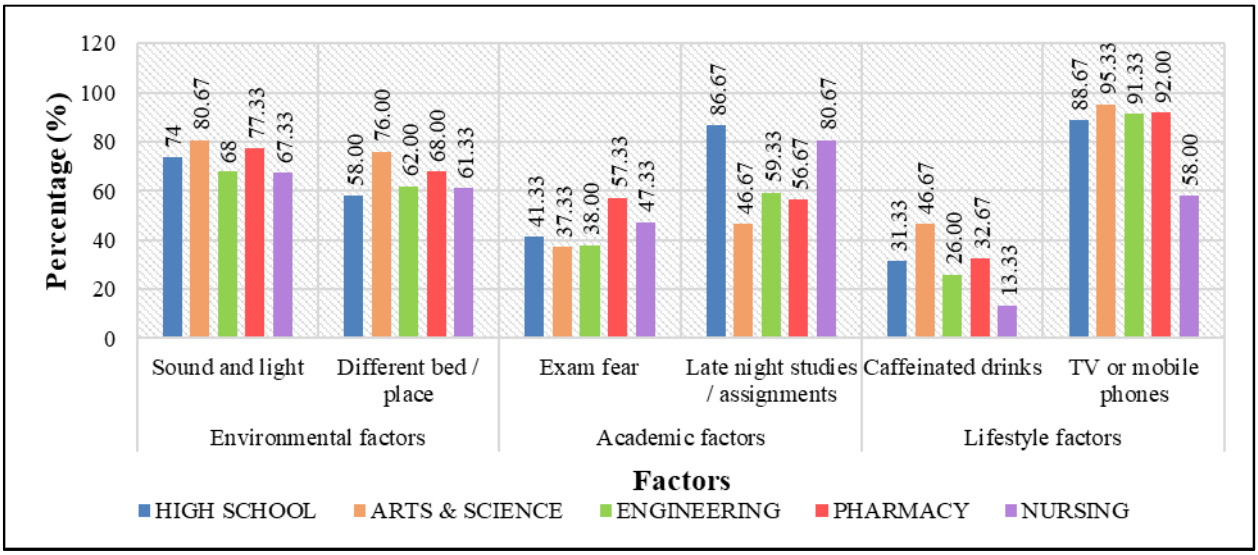

Figure 2 Distribution of factors affecting sleep quality

The comparative analysis of environmental, academic, and lifestyle factors revealed distinct patterns influencing sleep quality across the five educational streams. Among all variables, the use of television and mobile phones before bedtime emerged as the most significant lifestyle factor affecting sleep. This was most prevalent among students from Arts & Science (95.33%), Pharmacy (92%), Engineering (91.33%), and High School (88.67%). In contrast, Nursing students reported a lower impact (58%) from screen exposure but were more affected by academic demands, with 80.67% citing late-night assignments as a primary disruptor. This trend was similarly observed among High School students (86.67%). Environmental disturbances, particularly noise and light, were commonly reported, with Arts & Science (80.67%) and Pharmacy (77.33%) students being most affected.

These findings highlight the importance of stream-specific factors in shaping sleep patterns and suggest the need for targeted sleep hygiene interventions tailored to students' academic and lifestyle contexts.

4. Discussion

This study aimed to evaluate sleep quality and its contributing factors among youth aged 15–24 across five educational streams: High School, Arts & Science, Engineering, Pharmacy, and Nursing. The findings revealed a widespread prevalence of poor sleep across all streams, with the highest rates observed among Engineering, Nursing, and Pharmacy students. Although no previous research has examined sleep quality across these five streams collectively, earlier studies affirm that poor sleep is a common issue among students in college or university with increased academic demands. For instance, a study by Kumari R et. al., reported that 66% of college students experienced poor sleep quality [9].

Our study further explored the influence of academic pressure, environmental disturbances, and lifestyle habits on sleep. Given that the PSQI is a self-reported measure, responses may have been influenced by individual stress levels and perception biases.

Studies by Pham HT and El-Nagar SA et al. highlighted that screen time before bed, particularly mobile phone and TV use, significantly disrupted sleep quality [10,11]. Likewise, research by Meng Q and Sexton-Radek K et al. identified environmental factors like noise and light as major contributors to poor sleep [12,13]. These observations were reflected in our study, where excessive use of mobile phones and TVs was the leading cause of poor sleep among high school and professional course students, with the exception of nursing students. This exception may be due to institutional restrictions on phone usage in nursing colleges. Instead, consistent with findings by Mohamed NA et al., nursing students in our study were mainly affected by academic stress, particularly from late-night studying and assignments, which emerged as their primary barrier to quality sleep [14].

Overall, these results highlight the multifaceted nature of sleep disturbances among students and underscore the need for targeted interventions, including lifestyle modifications, mental health support, and academic policies that promote healthier sleep patterns.

Abbreviations

- PSQI: Pittsburgh Sleep Quality Index
- NREM: Non-Rapid Eye Movement
- REM: Rapid Eye Movement

5. Conclusion

This study highlights the widespread prevalence of poor sleep quality among students across diverse educational streams, with the highest rates seen in professional courses such as Engineering, Pharmacy, and Nursing. Key contributing factors included academic stress, environmental disturbances, and lifestyle habits (particularly screen use before bedtime). Notably, while mobile phone and television use were major disruptors in most groups, nursing students were more affected by academic pressure, likely due to institutional regulations limiting screen access. These findings reflect the complex interplay of personal, academic, and environmental influences on sleep health. Addressing these issues requires a multifaceted approach, i.e., combining sleep education, stress management strategies, and institutional support tailored to the specific needs of each academic stream. Promoting awareness and encouraging healthier sleep practices could significantly enhance the well-being, academic performance, and long-term health of students.

Compliance with ethical standards

Acknowledgments

The authors would like to extend their sincere gratitude to the staff of Nazareth college of pharmacy and the institutions that consented to participate in the study for their kind support in this research.

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

The authors certify that they have obtained consent from the participants in this study and their details will be concealed with due effort.

References

[1] Mograss, M.A. et al. (2025) Sleep, Encyclopædia Britannica. Available at: https://www.britannica.com/science/sleep.

[2] Buysse DJ. Sleep health: can we define it? Does it matter?. Sleep. 2014 Jan 1;37(1):9-17.

[3] Nelson KL, Davis JE, Corbett CF. Sleep quality: An evolutionary concept analysis. InNursing forum 2022 Jan (Vol. 57, No. 1, pp. 144-151).

[4] Pierson-Bartel R, Ujma PP. Objective sleep quality predicts subjective sleep ratings. Scientific Reports. 2024 Mar 11;14(1):5943.

[5] Fabbri M, Beracci A, Martoni M, Meneo D, Tonetti L, Natale V. Measuring subjective sleep quality: a review. International journal of environmental research and public health. 2021 Feb;18(3):1082.

[6] CDC. About Sleep [Internet]. Sleep. 2024. Available from: https://www.cdc.gov/sleep/about/

[7] Altun İ, Cınar N, Dede C. The contributing factors to poor sleep experiences in according to the university students: A cross-sectional study. Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences. 2012 Jun;17(6):557.

[8] Okano K, Kaczmarzyk JR, Dave N, Gabrieli JD, Grossman JC. Sleep quality, duration, and consistency are associated with better academic performance in college students. NPJ science of learning. 2019 Oct 1;4(1):16.

[9] Kumari R, Jain K, Nath B. Sleep quality assessment among college students using Pittsburgh Sleep Quality Index in a municipal corporation area of Uttarakhand, India. Ceylon Medical Journal. 2020 Dec 31;65(4).

[10] Pham HT, Chuang HL, Kuo CP, Yeh TP, Liao WC. Electronic device use before bedtime and sleep quality among university students. InHealthcare 2021 Aug 24 (Vol. 9, No. 9, p. 1091). MDPI.

[11] El-Nagar SA. Relation between Nighttime Technology Devices Use, Stimulant Drinks Intake and Sleep Quality among Adolescent Students. Sleep.;10:11.

[12] Meng Q, Zhang J, Kang J, Wu Y. Effects of sound environment on the sleep of college students in China. Science of The Total Environment. 2020 Feb 25;705:135794.

[13] Sexton-Radek K, Luna L. University Student Sleep Quality: Some Health Insights regarding Light Exposure. Health. 2022 Mar 3;14(3):368-76.

[14] Mohamed NA, Ali SO, Ehrahim EE, Ahmed AL, Wahba AM. Predictors of academic and clinical stress among nursing students. SAGE Open Nursing. 2024 Oct;10:23779608241290392.