



RELATIONSHIP BETWEEN SLEEP QUALITY AND ACADEMIC PERFORMANCE AMONG UNDERGRADUATE NURSING STUDENTS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Sleep is a vital physiological process that plays a crucial role in maintaining overall health and well-being. Adequate sleep is particularly important for students, as it directly impacts their cognitive functioning, learning abilities, and academic performance. Chronic lack of sleep among university students has a significant impact on their health and academic outcomes. Hence, this study aims to explore the relationship between sleep quality and academic performance among undergraduate nursing students. Methodology: A Quantitative cross-sectional survey research design was adopted for the study. Total sample of 200 students was selected by using convenience sampling technique. Data were collected by using Socio-demographic variables, Sleep quality Scale was used to assess quality of sleep and Academic Performance was used to assess by Grade Point Average (GPA) method. Results: The study results showed that most of the undergraduate students (27%) had very good sleep and 47.9% had fairly good sleep; 80% had good academic performance. The correlation values indicated a substantial positive correlation between Quality of Sleep and Academic Performance among undergraduate students. Conclusion: The study concluded that good quality of sleep improves the academic performance of undergraduate students. If the quality of the sleep was good their academic performance would also be good.

Key Words: Sleep, physiological process, well-being, Chronic lack of sleep, university students.

INTRODUCTION

Sleep is a vital physiological process that plays a crucial role in maintaining overall health and well-being. Adequate sleep is particularly important for students, as it directly impacts their cognitive functioning, learning abilities, and academic performance. Dijk et. Al. (2019) study states that chronic lack of sleep among university students has a significant impact on their health and academic outcomes. Hence, this study aims to explore the relationship between sleep-quality and academic performance among undergraduate nursing students.

AIM

The main aim of the study is to assess the relationship between Sleep quality and Academic performance among undergraduate nursing students.

HYPOTHESIS/ RESEARCH QUESTIONS

The hypotheses are:

- H₁ There is a significant relationship between the sleep quality and academic performance among nursing students.
- H₂ There is a significant association of Students' sleep quality and academic performance with their demographic variables.

MATERIALS AND METHODS

Materials and Methods Research Approach: The research has a descriptive, cross-sectional research design which aims to find out the relationship between sleep quality and academic performance of undergraduate nursing students.

Study Subjects/ samples: The study subjects were undergraduate female nursing students of Riyadh ELM University.

Sample selection and Size: The convenient sampling technique was used to select the study samples. A total of 200 female nursing students was the sample size of the study. This was calculated using a Slovincs formula with 3% margin of error.



Inclusion and exclusion criteria: *Inclusion criteria:* The study includes only undergraduate female students of REU within age 18 – 30 years. *Exclusion criteria:* This excludes male nursing students and non-nursing students of REU. **Instrument for data collection:** Data were collected by using Socio-demographic variables, Sleep quality Scale was used to assess quality of sleep and Academic Performance was assessed by Grade Point Average (GPA) method. Data collection procedure was started once the proposal was approved from the University Research Centre. The questionnaires were distributed through Google form. A detailed explanation about the purpose of the study was described in the google forms.

Ethical consideration: Ethical approval to conduct the study was obtained from the Institutional Review Board (IRB) at Riyadh Elm University (REU). All methods were performed in accordance with the relevant REU's IRB policies and procedures. The aim of the study was clearly described to the participants in the google forms. Confidentiality was guaranteed, and the participants were assured about the anonymity of their data.

Statistical analysis methods: The collected data was statistically analysed to find out the result of the study. It was checked for error and completeness. The demographic data was analysed using descriptive statistics of frequency and percentages. The hypotheses were tested using chi-square at level of significance 0.05, other variables were analysed using frequency distribution and percentage. SPSS software version 16.0 was used to analyse the data.

RESULTS

SECTION A: DEMOGRAPHIC VARIABLES

(Table – 1)

Sl. Nos.	Variables	Frequency	Percentage %	
1.	Age in years	18 – 20	95	47.5
		21 – 23	64	32.0
		24 – 26	37	18.5
		27 – 30	4	2.0
2.	Level of study	Level 1 -2	69	34.5
		Level 3 - 4	55	27.5
		Level 5 - 6	27	13.5
		Level 7 - 8	49	24.5
3.	Income:	Low	21	10.5
		Middle	163	81.5
		High	16	8.0
4.	Total hours of sleeping	More than 10	11	5.5
		From 7 – 10	72	36.0
		From 4 – 6	105	52.5
		Less than 4	12	7.0
5.	Living with	Parents	163	81.5
		Father	9	4.5
		Mother	12	6.0
		Colleagues	16	8.0
6.	Taking Naps:	yes	53	26.5
		No	147	73.5
7.	Study hours:	More than 6	75	37.5
		From 4 - 6	93	46.5
		From 2 – 4	32	16.0
8.	Health problems	Yes	47	23.5
		No	153	76.5

Table - 1 shows the demographic variables of undergraduate students. Out of 200 samples, majority of 95 students (47.5%) were under 18 – 20 years of age. Based on the level of study, about 69 students (34.5%) were

from level 1 – 2 and 163 students (81.5%) were living with their parents. About 147 students (73.5%) did not have the habit of taking naps and about 93 students (46.5%) studied for 4 – 6 hours every day. As regards the health problems of the students, about 153 students (76.5%) did not have any health issues.

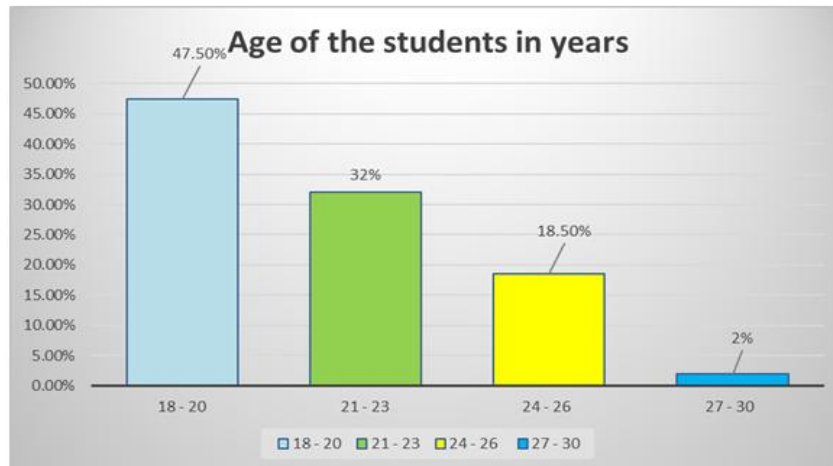


Fig. -1: Age of the female nursing students in years

Table - 2: Academic performance of undergraduate Nursing students

Academic scores (GPA)	Frequency	Percentage
< 2.5	40	20%
>2.5	160	80%

Table - 2 depicts the academic performance of female nursing students. Among 200 female nursing students, majority 160 (80%) students had good academic scores and the remaining 40 (20%) of students had poor academic score of <2.5.

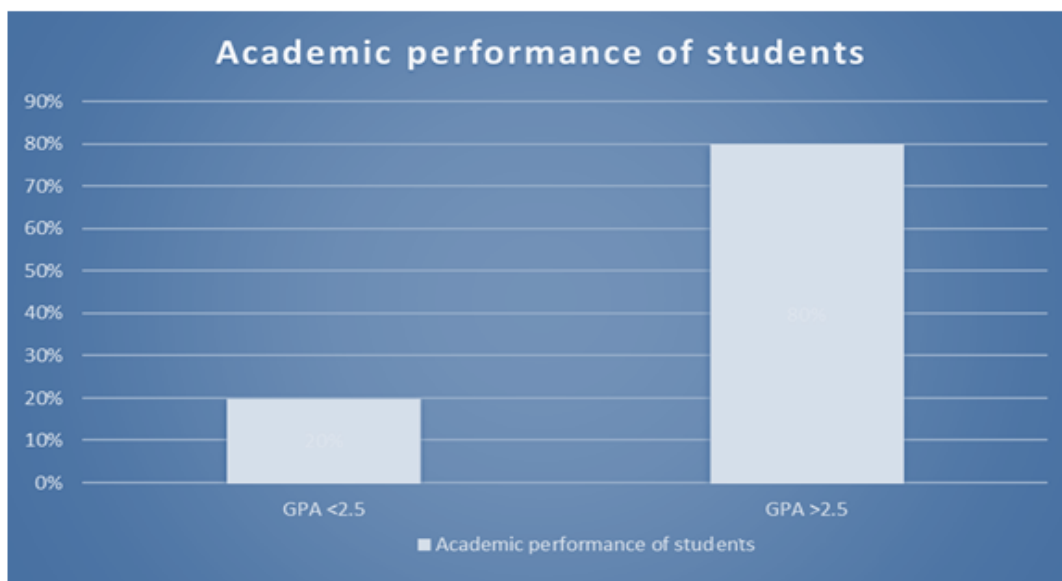


Fig. - 2: Academic performance (GPA) of students

Table - 3: Frequency and Percentage Distribution of Quality of Sleep among Undergraduate Nursing Students

Sleep quality	Frequency	Percentage (%)
Very good sleep (0 – 21)	54	27.0
Fairly good sleep (22 – 24)	99	49.5
Fairly bad sleep (43 – 63)	47	23.5
Very bad sleep (64 – 84)	0	0

Quality of sleep was analysed using Sleep Quality Scale; based on the scale, 54 (27%) students reported very good sleep. Majority of 99 students (49.5%) had fairly good sleep and the remaining 47 students (23.5%) had fairly bad sleep.

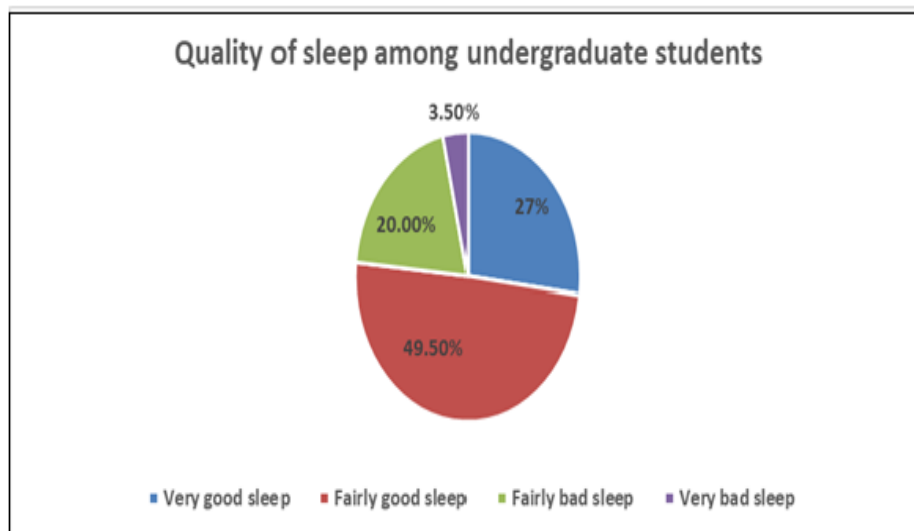


Table - 4: Correlation between sleep quality and academic performance among undergraduate students

Variables	Mean	SD	Correlation [®]	Level of significance
Quality of sleep	29.89	18.78	0.181	P =0.01032 S*
Academic performance	3.44	0.90		

*p<0.05, S – Significant

The above table portrayed that the mean score for Quality of sleep was 29.89 ±18.78 and the mean score for academic performance was 3.44± 0.90; the calculated Karl Pearson’s Correlation value of r = 0.181 showed a substantial positive correlation between Quality of sleep and Academic performance among undergraduate students.

Table 5: Association between Quality of Sleep among Undergraduate Students with selected Demographic Variables

VARIABLES	LEVEL OF QUALITY OF SLEEP						χ ²	df	P - Value
	Very good sleep		Fairly good sleep		Fairly bad sleep				
	F	%	F	%	F	%			
Age in years							12.59	6	0.147 (NS)
18 – 20	11	5.5	32	16.0	7	3.5			
21 - 23	39	19.5	47	23.5	29	14.5			
24 – 26	3	1.5	6	3.0	11	5.5			
27 – 30	1	0.5	14	7.0	0	0			



VARIABLES	LEVEL OF QUALITY OF SLEEP						χ^2	df	P - Value
	Very good sleep		Fairly good sleep		Fairly bad sleep				
	F	%	F	%	F	%			
Level of study									
Level 1 -2	13	6.5	34	50.17	9	4.5	12.59	6	0.0007 S
Level 3 - 4	20	10.0	35	17.5	10	5.0			
Level 5 - 6	19	9.5	15	7.5	12	6.0			
Level 7 - 8	2	1.0	15	7.5	16	8.0			
Income:									
Low	4	2.0	9	4.5	8	4.0	9.49	4	0.0014 S
Middle	47	23.5	87	43.5	29	14.5			
High	3	1.5	3	1.5	10	5.0			
Total hours of sleeping									
More than 10	1	0.5	10	5.0	0	0	12.59	6	0.00001 S
From 7 – 10	11	5.5	34	17.0	27	13.5			
From 4 – 6	41	20.5	51	25.5	13	6.5			
Less than 4	1	0.5	4	2.0	7	3.5			
Living with									
Parents	33	16.5	91	45.5	39	19.5	12.59	6	0.00001 S
Father	5	2.5	2	1.0	2	1.0			
Mother	2	1.0	5	2.5	5	2.5			
Colleagues	14	7.0	1	1.0	1	1.0			
Taking Naps:									
yes	11	5.5	8	4.0	44	22.0	5.99	2	0.00001
No	43	21.5	91	45.5	13	6.5			
Study hours:									
More than 6	25	12.5	31	15.5	19	9.5	9.49	4	0.270 NS
From 4 - 6	20	10.0	54	27.0	19	9.5			
From 2 – 4	9	4.5	14	7.0	9	4.5			
Health problems									
yes	2	1.0	11	5.5	34	17.0	5.99	2	0.00001 S
No	52	26.0	88	44.0	13	6.5			

* $p < 0.05$, S – Significant, N.S – Not Significant

The Table - 4 depicted that the study hours of the student ($\chi^2 = 9.49$, $p = .270$) had shown statistically not-significant association with the quality of sleep among undergraduate students at $p < 0.05$ level. The other demographic variables had shown statistically significant association with the quality of sleep among undergraduate students.



Table - 6: Association between Academic performance among Undergraduate Students with selected Demographic Variables

Variables	Academic Performance				χ^2	df	P-value
	GPA < 2.5		GPA > 2.5				
	F	%	F	%			
Age in years							
a) 18 – 20	16	8.0	79	39.5	7.82	3	0.324 NS
b) 21 - 23	12	6.0	52	26.0			
c) 24 – 26	11	5.5	26	13.0			
d) 27 – 30	1	0.5	3	1.5			
Level of study							
a) Level 1 -2	11	5.5	58	29.0	7.82	3	0.00009 S
b) Level 3 - 4	21	10.5	34	17.0			
c) Level 5 - 6	3	1.5	24	12.0			
d) Level 7 - 8	5	2.5	44	22.0			
Income:							
a) Low	5	2.5	16	8.0	5.99	2	0.7046 NS
b) Middle	33	16.5	130	65.0			
c) High	2	1.0	14	7.0			
Total hours of sleeping							
a) More than 10	2	1.0	9	4.5	7.82	3	0.9703 NS
b) From 7 – 10	21	10.5	51	25.5			
c) From 4 – 6	16	8.0	89	44.5			
d) Less than 4	1	0.5	11	5.5			
Living with							
a) Parents	14	7.0	149	74.5	7.82	3	<0.00001 S
b) Father	8	4.0	1	0.5			
c) Mother	9	4.5	3	1.5			
d) Colleagues	9	4.5	7	3.5			
Taking Naps:							
a) yes	20	10.0	33	16.5	3.84	1	0.00039 S
b) No	20	10.0	127	63.5			
Study hours:							
a) More than 6	18	9.0	57	28.5	5.99	2	<0.00001 S
b) From 4 - 6	17	8.5	86	43.0			
c) From 2 – 4	15	7.5	17	8.5			
Health problems							
a) Yes	15	7.5	32	16.0	3.84	1	0.16118 S
b) No	25	12.5	128	64.0			

*p<0.05, S – Significant, N.S – Not Significant



Table - 6 depicts that the age in years, income and total hours of sleeping had shown statistically not-significant association with the academic performance among undergraduate students at $p < 0.05$ level. The other demographic variables had shown statistically significant association with the academic performance among undergraduate students.

DISCUSSION

The study findings reveal that about 54 students (27%) reported very good sleep. Majority of 99 students (49.5%) had fairly good sleep and the remaining 47 students (23.5%) had fairly bad sleep.

The academic performance of the female nursing students revealed that majority of 160 students (80%) had good academic scores and the remaining 40 students (20%) had poor academic score of < 2.5 .

To identify the relationship between quality of sleep and academic performance among undergraduate students Karl Pearson correlation was used. The calculated Karl Pearson's Correlation value of $r = 0.181$ showed a substantial positive correlation between Quality of sleep and Academic performance among undergraduate students leading to the clear inference that when the quality of sleep is good, academic performance is also good. The results showed that a significant substantial positive relationship between Quality of sleep and Academic Performance exists. Hence Hypothesis H_1 was accepted. Therefore, it was suggested that quality of sleep and academic performance were related among undergraduate students i.e. when quality of sleep increases, the academic performance also increases and the relationship was found to be statistically significant.

Regarding association between quality of sleep among undergraduate students and their selected demographic variables it showed that the study hours of the student ($\chi^2 = 5.165$, $p = .270$) had statistically 'not-significant' association with the quality of sleep among undergraduate students at $p < 0.05$ level. The other demographic variables had shown statistically significant association with the quality of sleep among undergraduate students.

CONCLUSION

The study concluded that most of the female students had good quality of sleep and good academic performance. The correlation value indicated a substantial positive correlation between Quality of sleep and Academic performance which clearly infers that when the quality of sleep is good, academic performance is also good and it is only applicable to female nursing students of Riyadh elm University.

RECOMMENDATIONS

- Replication of the study may be done with larger samples in different settings to generalise the study findings.
- This study can be conducted in a school setting.
- A comparative study can be done between the Male and Female students.
- An interventional study can be conducted to evaluate the improved quality of sleep

REFERENCES

1. Dijk, DJ., Landolt, HP, (2019). Sleep physiology, circadian rhythms, waking performance and the development of sleep-wake therapeutics. *Sleep-wake neurobiology and pharmacology. Handbook of experimental pharmacology*, 253, pp. 441–481. DOI: https://doi.org/10.1007/164_2019_243.
2. El Desouky, E.M. and Awed, H.A.M., (2015). Relationship between quality of sleep and academic performance among female nursing students. *International Journal of Nursing Didactics*, 5(9), pp.06-13. DOI: <http://dx.doi.org/10.15520/ijnd.2015.vol5.iss9.111.06-13>.
3. Gallego-Gómez, J.I., et al., (2021). Relationship between sleep habits and academic performance in university Nursing students. *BMC nursing*, 20(1), pp.1-8. DOI: <https://doi.org/10.1186/s12912-021-00635-x>.
4. Hysing, M. (2016). Sleep and academic performance in later adolescence: Results from a large population-based study. *Journal of sleep research*, 25(3), pp.318-324. DOI: <https://doi.org/10.1111/jsr.12373>.
5. Jalali, R., et al., (2020). The effect of sleep quality on students' academic achievement. *Advances in medical education and practice*, 11, pp.497-502. DOI: <https://doi.org/10.2147/AMEP.S261525>.
6. Marta, O.F.D., et al., (2020). Gender differences in the relationships between sleep disturbances and academic performance among nursing students: A cross-sectional study. *Nurse Education Today*, 85, pp.104270. DOI: <https://doi.org/10.1016/j.nedt.2019.104270>.



7. Medic, G et al. (2017) Short-and long-term health consequences of sleep disruption. *Nature and science of sleep*, 9, pp.151-161. DOI: <https://doi.org/10.2147/NSS.S134864>
8. Menon, B., et al., (2015). Sleep quality and health complaints among nursing students. *Annals of Indian Academy of Neurology*, 18(3), pp .363. DOI: 10.4103/0972-2327.157252.
9. Pilcher, J. J., & Walters, A. S. (2017). How sleep deprivation affects psychological variables related to college students' cognitive performance. *Journal of American College Health*, 65(7), 482-487. DOI: <https://doi.org/10.1080/07448489709595597>.
10. Silva, M., (2016). Sleep quality determinants among nursing students. *Procedia-Social and Behavioral Sciences*, 217, pp.999-1007. DOI: <https://doi.org/10.1016/j.sbspro.2016.02.090>.