

Determinants of Sleep Quality among Nursing Students in Pakistan

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Introduction

Sleep quality is a critical component of overall health and well-being, particularly for nursing students who face demanding academic and clinical responsibilities. Adequate sleep is essential for cognitive function, emotional regulation, and physical health. However, nursing students report experiencing poor sleep quality. Factors such as academic stress, irregular schedules, and lifestyle choices can significantly impact their sleep patterns. Understanding the determinants of sleep quality among nursing students is vital, as inadequate sleep can lead to increased fatigue, decreased academic performance, and a higher risk of burnout. A Cross-sectional descriptive study was conducted among the 135 nursing students of Lahore School of Nursing concluded the factors that influence academic performance among undergraduate nursing students, with teaching methods, attendance, time management, and sleep quality emerging as critical elements (Khaliq et al., 2019). Further more, Poor sleep quality and excessive diurnal sleepiness significantly impact academic performance in medical students, highlighting the need for urgent intervention to improve sleep (Seoane et al., 2020). Therefore, this study aims to explore the various factors influencing sleep quality in nursing students, providing insights that can inform interventions to promote, better sleep hygiene and overall health within nursing students. A person's general health and well-being can be determined by their sleep quality, especially nursing students who frequently experience high levels of stress, academic pressures, and irregular schedules. The study is important for the Pakistani students because we already are not up to the international standard in this subject so to improve our training and learning as well as patient care. The sleeping pattern definitely improve the ultimate outcome of the patient leading to optimize healthy community.

Background of the study

The quality of sleep plays a vital role in determining both the health and academic success of nursing students. Nursing students in Pakistan often face significant challenges that can adversely affect their sleep quality, as in many other countries.

These challenges include demanding academic schedules, clinical rotations, and personal responsibilities, all of which can contribute to sleep disturbances and poor sleep hygiene.

Research has consistently shown that poor sleep quality is prevalent among nursing students globally. For instance, Regmi. et al. (2022) found that nursing students in Kathmandu Valley revealed that a significant proportion (63.7%) of students experienced poor sleep quality, which

negatively impacted their health and academic performance. However, in Pakistan, a study conducted by Zahoor et al. (2023) at Islamabad identified several factors that can cause poor sleep quality among university students that lead to poor academic success, such as heavy meals, daytime sleep gadget use, noisy sleeping environments, and type of residence.

Problem statement

Poor sleep quality among nursing students is associated with decreased academic performance, impaired cognitive function, increased stress levels, and reduced patient safety competence. In Pakistan, nursing students face unique challenges that may affect their sleep quality, including rigorous academic schedules, clinical duties, and socio-cultural factors. Poor sleep quality among nursing students can lead to various negative outcomes such as decreased academic performance, impaired cognitive function, and increased stress levels. Understanding these factors can help in developing targeted interventions to improve sleep hygiene and, consequently, the academic and clinical performance of nursing students. This study aims to fill the gap in the literature by exploring the specific determinants of sleep quality among nursing students in Pakistan, thereby providing a foundation for future research and intervention programs.

Purpose of the study

This study aims to explore how sleep quality affects nursing students in Pakistan. By looking at what influences their sleep, the research hopes to find ways to help these students improve their sleep habits. Better sleep is important because it can lead to better academic performance and greater focus when caring for patients. The findings could provide useful tips and ideas for nursing schools to support their students, helping them balance their studies and health. Ultimately, this study seeks to make a positive difference in the lives of nursing students, ensuring they are well-rested and ready to provide the best care possible.

Objective

The objective of this study is to assess the quality of sleep among nursing students in Pakistan and identify the determinants that influence their sleep patterns

Hypothesis

Null Hypothesis (H₀)

There is no significant relationship, between sleep quality and its determinants

Alternative Hypothesis (H₁)

There is a significant relationship, between sleep quality and its determinants

Significance of study

The importance of examining sleep quality and its influencing factors among nursing students is complex, as it affects both their academic success and overall health. Nursing students are essential to the future healthcare workforce, and their capacity to deliver safe and effective care is crucial. By understanding what impacts their sleep quality, we can create specific strategies that improve their educational experience and readiness for the profession. Educational institutions can take measures to tackle the reasons, behind inadequate sleep, which will ultimately help support their students and foster a more capable and healthier nursing workforce.

Literature review

The findings of the study conducted in Spain in 2020, indicate that nursing students experienced a significant decline in sleep quality during despite an increase in the average time spent in bed. Specifically, the average duration of sleep increased from 7.6 hours 8.5 hours during this period (Romero-Blanco et al., 2020). Factors emerged as critical determinants of sleep quality among nursing students. The consumption of caffeinated beverages was notably linked to poorer sleep

outcomes, as students who reported higher caffeine intake experienced more sleep disturbances (Yiğitalp & Aydın, 2021). Additionally, smoking habits were associated with reduced sleep quality, suggesting that nicotine negatively impacts sleep patterns (Yiğitalp & Aydın, 2021). A Study conducted in China concluded that the prevalence of nocturia among Chinese university students is considerable, with various factors contributing to its occurrence. The significant impact on sleep quality and academic performance underscores the need for increased awareness and intervention strategies to address this health issue in young adults (Liu et al., 2024).

The study conducted by Nguyen and Liuin in Vietnam in 2022, found that a notable percentage of nurses in Vietnam, approximately 46.9%, experienced sleep disturbances. The study identified high-stress levels and poor physical health as significant factors linked to the occurrence of sleep issues among nursing staff. These results highlight the critical need to address both mental and physical health aspects to enhance sleep quality among healthcare professionals (Nguyen & Liu, 2022). The study conducted in 2016 by Silva found that psychological factors such as anxiety, depression, and neuroticism are negatively correlated with sleep quality, suggesting that students with higher levels of these issues experience worse sleep outcomes (Silva et al., 2016). Similarly a study conducted Gallego-Gómez et al., 2021 emphasizes the significant impact of sleep habits on academic performance among university students, particularly Nursing students, highlighting a normalization of poor evening behaviors that can lead to sleep deficits (Gallego-Gómez et al., 2021). However a study conducted in Lahore have found that sleep deprivation can lead to hormonal imbalances, motor problems, and emotional instability, which can result in reduced academic performance and quality of life. Additionally, sleep deprivation is associated with increased risk for errors in patient care, posing a threat to both patient safety and nurse education (Tanveer et al., 2023). Similarly another study revealed that sleep quality has significant effects on academic performance among university students. Poor sleep quality, such as sleep latency, disturbances, and medication use, negatively impacts academic performance in university students (Hossain & Rahman, 2021). Similarly, a Cross-sectional descriptive study was conducted among the 135 nursing students of Lahore School of Nursing concluded the factors that influence academic performance among undergraduate nursing students, with teaching methods, attendance, time management, and sleep quality emerging as critical elements (Khaliq et al., 2019). Anxiety, depression, and stress are prevalent among university students in Jahangirnagar University, Bangladesh, and are associated with their socio-demographic characteristics (Hossain et al., al 2022). Poor sleep quality and excessive diurnal sleepiness significantly impact academic performance in medical students, highlighting the need for urgent intervention to improve sleep (Seoane et al., 2020). Furthermore, a cross-sectional study conducted in Iran in 2024 concluded that Factors such as physical inactivity, chronic pain, and workplace stress have been identified as contributors to sleep disturbances in this population (Kayaroganam et al., 2024). The study conducted by Yiğitalp and Aydın (2021) emphasizes the critical relationship between sleep quality and fatigue levels among nursing students, findings suggest that enhancing sleep quality could be essential for improving the overall well-being and academic performance of nursing students. Furthermore, the study highlights the need for comprehensive strategies within nursing curricula to promote healthy sleep habits and reduce fatigue (Yiğitalp 2021). Sleep quality is a significant factor impacting health, with components like sleep efficiency, disturbance, latency, duration, and waking after sleep onset influencing overall well-being (Zaldibar et al., 2022)

Methodology

This section consists of the research methodology used for the study, followed by the study setting, study design, study duration, sampling techniques, sample size, and eligibility criteria utilized for this study. The section also describes the tool utilized for data collection and ethical considerations for the study.

Study Settings

The current study was conducted at Oxford College of Nursing, Karachi.

Study Design

A descriptive study design was utilized for the current study

Study population

The target population for the study was nursing students (1st Year, 2nd year, 3rd year, 4th year)

Duration of Study

The duration of the study was four months, subject to approval from the concern committees tentatively from August 2024 to November 2024

Sample Size Calculation

Sample size would, $n=30$. The Oxford College of Nursing in Karachi operates within specific cultural and institutional dynamics, By focusing on a smaller sample from within this institution, the study captures insights that are highly relevant to the participants' unique educational and cultural environment.

Sampling Techniques:

Purposive sampling techniques were, used to recruit participants from the study setting.

This technique is used because the lack of volunteer participants so we were not able to do the random or apply other techniques.

Sample Selection

Inclusion Criteria:

Nursing Students (1st Year, 2nd year, 3rd year, 4th year)

Exclusion criteria:

- Staff nurses.
- Nursing interns

Data Collection Tools

The data for the current study was collected through a validated and reliable tool Pittsburg Quality Sleep Index after approval from the concerned authorities.

Data Collection Tools Reliability

A previous study conducted in Switzerland measured The reliability of the Pittsburgh Sleep Quality Index (PSQI) in patients with multiple sclerosis (pwMS) was demonstrated with a Cronbach's alpha coefficient of 0.83 for the global score, indicating high internal consistency. The sleep quality subscale had a Cronbach's alpha of 0.81, while the sleep efficiency subscale also showed a Cronbach's alpha of 0.79. These findings suggest that the PSQI is a reliable tool for assessing sleep quality.

Ethical Considerations

The voluntary participation of the participants was assured, and the written informed consent was signed. Confidentiality and anonymity were maintained throughout the research. Participants were guided at every step of the research study regarding the data files. All the hard copies were kept confidential in a locked cabinet, and the soft data was kept in a password-protected file.

Results:

The results of the study indicate several important health concerns. 87% were Male and 13% were female. When participants were asked about their academic performance 46% were above 3.5 GPA

while 39% of the participants were from 3.00 to 3.5 GPA (Fig.1), this shows that participants included in this reflect high academic performance. Of many participants, 36% reported sleep Average daily Screen from 2-4 hours while 30% reported more than 6 hours average screen time however 16% reported from 4-6 hours daily average screen time while 16% reported less than 2 hours screen time. When participants were asked about Physical activity in a week 40% reported 1-2 times in a week, 20% 3-4 times a week, 26% reported more than 5 times in a week while 13% reported no physical activity in a week. When participants were asked to rate their overall sleep quality during the last month 75% reported Fairley good, 23% reported very good only 2% reported Fairley bad(Figure 8) The overall findings point out the good sleep quality and academic performance of nursing students at oxford college of nursing Karachi.

Discussion:

This research examines health behaviors, academic achievements, and lifestyle elements among nursing students at Oxford College of Nursing in Karachi. The gender breakdown (87% male, 13% female) reveals enrollment trends that may affect the general applicability of the findings.

Academic Performance: The observed high academic achievements, with 46% of students achieving GPAs exceeding 3.5 and 39% between 3.0-3.5, correspond with the findings of Gallego-Gómez et al. (2021), which indicated that sleep patterns significantly influence academic success in nursing students. Nevertheless, investigations by Silva et al. (2016) and Hossain & Rahman (2021) point out that issues like anxiety, depression, and sleep disturbances are commonly associated with lower academic performance. This highlights the importance of ongoing support to alleviate stress and sustain high academic standards.

Screen Time: There was considerable variation in screen time, as 36% of participants reported using screens times for 2-4 hours a day, while 30% indicated observing more than 6 hours. Prolonged screen exposure can interfere with sleep and overall health, as demonstrated in studies such as Tanveer et al. (2023). The factors deprive the sleep patterns are associated with emotional instability and diminishing academic performance. This is pertinent since inadequate sleep caused by extended screen time may adversely affect students' health and academic achievements, as documented in other studies.

Physical Activity: Patterns of physical activity were irregular, with 26% of students exercising more than five times a week, while 13% reported no physical activity. Research by Kayaroganam et al. (2024) identified physical inactivity as a contributing factor to sleep disturbances, a crucial aspect of both academic and mental health, especially among young adults. This suggests that initiatives aimed at encouraging regular exercise could enhance overall well-being and academic resilience.

Sleep Quality: Sleep quality among students was generally rated as high, with 75% describing it as "fairly good" and 50% as "very good." Research in other regions, including Nguyen & Liu (2022) in Vietnam, similarly highlights sleep disturbances linked to heightened stress levels, with additional contributing factors like caffeine consumption and smoking further worsening sleep quality (Yiğitalp & Aydın, 2021).

Conclusion

This research emphasizes the necessity of maintaining a balance between sleep, screen time, and physical activity to enhance the academic performance and overall health of nursing students. It is essential for nursing programs to implement interventions targeting these lifestyle elements to promote student achievement and resilience, aligning with evidence that associates effective lifestyle management with better academic and health results.

Limitation:

The results of this study are limited by the relatively small sample size and its focus on a single institution, therefore it suggested for future to include Subgroups within the nursing profession, such as registered nurses, nursing students at various training levels, and clinical nurse specialists.

Conflict of interest:

The writers say they have no conflicts of interest.

Source of funding:

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References

- Yiğitalp, G. & Aydın, L.Z., 2021. Determination of sleep quality, fatigue and related factors in nursing students. *Journal of Nursing and Midwifery Sciences*, 8(3), pp.212-218.
- Liu, Y., Zhang, Z., Hu, H., He, X., Xu, P., Dou, Q., Song, C., Zhang, H., Franco, I., Kamperis, K., Rittig, S. & Wen, J., 2024. Prevalence and relevant factors of nocturia and its impact on sleep quality in Chinese university students. *Scientific Reports*, 14, p.13883. Available at: <https://doi.org/10.1038/s41598-024-60656-9> [Accessed 11 Nov. 2024].
- Silva, M., et al., 2016. Sleep quality determinants among nursing students. *Procedia - Social and Behavioral Sciences*, 217, pp.999-1007.
- Gallego-Gómez, J.I., Simonelli-Muñoz, A.J., Balanza, S., Rivera-Caravaca, J.M., Vera-Catalán, T. & Lorente, A.M., 2021. Sleep habits and academic performance in nursing students: A cross-sectional study. *BMC Nursing*, 20(100). doi: 10.1186/s12912-021-00635-x.
- Tanveer, H., Munir, I., Osama, M., Zia, M.R., Chattha, I.R. & Zaffar, S., 2023. Impact of sleep deprivation on academic performance of nursing students at CMH, Lahore. *Pakistan Journal of Medical & Health Sciences*, 17(01), p.289.
- Hossain, M. & Rahman, H., 2021. Assessing sleep quality and its effects on academic performance among university students. *Journal of Systems and Software*, 5, pp.67-72. Available at: <https://doi.org/10.18502/JSS.V5I2.5614> [Accessed 11 Nov. 2024].
- Khaliq, J., Hussain, M., Afzal, M. & Gilani, S.A., 2019. Exploring the factors affecting the academic performance of undergraduate nursing students. *Merit Research Journal of Medicine and Medical Sciences*, 7(12), pp.540-551.
- Seoane, H., Moschetto, L., Orliacq, F., Orliacq, J., Serrano, E., Cazenave, M., Vigo, D. & Pérez-Lloret, S., 2020. Sleep disruption in medicine students and its relationship with impaired academic performance: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 53, p.101333. Available at: <https://doi.org/10.1016/j.smrv.2020.101333> [Accessed 11 Nov. 2024].
- Hossain, M., Alam, M. & Masum, M., 2022. Prevalence of anxiety, depression, and stress among students of Jahangirnagar University in Bangladesh. *Health Science Reports*, 5. Available at: <https://doi.org/10.1002/hsr2.559> [Accessed 11 Nov. 2024].
- Van Nguyen, T. & Liu, H.E., 2022. A cross-sectional study on sleep disturbances and associated factors among nurses. *BMC Psychiatry*, 22(1), p.119.
- Sleep Quality and its Associated Factors among Nurses in a Tertiary Care Public Hospital in Puducherry District: A Cross-sectional Study.

- Ruiz-Zaldibar, C., Gal-Iglesias, B., Azpeleta-Noriega, C., Ruiz-López, M. & Pérez-Manchón, D., 2022. The effect of a sleep intervention on sleep quality in nursing students: Study protocol for a randomized controlled trial. *International Journal of Environmental Research and Public Health*, 19(21).
- Kayaroganam, R., Sarkar, S., Satheesh, S., Tamilmani, S., Sivanantham, P. & Kar, S.S., 2024. Sleep quality and its associated factors among nurses in a tertiary care public hospital in Puducherry District: A cross-sectional study. *Iranian Journal of Nursing and Midwifery Research*, 29(5), pp.617-622.
- Kalal, N., Vel, N., Angmo, S., Choyal, S., Bishnoi, S., Dhaka, S., Rulaniya, S. & Banswal, S., 2023. Smartphone addiction and its impact on quality of sleep and academic performance among nursing students: Institutional-based cross-sectional study in Western Rajasthan (India). *Investigación y Educación en Enfermería*, 41. Available at: <https://doi.org/10.17533/udea.iee.v41n2e11> [Accessed 11 Nov. 2024].
- Ruiz-Zaldibar, C., Gal-Iglesias, B., Azpeleta-Noriega, C., Ruiz-López, M. & Pérez-Manchón, D., 2022. The effect of a sleep intervention on sleep quality in nursing students: Study protocol for a randomized controlled trial. *International Journal of Environmental Research and Public Health*, 19. Available at: <https://doi.org/10.3390/ijerph192113886> [Accessed 11 Nov. 2024].
- Regmi, U., Kunwar, M. & Acharya, Y., 2022. Sleep quality among nursing students in Kathmandu Valley: A cross-sectional study. *One Health Journal of Nepal*. Available at: <https://doi.org/10.3126/ohjn.v2i1.47440> [Accessed 11 Nov. 2024].
- Zahoor, M., Waqar, S., Kawish, A., Sughra, U., Mashhadi, S. & Shahzad, A., 2023. Sleep quality and its possible predictors among university students of Islamabad, Pakistan. *Pakistan Armed Forces Medical Journal*. Available at: <https://doi.org/10.51253/pafmj.v73i1.7814> [Accessed 11 Nov. 2024].
- Chang, A.M., Aeschbach, D., Duffy, J.F. & Czeisler, C.A., 2015. Even the use of light-emitting eReaders negatively affects sleep, circadian timing, and next-morning alertness. *Proceedings of the National Academy of Sciences*, 112(4), pp.1232-1237.
- Kredlow, M.A., Capozzoli, M.C., Hearon, B.A., Calkins, A.W. & Otto, M.W., 2015. The effects of physical activity on sleep: A meta-analytic review. *Journal of Behavioral Medicine*, 38(3), pp.427-449.

Appendix-A: Informed Consent

Study Title: “Sleep Quality and Its Determinants among Nursing Students:

Principal investigators: Ismail Khan, Muhammad Jehangeer Khan, and

Aiman MSN Students at ZU FONAM

Supervisor: Syeda Rakhshanda Kaukab

Introduction:

We are students of Master of Science in Nursing (MSN) at the Ziauddin University, Faculty of Nursing and Midwifery (ZUFONAM), Karachi. I am the primary investigator to test **Sleep Quality and Its Determinants among Nursing Students:**

Benefits/Risks

This study is only for academic purposes. In this study, no risks are involved, except your valuable time will be required. No direct benefits and financial compensation are associated with participation in this study. There is no compensation or payment to participate in this research. However, the findings of this study will contribute to an in-depth understanding.

Anonymity and Confidentiality

Your identity in the research will not be disclosed at any time during the research study however, the data obtained from you may be shared aggregately among the members of the research team and may be published in the journal or elsewhere without revealing your identity.

Right of refusal to participate and withdrawal

Your participation in this study is completely voluntary. You have the right to refuse to participate in the study without any penalty or loss of benefits. You can also withdraw from the study at any time if you wish. You may also refuse to respond to some or all questions if you do not feel comfortable answering any specific questions that arise during the interview.

Questions and queries

If you have any questions about the study or the consent form, please ask me.

Available Sources of Information

If you have any further queries or questions, you may contact the principal investigator (Ismail Khan).

Contact# 03442007370

Email address: ismail.19486@zu.edu.pk

Agreement to participation

I have read and understood this consent form and I understand that a copy of the consent form will be provided to me. I agree to participate in this study voluntarily.

Participant name and Signature: _____

Date: _____

Name and Signature of the person obtaining consent:

Date: _____

Appendix-B Pittsburgh Sleep Quality Index (PSQI)

Instructions: The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month.

Please answer all questions.

1. During the past month, what time have you usually gone to bed at night?

2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?

3. During the past month, what time have you usually gotten up in the morning?

4. During the past month, how many hours of actual sleep did you get at night? (This may be

different than the number of hours you spent in bed.) _____

5. During the <u>past month</u> , how often have you had trouble sleeping because you...	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week
a. Cannot get to sleep within 30 minutes				
b. Wake up in the middle of the night or early morning				
c. Have to get up to use the bathroom				
d. Cannot breathe comfortably				
e. Cough or snore loudly				
f. Feel too cold				
g. Feel too hot				
h. Have bad dreams				
i. Have pain				
j. Other reason(s), please describe:				
6. During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?				
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?				
	No problem at all	Only a very slight problem	Somewhat of a problem	A very big problem
8. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?				
	Very good	Fairly good	Fairly bad	Very bad
9. During the past month, how would you rate your sleep quality overall?				

	No bed partner or roommate	Partner/roommate in other room	Partners in the same room but not same bed	Partner in same bed
10. Do you have a bed partner or roommate?				
	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week

If you have a roommate or bed partner, ask him/her how often in the past month you have had:				
a. Loud snoring				
b. Long pauses between breaths while asleep				
c. Legs twitching or jerking while you sleep				
d. Episodes of disorientation or confusion during sleep				
e. Other restlessness while you sleep, please describe:				

Genders

Figure. 1

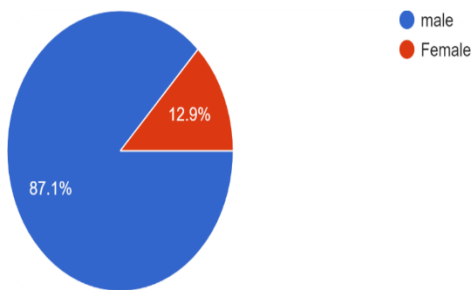
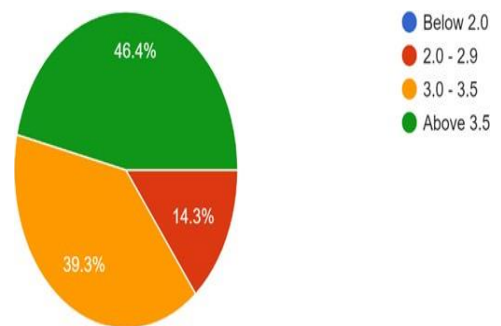
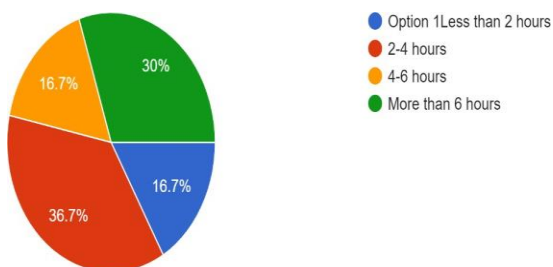


Figure. 2



Average daily Screen time

Figure 3



Physical Activity in a week

Figure 4

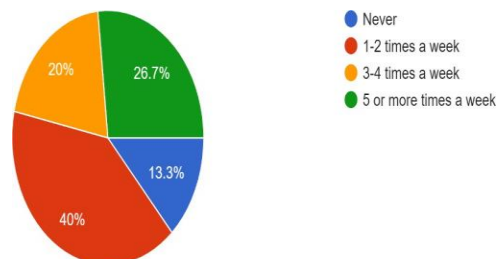


Figure 5

During the past month, how often have you had trouble sleeping because you...

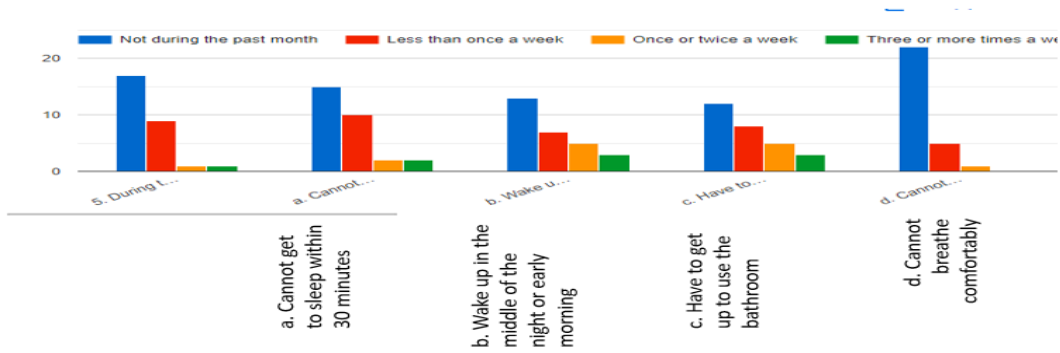


Figure 6

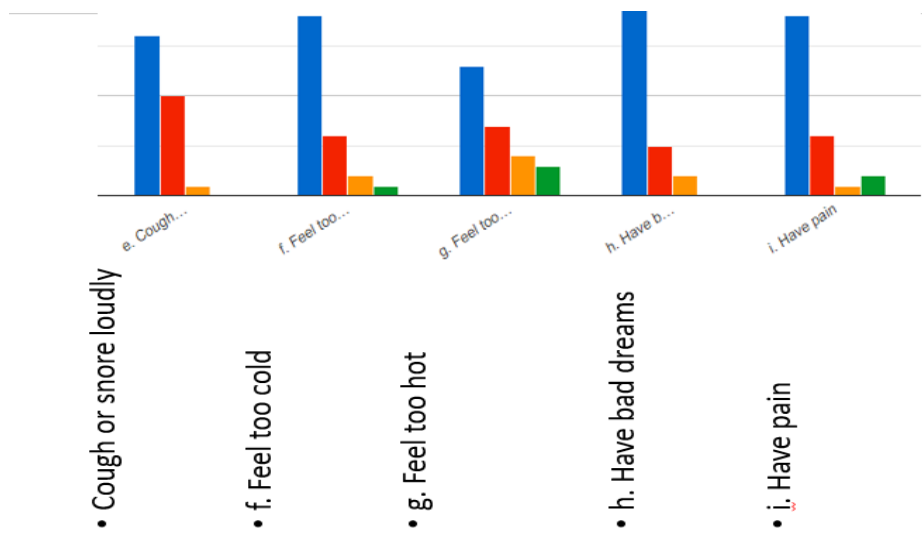


Figure 7

