ISSN: 2976- 1077 (Online)

Multi-disciplinary double-blind peer review journal

http://doi.org/10.58196/jhswn/v14.22620254

Sleep Pattern and Academic Performance among Nursing Students at Nepal Police Hospital School of Health Sciences

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Abstract

Publishing Process.
Received on: April.24, 2025
Finalized to publish: June 25, 2025
Open Access 4.0
Published date: 30 June 2025

Introduction: The cognitive performance of an individual is determined by sleep duration. Adequate sleep is required for general alertness and attention. Fewer than seven hours' sleep per night causes slowed cognitive processing. Students who do not sleep or wake up at consistent times daily are more likely to have lower grades. Hence, this study is to find out the relationship between sleep patterns and academic performance in nursing students of Nepal Police Hospital School of Health Sciences.

Methods: This was a cross-sectional analytical study conducted in the Nepal Police Hospital School of Health Sciences, Maharajgunj, Kathmandu, from August 2024 to November 2024. A total of 80 students participated in the study as that is the maximum sample size available at the school of nursing. A self-structured questionnaire was used to collect the data which the researcher had already used.

Results: More than half (68.8%) of students go to bed later than the usual time around the final examination, whereas only 1.3% never go to bed around the final exam. The majority (86.3%) of students wake up earlier than usual in the morning every time around the final exam, whereas fewer students (3.8%) never or rarely wake up earlier than their usual time in the morning before the final exam. Similarly, nearly half of the students (40%) wake up earlier than usual around the final examination, and 45% of the students sleep for about 4 hours during the night before final exams, whereas fewer (3.8%) of the students sleep for about 7 hours in the night before final

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exams. There was a significant association between performance in the final exam and typical wake up time *(p=0.036),* duration of sleep at night during normal school days *(p < 0.001),* earlier wakeup than usual time in the morning *(p < 0.001)* and duration of sleep during the night before final exam *(p < 0.001*).

Conclusion: The score obtained in the final exam was significantly associated with the duration of sleep and wake-up time during normal school days, as well as in the morning before the final exam. So, this study concludes that a short sleep pattern and bad sleep habits are associated with a higher risk of poor academic performance.

Key words: Academic performance; Final exam; Sleep pattern

Declaration: There is no conflict of interest.

INTRODUCTION

The cerebral cortex, particularly the prefrontal cortex, executes higher mental functions such as memory, logical reasoning, creativity, and language.[1] The cognitive performance of an individual is determined by sleep duration. Adequate sleep is required for general alertness and attention. Fewer than seven hours' sleep per night causes slowed cognitive processing.[2] Lack of adequate sleep is also associated with cardiovascular diseases such as angina, heart failure, stroke, and endocrine disorders like diabetes mellitus. On the other hand, sleep deprivation and depression go simultaneously since the loss of sleep triggers depression, while when one is depressed may be unlikely to fall asleep.[3] Aside from those students who do not sleep or wake up at consistent times daily were more likely to have lower grades. Differences between regular and irregular students include significant differences in grade point averages.[4] Most often, cognitive ability becomes insufficient when students sleep less than seven hours a day.[5] Teenagers and young adults who stay up late but are limited by rigid morning schedules, sleep inconsistency tends to be highest. In college, adolescents who experience more significant sleep variability perform worse.[6]

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Among biological factors determining sleep, there are "chronotypes" and sleep patterns. The first term refers to the personal preferences of scheduling the sleep-wake cycle, emphasizing three basic chronotypes: morning (early risers), evening (night owls), and those who are intermediate, defined as those who do not have clear preferences towards any of the extreme schedules for the fulfillment of their activities.[7] The sleep pattern refers to the personal schedule of bedtime and wake-up time. In this sense, a circadian rhythm is a natural, internal process, driven by a circadian clock that repeats roughly every 24 hours and regulates the sleep-wake cycle.[8,9] Mental alertness and quality of study are associated with enough duration of sleep and sound sleep. If the duration of sleep is less or altered due to any reason, it might directly affect the academic performance of the students. Similarly, sleep patterns such as late going bed or rising from the bed might affect the quality of study, and ultimately, academic performance. So, this study will figure out what would be the relationship of sleep patterns and duration of sleep with academic performance.

METHODS AND MATERIALS

The cross-sectional analytical study design was adopted for this research, and the study was conducted in the Nepal Police Hospital, School of Health Sciences, Maharajgunj, Kathmandu, Nepal. The population of the study was the first and second batch of proficiency certificate level nursing students of Nepal Police Hospital, School of Health Sciences, Maharajgunj, Kathmandu, Nepal. A total of 80 students participated in the study because this was the maximum number available at the research site. A convenient sampling design was applied to collect the data in this study. The data was collected from each respondent by providing a self-structured questionnaire, which consists of two groups of questions related to socio-demographic variables as well as related to sleep patterns.

Students who gave written informed consent were included in the study. Students with chronic physical or mental illness and those who were using sedatives were excluded from the study. Data collection was started in the classroom of Nepal Police Hospital School of Health Sciences, Kathmandu, after getting institutional ethical clearance (07/2081). The objectives of the study and

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data collection process were explained to the participants, and written informed consent was taken from them before data collection. The data was coded and entered into the SPSS window for analysis. Data was analyzed using descriptive statistics to identify the patient's socio-demographic, sleep pattern, and academic performance. The chi-square test was used to find out the associations between selected variables. All the statistically significant were set at p-value <0.05.

RESULTS

The study showed that there is no significant association between score in the final exam and age of the respondents and their ethnicity *(p=0.903*) and (*p=0.084*) respectively. But there was significant association between marks obtained by students in final exam and typical wake time *(p=0.036*), with hour of sleep at night during normal school days *(p = 0.001),* with earlier wakeup than usual in morning before final exam *(p = 0.001*) and with duration of sleep during night before final exam (*p = 0.001*).

Table 1.

Respondents' Socio-demographic Characteristics (n= 80)

Sociodemographic Variables	**Number**	**Percentage**
Age in Years		
≤ 18	54	67.5
Above 18	26	32.5
Median age (IQR)= 18 years, (18-30) years, (Min = 15, Max = 30)		
Ethnicity		
Brahmin	10	12.5
Chhetri	26	32.5
Janajati	32	40.0
Dalit	12	15.0

IQR- Interquartile Range Min- Minimum Max- Maximum

The table above shows that the maximum (40%) of the students are Janajati and the minimum (15%) are Dalit.

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Table 2. Respondents' Scores on Sleep during Weekdays of a School Week (n= 80)

Variables	Number	Percentage
Time to bed		
Before 11 PM	20	25.0
11 PM -12 PM	50	62.5
12 MN- 1AM	10	12.5
Wake Time		
Wake up before 6 AM	48	60.0
Wake up at 6 to 7 AM	27	33.8
Wake up at 7 to 8 AM	5	6.3
Hour of Sleep (hours)		
4	4	5.0
5	15	18.8
6	40	50.0
7	16	20.0
8	5	6.3
Need for Naps		
Taking Naps	61	76.3
Not Taking Naps	19	23.8

The table above shows that the majority of the students go to bed at 11 PM to 12 MN, whereas a minimum (12.5%) goes to bed at 12 MN to 1 am. Similarly, the maximum (60%) of the students woke up before 6 AM, and the minimum (6.3%) woke up at 7 to 8 AM. On the other hand, half of the students (50%) sleep for 6 hours a day at night during normal school days, and only 5% of the students sleep for 8 hours a day during normal school days. Regarding the need for naps, more than one-third of the students needed naps.

Table 3. Respondents' Scores on Sleep Around Final Examination (n= 80)

Variables	No.	Percentage
Later to Bed		
Never or almost never	1	1.3
Occasionally	24	30.0
Every time	55	68.8
Time to Bed		
Never or almost never	3	3.8
Occasionally	8	10.0
Every time	69	86.3
Waking-up Earlier		
Before 11 pm	8	10.0

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11- 12 MN	19	23.8
12 MN- 1 am	32	40.0
After 1 am	21	26.3
Hour of Sleep (Hr.)		
For 4 hours	36	45.0
For 5 hours	25	31.3
For 6 hours	16	20.0
For 7 hours	3	3.8

The table above shows that more than half (68.8%) of students go to bed later than usual around the final examination, whereas only 1.3% never or rarely go to bed late around the final exam. A maximum (86.3%) of students wake up earlier than usual in the morning every time around the final exam, whereas a minimum (3.8%) never or rarely wake up earlier than usual in the morning before the final exam. Similarly, nearly half of the students (40%) wake up earlier than usual around final examinations, and 45% of the students sleep for 4 hours during the night before final exams, whereas a minimum (3.8%) of the students sleep for 7 hours in the night before final exams.

Table 4. Respondents' Score for Final Percentage (n= 80)

Final Percent	**No.**	**Percentage**
80% and above	26	32.5
65% to above 80 %	44	55.0
50% to below 65%	8	10.0
Below 50%	2	2.5

The table above shows that more than half (55%) of students were able to secure 65 to 80% whereas the minimum (2.5%) was below 50%.

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ISSN: 2976- 1077 (Online)

Multi-disciplinary double-blind peer review journal

http://doi.org/10.58196/jhswn/v14.22620254

Table 5. Association between Respondents' Final Percentage and Selected Demographic Variables (n= 80)

Variables	Final Percentage				$\chi 2$	*p*- value
	80% and above No. (%)	65% to above 80 % No. (%)	50% to below 65% No. (%)	Below 50% No. (%)		
Age (in years)						
≤ 18	18	29	6	1	0.571	0.903
Above 18	8	15	2	1		
Ethnicity						
Brahmin	1	7	2	0	15.274	0.084
Chhetri	6	13	6	1		
Janajati	13	18	0	1		
Dalit	6	6	0	0		

The table above shows that there is no significant association between the final percentage and the age of the respondents and their ethnicity, *p*=0.903 and *p*=0.084, respectively.

Table 6. Association between Respondents' Final Percentage and Selected Variables (n=80)

Variables	**Final Percentage**				$\chi 2$	***p*- value**
	80% and above No. (%)	**65% to above 80 % No. (%)**	**50% to below 65% No. (%)**	**Below 50% No. (%)**		
Sleep on weekdays (Normal School Week)						
Before 11 PM	8	10	1	1	3.856	0.696
11PM to 12 MN	14	30	5	1		
12 MN to 1 AM	4	4	2	0		
Typical Wake Time (Normal School Days)						
Before 3 AM	1	0	0	0	22.115	**0.036**
4 to 5 AM	3	1	0	1		
5 to 6 AM	10	27	4	1		
6 to 7 AM	9	16	2	0		
7 to 8 AM	3	0	2	0		
Hours of Sleep at Night (Normal School Days) (In hours)						
4	0	1	2	1	36.184	**0.000**
5	4	5	5	1		
6	12	27	1	0		
7	7	9	0	0		
8	3	2	0	0		
Later Bed Time than Usual Night (Before Final Exam)						
Never or almost never	0	1	0	0	3.226	0.780
Occasionally	10	10	3	1		
Every time	16	33	5	1		
Earlier Wakeup than Usual in Moring (Before Final Exam)						

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Never or almost never	1	2	0	0	21.865	**0.001**
Occasionally	2	2	2	2		
Every time	23	40	6	0		
Hours of Sleep During Night (Before Final Exam) (In hours)						
4	0	27	7	2	41.198	**0.000**
5	11	13	1	0		
6	12	4	0	0		
7	3	0	0	0		

The table above shows that there is significant association between final percentage and typical wake time *($p < 0.036$),* with hour of sleep at night during normal school days *($p < 0.001$),* with earlier wakeup than usual in morning before final exam *($p < 0.001$)* and with hours of sleep during night before final exam *($p <0.001$)*.

DISCUSSION

The majority of the students who obtained high scores in the exam used to go to bed between 11 pm to 12 midnight during school weekdays, whereas the lowest score was obtained by the students who used to go to bed between 12 midnight to 1 am. Similarly, students who used to wake up between 5 to 6 am got the highest score in the final exam, and students who used to wake up between 7 to 8 am got the lowest score in the final exam. On the other hand, the majority of students who obtained high scores in the final exam used to sleep 6 hours at night, whereas students who slept less than 4 hours at night got the lowest scores in the final exam.

A study conducted at the Department of Nursing in the University of Almeria, Spain, in 2021 showed that a short sleep pattern and bad sleep habits were associated with a higher risk of poor academic performance.[9] This finding is quite like our findings. Half of the students (50%) used to sleep for 6 hours a day at night during normal school days, and only 5% of the students sleep for 8 hours a day during normal school days. Regarding the need for naps, more than one-third of the students required naps. A study conducted in Kuala Lumpur, Malaysia, in 2021 found that the respondents indicated having different sleep patterns in respect of wake time, bedtime or daytime naps, and sleep duration. The study also found that the respondents' academic performance, as measured by CGPA, was significantly affected by their sleep patterns.[10] It can be concluded that

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most of the students managed to have a good sleep duration, in which the total sleep duration is related to their wake time, bedtime, and daytime nap.

According to the study conducted at Texila American University in 2022, 58% of research subjects said they get quality sleep and 8.3% of participants spent less than an hour, and 8.2% of individuals spent five hours studying. They were then asked to rank what range their average grades fall into. 8.3% of participants indicated that their average grades fell within the range of 90-100%. 83.3% of participants indicated that their average grades fell within the range of 70-89%. 8.3% of participants indicated that their average grades fell within the range of 50-69%. None of the participants indicated that their average grades fell within the range of below 50%. [11]

A study conducted by M. Valic in Croatia showed that amongst the whole group of students, average bedtime and wake time during weekdays was significantly earlier compared with weekends.[12] Main findings indicate that students with high academic performance had earlier bedtimes during the weekdays and weekends, earlier wake times during weekends, and shorter sleep latency compared with low academic-performing students. Another study done by Megan L Zeek in student pharmacists showed that adequate sleep the night before an examination was positively associated with student course grades and semester GPAs.[1] Contradiction to our study, a study done in the Philippines concluded that there is no correlation between sleep and academic performance.[4]

A study done by Kana Okano concludes that overall, better quality, longer duration, and greater consistency of sleep correlated with better grades. However, there was no relation between sleep measures on the single night before a test and test performance; instead, sleep duration and quality for the month and the week before a test correlated with better grades.[5] In the present study, more than half (68.8%) of students go to bed later than usual around the final examination, whereas only 1.3% never or rarely go to bed late around the final exam. A maximum (86.3%) of students wake up earlier than usual in the morning every time around the final exam, whereas a minimum (3.8%) never or rarely wake up earlier than usual in the morning before the final exam. Similarly, nearly half of the students (40%) wake up earlier than usual around final examinations, and 45% of the students sleep for 4 hours during the night before final exams, whereas a minimum (3.8%) of the

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students sleep for 7 hours in the night before final exams. Regarding the feeling during the school week, more than half (51.3%) of students feel tired when waking up during a normal school week, and only 10% never or rarely feel tired. Nearly half (47.5%) of students feel sleepy in the daytime, and a minimum (12.5%) of students feel sleepy 3-5 days a week. During independent study days, the majority (36.3%) of students feel sleepy once or twice a week, whereas a minimum (15%) feel sleepy 3-5 days a week. More than half (53.8%) of students feel sleepy during class time, whereas a minimum (7.5%) of students feel sleepy almost every day during class time of a normal school week.

The study showed that there was no significant association between final marks obtained and the age of the respondents and their ethnicity *(p=0.903)* and *(p=0.084)* respectively. There was significant association between final marks percentage and typical wake time *(p=0.036),* with duration of sleep at night during normal school days *(p = 0.001*), with earlier wakeup than usual in morning before final exam *(p =0.001)* and with duration of sleep during night before final exam *(p = 0.001).* The limitation of the study is that it was conducted in a single center, so the results of the study might not be generalized.

CONCLUSION

This study concludes that the academic performance of students is affected by their sleep patterns. The score obtained in the final exam was significantly associated with duration of sleep and wake-up time during normal school days, as well as in the morning just before the final exam. However, the study showed no significant association between the score in the final exam and the age of the respondents and their ethnicity. So, this study shows that a short sleep pattern and bad sleep habits are associated with a higher risk of poor academic performance.

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ISSN: 2976- 1077 (Online)

http://doi.org/10.58196/jhswn/v14.22620254

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REFERENCES

1. L. Zeek, Matthew J. Savoie, Matthew Song. Sleep Duration and Academic Performance Among Student Pharmacists. American Journal of Pharmaceutical Education 2015; 79 (5) Article 63.
2. Alhola P, Polo-Kantola P. Sleep deprivation: impact on cognitive performance. Neuropsychiatr Dis Treat. 2007;3(5):553-567.
3. Peri, C. (2014, February 13). 10 Things to Hate About Sleep Loss. Retrieved from WebMD: https://www.webmd.com/sleep-disorders/features/10-results-sleep-loss#1 (Accessed on November 2020)
4. Knight, V. (2017, June 13). Study links college students' grades to sleep schedules. Retrieve from CNN Philippines:https://cnnphilippines.com/lifestyle/2017/06/13/college-students-grades-sleepschedules.html (Accessed on November 2020)
5. Okano, K., Kaczmarzyk, J. R., Dave, N., Gabrieli, J. E., & Grossman, J. C. (2019). Sleep quality, duration, and consistency are associated with better academic performance in college students. NPJ Science of Learning, 4(16), 1-4. https://doi.org/10.1038/s41539-019-0055-z
6. Paul KB. The Correlation of Sleep and Academic Performance. Asian J. Interdicip. Res. 2021; 47-57. DOI: https://doi.org/10.34256/ajir2115.
7. Zerbini G, Merrow M. Time to learn: How chronotype impacts education. Psych J. 2017;6(4):263–276. doi: https://doi.org/10.1002/pchj.178.
8. Huang W, Ramsey KM, Marcheva B, Bass J. Circadian rhythms, sleep, and metabolism. metabolism. J Clin Invest. 2011;121(6):2133–41. doi: https://doi.org/10.1172/ JCI46043.
9. Gallego-Gómez et al. Relationship between sleep habits and academic performance in university Nursing students. BMC Nursing (2021) 20:100 https://doi.org/10.1186/s12912-021-00635-
10. Ibrahim L, Ibrahim N, Kamarudin AN, Ghani NA. Association Between Sleep Patterns and Academic Performance. In2021 IEEE International Conference on Computing (ICOCO) 2021 Nov 17 (pp. 208-212). IEEE.
11. Duncan A, Wright D, Darigho F, Crawford J, Bedward J, Erebe T. The Correlation between Sleeping Patterns and Academic Performance for TAU Medical Students
12. Valic M, Pecotic R, Lusic L, Peros K, Pribudic Z, Dogas Z. The relationship between sleep habits and academic performance in dental students in Croatia. European journal of dental education. 2014 Nov;18(4):187-94.

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