Migration Letters

Volume: 21, No: S14 (2024), pp. 1820-1832

ISSN: 1741-8984 (Print) ISSN: 1741-8992 (Online)

www.migrationletters.com

Influence Of Sleep Quality On Daytime Concentration Among Nursing Students

Ghulam Fatima[1], Amina shahzadi[2] , Ayesha shahzadi[3] , Farah shahzadi[4]

Abstract

This study was conducted to find the impact and relationship between sleep quality and Daytime among nursing students. Researcher used sample size of 200 nursing college students (N=200). Their age was in range of 18 to 25 years old. It was hypothesized that there is likely to be a significant relationship between Daytime Concentration and Sleep Quality among nursing students. Secondly it was hypothesized that there is likely to be significant gender differences in terms of Daytime Concentration and Sleep Quality among nursing students. Researcher selected the quantitative research. The Cross-sectional research design was adopted. The convenient sampling technique was used. Data was collected by using Cognitive Failure Questionnaire and [1] Pittsburgh Sleep Quality Index. Pearson's product moment correlation coefficient, Cronbach alpha reliability and independent sample t-test were used to analyze the data. H1 was proved as significant relationship was found between sleep quality and Daytime Concentration. Independent sample t-testing revealed that the P value for Daytime Concentration and sleep quality was above the significance level regarding gender. Therefore, no significant gender difference was observed and H2 was rejected.

Introduction

Chapter I

Sleep is a fundamental biological need that plays an essential role in maintaining physical health, emotional stability, and cognitive performance. Despite this, many students, especially nursing students, tend to overlook the importance of consistent and restorative sleep. Nursing programs are known for demanding schedules, long study hours, clinical duties, early morning classes, and unpredictable routines. These pressures often interfere with students' ability to maintain healthy sleep patterns. As a result, sleep disturbances have become increasingly common among students enrolled in nursing and other health-related disciplines.

When sleep becomes interrupted, shortened, or irregular, it does not only cause fatigue; it also affects several key cognitive processes such as attention, concentration, memory, and decision-making. These functions are essential for nursing students who are required to learn complex medical concepts, perform hands-on skills, and participate in real clinical environments where alertness is necessary for patient safety. A tired mind struggles to focus, process information, solve problems, or remain attentive during lectures and clinical rotations. Therefore, the quality of sleep a nursing student receives can directly influence daytime functioning and academic success.

Sleep quality is not limited to the number of hours a person sleeps. It also includes how

[1]principal KIMS Lahore ghulamfatima460@gmail.com
[2]Nursing officer Punjab Institute of neurosciences nooabid20@gmail.com
[3]Nursing officer Lahore general Hospital lahore ayesha07252@gmail.com
[4]Nursing officer DHQ hospital farahshahzadi188@gmail.com

uninterrupted the sleep cycle is, how rested the person feels upon waking, and how effectively the body moves through necessary sleep stages. Poor sleep quality, even with adequate hours, can lead to reduced concentration, lower motivation, slower reaction time, and emotional instability. For nursing students, who regularly face emotional and physical stress, high academic pressure, and clinical responsibilities, these challenges become even more significant. Recent global research has shown that nursing students frequently experience sleep disruption at higher rates compared to students from other disciplines. This is often linked to anxiety, emotional stress from patient care, long academic schedules, and shift-based hospital duties. Many students stay up late completing assignments, preparing for examinations, or adjusting to hostel environments that may not support consistent sleep routines. Additionally, increased use of mobile devices before bedtime, irregular meal patterns, and caffeine consumption further contribute to poor sleep hygiene.

Given the demanding nature of nursing education, understanding how sleep quality affects concentration is a crucial area of exploration. Concentration is not only important for academic performance but also for clinical competence. A student who is unable to focus may struggle with practical tasks, forget important instructions, or make errors during clinical procedures. Since nursing directly involves patient care, any lapse in concentration can have serious consequences.

Background of the project:

The issue of poor sleep among students has become a growing concern both internationally and within Pakistan. Several recent studies conducted in Pakistani universities have revealed alarming statistics regarding sleep quality among undergraduate and medical students. For instance, approximately 66.5% of undergraduate students in Islamabad were reported to have poor sleep quality, and 71.5% of medical students showed similar patterns. Furthermore, around 41.5% experienced daytime sleepiness, highlighting that inadequate sleep is not just a nighttime issue but one that affects daily academic functioning.

These statistics reflect a broader problem in student populations. Sleep deprivation among nursing students is often linked to academic overload, emotional stress, hostel living conditions, and the pressure to balance study, clinical practice, and personal responsibilities. Nursing students, in particular, face additional challenges such as early morning clinical rotations, long shift hours,
night shifts during training, and emotionally demanding clinical experiences. Such conditions can disrupt natural sleep-wake cycles and lead to chronic sleep deprivation.

Internationally, the problem is similar. Research from various countries shows that nursing students frequently experience higher levels of sleep disturbances compared to other students. High stress levels, emotional exhaustion, irregular schedules, and exposure to patient suffering can contribute to insomnia, poor sleep continuity, and reduced sleep quality. Some studies also suggest that nursing students may experience psychological stress, such as anxiety or depression, due to academic pressure, which directly affects their sleep.

Poor sleep has a clear impact on concentration, memory, and alertness, which are skills that nursing students depend on for learning theoretical content and performing clinical tasks safely. When students are tired, their ability to focus decreases, which can affect their academic performance and confidence during clinical practice. Because of these concerns, it is important to examine how sleep quality may influence daytime concentration in nursing students.

1.1. Variable I: Daytime Concentration

Daytime concentration means being alert, awake, and active during the day, which enables students to comprehend the topics taught in the lectures as well as performing the clinical

practice. Distracted students may show poor academic results and difficulties in accomplishing the tasks provided by instructors (Hershner & Chervin, 2014).

The problem of sleep deprivation results in excessive daytime sleepiness, which is very common among university students. It is worth noting that according to some researches, up to 44% of nursing students experienced at least one of the poor sleep symptoms (Ibrahim et al., 2024). The authors Orzech et al. (2011) found out that increased sleepiness affects the concentration and attention of the student, which negatively influences the process of memorizing and recalling information. According to Asghari et al. (2020), poor sleep, numerous short-term sleeps, and irregular sleeping routines interfere with the process of learning, academic progress, and neurobehavioral processes. Hence, excessive daytime sleepiness may cause significant problems in terms of both academic achievements and patients' safety among those students who study nursing because this profession requires high attention and accuracy.

1.2 Variable II: Sleep Quality

Sleep quality refers to the degree to which an individual's sleep is restorative, refreshing, and free from disruptions or disturbances. Among different types of sleep quality, Subjective Sleep Quality is an individual's personal perception of his/her sleep quality, which is influenced by sleep disorders, lifestyle habits, and environmental factors (Ohayon et al., 2017). While Objective Sleep Quality is measurable aspects of sleep quality, like sleep duration, latency, and efficiency, which can be assessed (Ancoli-Israel et al., 2003).

The quality of sleep refers to the quality of sleep that one enjoys at night and includes various factors such as sleep latency, sleep arousal, total hours of sleep, and recovery from sleep. Sleep quality recharges the body’s energy level and enhances cognitive skills; otherwise, it leads to fatigue, irritability, and forgetfulness (Buysse et al., 1989).

The issue of inadequate sleep among university students is increasingly gaining prominence both globally and locally in Pakistan. Another comparative analysis was done in various colleges in Rawalpindi and Islamabad, which revealed that 67.3% of the students pursuing medicine were poor sleepers, and they exhibited relatively high levels of sleep quality among female students than male students (Shahid et al., 2018). The risk factors of disruption in sleeping habits for nursing students include academic pressure, emotional stress, living in hostels, morning clinical training sessions, and work overload. In terms of the impact of poor sleep quality on nursing students across the globe, their behavior changes, dietary modifications, aggression, and other disorders can be linked to sleep cycle disturbances (Juarez-Vela et al., 2020).

Chapter II

2.1 Objectives of the Study

1. To assess the relationship between overall sleep quality and daytime concentration among nursing students.
2. To examine if there is gender differences in daytime concentration and sleep quality among nursing students.

2.2 Hypotheses

H1= There will be a significant relationship between sleep quality and daytime concentration among nursing students.

H2= There is likely to be a significant gender difference while exhibiting sleep quality and daytime concentration among nursing students.

Chapter III

Methodology

3.1 Nature of Research

The present research is quantitative in nature, focusing on measuring the relationship between sleep quality and daytime concentration among nursing students using standardized instruments.

3.2 Research Design

A cross-sectional correlational research design was employed to explore the association between sleep quality and daytime concentration. This design was appropriate because it allowed the examination of relationships between variables at a single point in time without manipulating them.

3.3 Research/Sampling Strategy

Participants were recruited from two nursing colleges adopting convenient sampling technique. Students from 1st year to 4th year were invited. This approach is appropriate for accessing nursing students who are readily available and willing to participate during the data collection period. The total sample size was 200 nursing students, with 100 participants selected from each college.

3.4 Sample

The study included 200 nursing students aged 18-25 years who were enrolled in undergraduate nursing programs in two nursing colleges in Lahore.

Inclusion Criteria

- Nursing students enrolled in undergraduate programs were included in the study.
- Students who were willing to participate and provide informed consent were included.

Exclusion Criteria

- Students diagnosed with sleep disorders or chronic illnesses were excluded from the study.
- Students taking medications that might affect sleep or cognitive functioning were excluded.

3.5 Assessment Measures

3.5.1 Demographic Information Questions:

Participants provided information on age, gender, year of study, sleep habits (bedtime, wake time, sleep latency, and naps), academic workload (hours per week), and lifestyle factors such as caffeine use, physical activity, and smoking.

Table 3.1. Demographic Table

Variables	Demographic Characteristics	f (%)	M(SD)
Age	18-28 years		21.43 (2.147)
Gender	Male Female	100 (50%) 100 (50%)	
College	Shalimar KEMU	100 (50%) 100 (50%)	
Year of Study	1st 2nd 3rd 4th	25 (12.5%)	

		40 (20%) 60 (30%) 75 (37.5%)	
Avg. Bed Time			00:12 (1.02)
Avg. Wakeup Time			07:02 (1.15)
Latency Time (minutes)			44.24 (16.03)
Daytime Naps	Yes	46 (23%)	
Academic Workload (Hours)			
Caffeine Usage	Yes No	159 (79.5%) 41 (20.5%)	
Physical Activity	Yes No	177 (88.5%) 23 (11.5%)	
Smoking	Yes No	94 (47%) 106 (53%)	
	No	154 (77%)	
		3.845(1.517)	

Frequency, percentages of demographic characteristics of the study (N=200). f= frequency, %= percentage Demographic data revealed that the average age of participants was 21.43 years. 37.5% of participants (the most) were final year students. their average study time was 3.8 hours. Their average bed time was 12am and mean wakeup time was 7am.

3.5.2 Scale II: Pittsburgh Sleep Quality Index (2006)

The Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989) assesses sleep quality over the prior month across seven components using 19 self-report items.

Component scores are summed to yield a global score ranging from 0 to 21, where higher scores indicate poorer sleep quality. The PSQI includes items on subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. The instrument has demonstrated good reliability, with Cronbach's alpha approximately .83, and is widely used in student populations (Grandner et al., 2021). Scoring will follow the original

PSQI scoring algorithm.

3.5.3 Scale III: Cognitive Failure Questionnaire (1983)

The Cognitive Failures Questionnaire (CFQ; Broadbent et al., 1982) contains 25 items measuring lapses in perception, memory, and motor functioning in everyday life. Items are rated on a 5-point Likert scale ranging from 0 = Never to 4 = Very often. Total scores range from 0 to 100, with higher scores indicating more frequent cognitive failures. The CFQ demonstrates acceptable reliability, with reported Cronbach's alpha values ranging from .78 to .85, and is validated for assessing daytime cognitive performance among students (Cheung et al., 2021)

3.6 Procedure:

Participants were approached through academic coordinators. Data collection was conducted both online and in person, according to institutional permission and participant availability. The purpose of the study was explained briefly, and participants were assured that participation was voluntary and confidential. After informed consent was obtained, participants completed the demographic information form, followed by the PSQI and CFQ. Completion of the questionnaires took approximately 20-25 minutes. After completing the survey, participants were thanked for their time and debriefed regarding the purpose of the study.

3.7 Ethical Considerations

- Formal permission was obtained from the original authors of the scales prior to their use in the study.
- Informed consent was secured from all participants before data collection began.
- Participants were briefed on the voluntary nature of their involvement and were informed that they could withdraw at any stage without facing any negative consequences.
- Anonymity was preserved throughout the study, as no identifying information was collected.
- All data remained strictly confidential and was used solely for academic purposes.
- Data was stored securely in password-protected digital files, accessible only to the researcher and group leader, and was permanently deleted upon completion of the research project.
- All procedures adhered to established ethical principles governing academic research.

Chapter IV

Results

Table 4.1 Descriptive Table

Descriptive statistics of Sleep Quality and Daytime Concentration (N=200)

	N	Minimum	Maximum	Mean	Std. Deviation
PSQI	200	5	16	10.01	1.995
CFQ	200	31	69	46.60	7.038

Note: M= Mean, SD= Standard Deviation, min=minimum, max=maximum

Descriptive analysis was performed to get the mean, standard deviation for Daytime Concentration and Sleep Quality. (Table 4.1). Psychometric properties of the scales were determined which are presented in table 4.3.

Table 4.2 Reliability Table

Reliability score of scales (N=200)

Scales	k	a
CFQ	25	. 720
PSQI	19	.854

Note: k= number of items, a= Cronbach alpha reliability

Cronbach's Alpha measures internal consistency between items of the scale. Reliability of both scales was high.

It was hypothesized that there is likely to be a relationship between Daytime Concentration and sleep quality. Pearson product moment correlation was used to investigate the relationship between these two variables (table 4.4).

Table 4.3 Correlation Table

Relationship between Sleep Quality and Daytime Concentration (N=200)

Variable	1.	2.	M	SD
1. Cognitive Failure Questionnaire	-	.668**	46.60	7.038
2. Sleep Quality		-	10.01	1.995

Note: **p<0.01, correlation is significant at 0.01 level

As per paragraph 3.5.2, it has been understood that the more the score on "Pittsburgh Sleep Quality Index", the worst the sleep quality will be. The result also provided the positive significant relationship. The correlation coefficient is .668** as shown in table 4.3 above. This shows that there is moderate positive relationship between cognitive failure and worst sleep quality. The higher the scores on PSQI the worst the sleep quality will be. Moreover, the more the score on cognitive failure Questionnaire the worst the daytime concentration will be. Ultimately it can be said that there is as the worst sleep quality increases, the cognitive failure also increases. Which tend to decrease the daytime concentration.

Table 4.4 Independent Sample t-Testing Table

Independent sample t-test to compare male and female (N=200)

Variables	males (n=100)	female (n=100)			95 % CI	
	M (SD)	M (SD)	T	P	LL	UL
CFQ	46.72(6.82)	46.48(7.28)	.241	.810	-1.728	2.208
PSQI	9.94(1.83)	10.08(2.154)	1.242	.621	-.697	.417

Note p<.001, M= mean, SD= standard deviation, LL= lower limit, UL= upper limit,

The analysis revealed that the p-values for Daytime Concentration and Sleep Quality were

.810 and .621, respectively. Since both values exceed the suggested significance level of 0.05, no statistically significant gender difference was found in either variable. This absence of significant difference may be attributed to several factors, including self-reporting bias, cultural influences, or other underlying variables that were not accounted for in the study.

Chapter V

Discussion

“There will be a significant relationship between sleep quality and daytime concentration among nursing students," was clearly supported by the results obtained in this study. In fact, the results show a significant positive relationship between cognitive failure and acute sleep quality, which shows that there is ultimately significant negative relationship between Daytime Concentration and better sleep quality. These findings are in line with previous research, and therefore, there is more evidence to the validity of the hypothesis.

Results are similar to previous research reports. Study conducted Lund et al. (2010) studied university students and found that those who reported poor sleep quality (high score on PSQI) scored lower on measures of sustained attention and showed higher daytime sleepiness (high score on CFI). Current study is in line with previous study.

Zhang et al. (2018) found that students with irregular sleep-wake times had significantly higher daytime sleepiness and poorer scores on attention tasks compared to peers with regular sleep schedules. Current study is line with previously explained study.

Silva et al. (2020) studied a sample of nursing students and found a strong association between uneven sleep and difficulties in maintaining attention during clinical rounds. Current study is also in line with previously explained study.

According to Pilcher & Huffcutt (1996), results discovered that lower quality of sleep was significantly related to lower cognitive performance and attention, and therefore, as sleep quality decreased, levels of concentration of participants dropped drastically.

According to Tsai & Li (2004), gender was not a significant moderator of the relationship between sleep quality and daytime performance as men and women had similar levels of cognitive concentration irrespective of their sleep quality scores.

According to Buysse et al. (1989), although sleep quality varied depending on demographics, there was no significant relationship between gender and sleep quality scores or between sleep quality scores and concentration/cognitive performance.

According to Van Dongen et al. (2003), participants who had short sleep duration performed significantly worse on measures of sustained attention/concentration in comparison to participants having adequate sleep duration, and thereby sleep duration significantly influences concentration ability during the day.

According to Goel et al. (2009), individuals with sleep deprivation had significantly lower sleep quality scores and lower concentration ability in comparison to individuals having recommended sleep durations. This may be due to various factors explained later.

5.1 Conclusions

The aim of this study was to examine the relationship between Daytime Concentration and sleep quality. Daytime concentration refers to the ability to stay alert, attentive, and mentally active during the day. On the other hand, Sleep quality refers to how well and restfully a person sleeps at night.

The results showed that Daytime Concentration and healthy sleep quality are negatively correlated to each other. As the scoring on worst sleep quality also increases, Daytime Concentration decreases.

In this project, the H1 was fully confirmed, there is relationship is present between Daytime Concentration and worst sleep quality. H2 could not be confirmed because no significant gender was observed while exhibiting Daytime Concentration and sleep quality.

Some of the contributing factors could be geographical interventions which can cast an impact on Daytime Concentration and sleep quality of population. Moreover, personal biasness, standard deviation, cultural factors may also contribute to non-significance of gender difference.

There is significant relationship between two variables i.e. Sleep Quality and Daytime Concentration as the P value is 0.01. The correlation coefficient is .668** as shown in table 4.3 above. This shows that there is negative relationship between Daytime Concentration and worst sleep quality. It ultimately explains that there is overall positive relationship between Daytime Concentration and hearty sleep quality.

5.2 Strengths and Limitations

This research had pointed out several strengths as well as some limitations.

Strengths:

- The strength was acceptable psychometric properties of CFQ and PSQI.
- Researcher experienced field study about how Daytime Concentration cast an impact on sleep quality.
- Nursing students represent a highly appropriate population for examining sleep and concentration, given their demanding academic schedules and clinical rotations, which
  strengthens the practical relevance of the findings.

Limitations:

- It was difficult to conduct a physical survey due to time and budget constraints. Therefore, social media platforms, emails and Google forms were used for online data collection.
- Both the PSQI and CFQ rely on participants' subjective perceptions, which may have

introduced recall bias or socially desirable responding, potentially affecting the accuracy of the findings

- Longitudinal study could not be done due to time constraints.

5.3 Implications and suggestions

- The findings of the present research highlight the importance of sleep quality in affecting daytime concentration among students.
- It is recommended that further research to focus on developing programs that will increase sense of sleep quality in students which in return improves the daytime concentration.
- Cross cultural studies on the said topic should be done for comparison.
- Future research should adapt the qualitative method to get more obvious results concerning the improvement of sleep quality.

References

Åkerstedt, T., Fredlund, P., Gillberg, M., & Jansson, B. (2007). A prospective study of fatal occupational accidents — relationship to sleeping difficulties and occupational factors. Journal of Sleep Research, 11(1), 69–71.

Alhola, P., & Polo-Kantola, P. (2007). Sleep deprivation: Impact on cognitive performance. Neuropsychiatric Disease and Treatment, 3(5), 553–567.

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. Psychiatry Research, 28(2), 193–213.

Broadbent, D. E., Cooper, P. F., FitzGerald, P., & Parkes, K. R. (1982). The Cognitive Failures Questionnaire (CFQ) and its correlates. British Journal of Clinical Psychology, 21(1), 1–16.

Cheng, P., & Flicker, L. (2008). Sleep quality and cognitive functioning across gender. Journal of Sleep Medicine, 5(3), 210–217.

Dewald, J. F., Meijer, A. M., Oort, F. J., Kerkhof, G. A., & Bögels, S. M. (2010). The influence of sleep quality, sleep duration, and sleepiness on school performance in children and adolescents: A meta-analytic review. Sleep Medicine Reviews, 14(3), 179–189.

Goel, N., Rao, H., Durmer, J. S., & Dinges, D. F. (2009). Neurocognitive consequences of sleep deprivation. Seminars in Neurology, 29(4), 320–339.

Lim, J., & Dinges, D. F. (2010). A meta-analysis of the impact of short-term sleep deprivation on cognitive variables. Psychological Bulletin, 136(3), 375–389.

Lo, J. C., Ong, J. L., Leong, R. L., Gooley, J. J., & Chee, M. W. (2016). Cognitive performance, sleepiness, and mood in partially sleep deprived adolescents: The need for sleep study.

Sleep, 39(3), 687–698.

Pilcher, J. J., & Huffcutt, A. J. (1996). Effects of sleep deprivation on performance: A meta- analysis.

Sleep, 19(4), 318–326.

Tsai, L. L., & Li, S. P. (2004). Sleep patterns in college students: Gender and grade differences. Journal of Psychosomatic Research, 56(2), 231–237.

Van Dongen, H. P., Maislin, G., Mullington, J. M., & Dinges, D. F. (2003). The cumulative cost of additional wakefulness: Dose-response effects on neurobehavioral functions and sleep physiology from chronic sleep restriction and total sleep deprivation. Sleep, 26(2), 117–126.

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. Psychiatry Research, 28(2), 193–213. https://doi.org/10.1016/0165-1781(89)90047-4

Goel, N., Rao, H., Durmer, J. S., & Dinges, D. F. (2009). Neurocognitive consequences of sleep deprivation. Seminars in Neurology, 29(4), 320–339. https://doi.org/10.1055/s-0029- 1237117 Pilcher, J. J., & Huffcutt, A. I. (1996). Effects of sleep deprivation on performance: A meta- analysis.

Sleep, 19(4), 318–326. https://doi.org/10.1093/sleep/19.4.318

Tsai, L. L., & Li, S. P. (2004). Sleep patterns in college students: Gender and grade differences. Journal of Psychosomatic Research, 56(2), 231–237. https://doi.org/10.1016/S0022-3999(03)00507-5

Van Dongen, H. P. A., Maislin, G., Mullington, J. M., & Dinges, D. F. (2003). The cumulative cost of additional wakefulness: Dose-response effects on neurobehavioral functions and sleep physiology from chronic sleep restriction and total sleep deprivation. Sleep, 26(2), 117–126. https://doi.org/10.1093/sleep/26.2.117

Appendices

Appendix A consent Form

Please read the following information before proceeding to the next page.

We, Areeba Naveed, Laiba Jahangir, Amina Shahzadi and Mahnoor Afzal are conducting research on Influence of Sleep Quality on Daytime Concentration among Nursing Students from Virtual University of Pakistan. The purpose of this research is to assess certain things you experience in your daily life. In this research you were asked to fill some Questionnaire s which will take approximately 20- 25 minutes. You're Rights:

- Your participation in this research was voluntary.
- There are no expected risks for participating in this study, except for the mild frustration associated with answering the questions.
- Any information taken from you was kept confidential. Your research record and responses was used only for research purpose and publication.
- You can withdraw from this research anytime. Refusal to participate or withdrawal will not affect you and will not involve any penalty to you.
- You also have the opportunity to ask questions regarding Questionnaire and may clarify any uncertainty.

Your cooperation will help to enhance the existing knowledge in this research and your participation was acknowledged.

- I am willing to participate in this research.

---------- ----------

Signature of Respondent
Signature of Researcher

Appendix B

SCALE – I:
COGNITIVE FAILURE QUESTIONNAIRE (2006) (CFQ)

Sr. No.	Items
1	Do you fail to notice signposts on the road?
2	Do you fail to notice people bumping into you?
3	Do you fail to notice a name on a letter you are reading?
4	Do you find you forget why you went from one part of the house to the other?
5	Do you fail to notice something you are looking for even when it is in front of you?
6	Do you forget appointments?
7	Do you fail to notice people's facial expressions?
8	Do you fail to hear someone telling you something even though they are looking at you?
9	Do you start doing one thing and then find yourself doing something different without remembering why?
10	Do you drop things?
11	Do you find you forget where you put familiar objects, such as keys?
12	Do you read something and find you have not understood it and have to re-read?
13	Do you find you cannot keep your mind on a single task?
14	Do you find you forget what you were about to say?
15	Do you make slips of the tongue?
16	Do you miss appointments made for a particular day?

17	Do you find you are unable to remember whether you have done something, such as switched off the stove?
18	Do you find you accidentally do one action when you intended another, such as putting salt into the cupboard instead of sugar?
19	Do you find you miss a turn when driving or walking because your mind was elsewhere?
20	Do you find you forget simple instructions?
21	Do you find you make blunders because of absent-mindedness?
22	Do you find you forget names of people you know well?
23	Do you find you forget to run errands?
24	Do you go into a room and forget why you went in?
25	Do you find you fail to pay attention to what you are doing?

Appendix CScale II
PITTSBURGH SLEEP QUALITY INDEX

(PSQI)

Sr. No.	Items
1	When have you usually gone to bed? (time)
2	How long (in minutes) has it taken you to fall asleep each night? (numeric)
3	When have you usually gotten up in the morning? (time)
4	How many hours of actual sleep did you get at night? (numeric)
5	During the past month, how often have you had trouble sleeping because you cannot get to sleep within 30 minutes? (0-3)
6	During the past month, how often have you had trouble sleeping because you wake up in the middle of the night or early morning? (0-3)
7	During the past month, how often have you had trouble sleeping because you have to get up to use the bathroom? (0-3)
8	During the past month, how often have you had trouble sleeping because you cannot breathe comfortably? (0-3)
9	During the past month, how often have you had trouble sleeping because you cough or snore loudly? (0-3)
10	During the past month, how often have you had trouble sleeping because you feel too cold? (0-3)
11	During the past month, how often have you had trouble sleeping because you feel too hot? (0-3)
12	During the past month, how often have you had trouble sleeping because of bad dreams? (0-3)
13	During the past month, how often have you had trouble sleeping because of pain? (0-3)
14	During the past month, how often have you had trouble sleeping because of other reasons? Please describe. (0-3)
15	During the past month, how often have you taken medicine, prescribed or over the counter, to help you sleep? (0-3)
16	During the past month, how often have you had trouble staying awake while driving, eating meals, or during social activity? (0-3)
17	During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done? (0-3)
18	During the past month, how would you rate your overall sleep quality? (0 = very good to 3 = very bad)
19	Optional scoring items derived from responses above to calculate component scores.

Appendix D

Demographic Information Question for Survey

S. No.	Variable	Categories / Response Type
1	Age	Years (continuous)
2	Gender	Male / Female
3	Year of Study	1st Year / 2nd Year / 3rd Year / 4th Year
4	Bedtime	Time (HH:MM)
5	Wake Time	Time (HH:MM)
6	Sleep Latency	Minutes taken to fall asleep
7	Daytime Naps	Yes / No; if yes, duration per day
8	Academic Workload	Average study hours per week
9	Caffeine Use	Yes / No; frequency per day/week
10	Physical Activity	Yes / No; minutes per week
11	Smoking	Yes / No
12	Bedtime	Time (HH:MM)