Research Article

Influence of Sleep on Academic Performance among Nursing students-Najran University; KSA

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ABSTRACT

Background and objective: Nursing students are exposed to high level of pressure due to their academic responsibilities beside other stressors. They may not be able to sleep adequately due to many assignments, examinations and other personal activities. Thus, they are at increased risk for sleep disorders. The main **objective** of the current study was to identify the association between sleeping patterns and the students' academic performance. **Methodology:** By adopting a convenience sampling technique, 60 female nursing students had been invited to participate in this study. A close-ended questionnaire was utilized for collecting the data beside obtaining the academic score (GPA) from the students' records. **Results:** The mean age ± standard deviation (SD) was 22.4 ± 3.1 years. Majority of students 46 (76.7%) their ages above 21 years old and half of them their GPA range between 2.0 - 3.49. 85% of the studied subjects use to sleep about four to six hours per day although 20% of them don't use to have day nap. Interestingly, 73.3% of them are currently living with their families which is correlated significantly with their GPA (P value = 0.05). Additionally, Day nap and duration of sleep hours per day were found to be statistically significant with their GPA (P value < 0.05) respectively. On the other hand, the body mass index was not statistically significant with their GPA (P value **>** 0.05). **Conclusion & Discussion:** Sleepiness and low sleep quantity were prevalent among nursing students which was affecting their academic performance and daytime functioning. Thus students with symptoms of sleep disorders are more likely to obtain poor grades in classes and accordingly poor academic achievement. So there should be suitable programs to help students to identify the physical as well as psychological symptoms as early as possible and therefore, providing adequate guidance to improve their academic as well as physical performance. Additionally, any student that performs poorly in academics should be monitored and referred to the concerned professional for help.

Introduction

Sleep plays a very important role in a human being's health. It has been reported that sleep is essential for the human memory and learning. Many factor determine sleep quality. Some of the important factors that influence sleep quality and quantity include age, gender, residence environment, body mass index (BMI), sports and smoking.[1,2]The relationships between sleep and performance have been studied in many different fields, such as human sciences, medicine, psychology, education and business. Most of studies reported that the adult human body normally requires seven to nine hours of daily sleep.[3,4,5,6]

Sleep loss or sleep disorder not only makes people feel sleepy in the daytime, it is even a possible risk factor for many health problems that include Alzheimer disease.[7] conversely, adequate sleep can lead to a better quality of life, physical and social health, life satisfaction, good performance and longevity. Hysing et al stated that the human brain undergoes "remodeling" during sleep. They argue that remodeling every night strengthens memory and the ability to problem-solve the following day.[8,9,10]

Researchers have investigated the relationship between sleep deprivation in terms of sleep-loss, task performance and individual productivity, they concluded that sleep deprivation has been negatively related to academic performance. One study showed that sleep-deprived students performed worse on attention, memory and problem-solving tasks and this adversely affected their academic performance. They argue that without proper sleep, memory and the ability to concentrate as well as higher cognitive functioning is severely affected.[11,12,13]

Simpson and Dinges reviewed a number of comprehensive studies that examined the effects of sleep deprivation on the human immune system. They found that the levels of important immune-related chemical substances in the blood plasma were different at bed-times and wake-up times.[14]Lemma et al reported that poor sleep is associated with lack of concentration and inability to function during the day and thus affect academic performance.[15]

Methodology

This is a descriptive and facility based study. A convince sampling technique was utilized for this study that conducted during the period from September to December, 2018 in Najran university, college of nursing. 60 female nursing students were recruited from 4 different study levels to participate in the current study. A close-ended questionnaire was used as a principal tool for collecting the data beside obtaining the academic score (GPA) from the students' records. An informed verbal consent and confidentiality were assured for the participated subjects who agreed to participate voluntary in this study.

Data was analyzed with Statistical Package for Social Sciences (SPSS) version 20. Data was displayed as counts and percentages. Chi-X test was used to test the effect of the studied variables on academic performance. A probability of (0.05) was considered statistically significant.

Result

A total of 60 female nursing students were participated in this study. The mean age ± standard deviation (SD) was 22.4 ± 3.1 years. As shown in table (1) the majority of students 46(76.7%) their ages above 21 years old and half of them their GPA range between 2.0 - 3.49.Most of the surveyed sample stated that they use to go to bed for sleeping later than midnight because of excessive assignments.85% of the studied subjects use to sleep about four to six hours per day although 20% of them don't use to have day nap. Our results also revealed that 40% of the selected sample use to perform physical activity (sports) only twice a week. Interestingly, 73.3% of them are currently living with their families and correlated significantlywith their GPA (P value = 0.05). Additionally, day nap and duration of sleeping hours per day were found to be statistically significant with GPA (P value < 0.05) respectively (table3). On the other hand, the Body Mass Index (BMI) was not statistically significant with GPA (P value > 0.05)as shown in table (2).

Table 1: Demographic characteristics of the studied sample (n=60)

Variable	No	%
Age in years		
≤ 20	14	23.3%
>21	46	76.7%
Number of students/Academic level		
4th level	18	30%
5th level	11	18.3%
6th level	9	15%
7th level	12	20%
8th level	10	16.7%
Habitat (Residence)		
Home with family	44	73.3%
Dormitory	16	26.7%
Body Mass Index (BMI)		
≤ 18.5	12	20%
18.4 - 29.9	34	56.7%
≥ 30	14	23.3%
Day nap		
Yes	48	80%

No	12	20%
Sleeping hours/ day		
4-6 hours	51	85%
7- 10 hours	9	15%
Physical activity/ sports		
≥ 3 sessions a week	16	26.7%
Twice a week	24	40%
≤ Once a week	20	33.3%
Academic scores (GPA)		
≥ 3.5	24	40%
2.0- 3.49	30	50%
≤1.99	6	10%

Table 2: The relationship between sleep quantity with GPA and BMI among the studied sample (n=60)

Variable	Sleeping/ day 4 -6 hours		Sleeping/ day 7 -10 hours		x^2	P	OR	95%	CI
	No.	%	No.	%					
GPA									
≥ 3.5	18	30%	6	10%	11.98	0.021∗	1.41	1.06	1.82
2.0- 3.49	28	6.7%	2	3.3%			1.69	1.03	1.27
≤1.99	5	8.3%	1	1.7%			1	-	-
BMI									
≤ 18.5	10	16.7%	2	3.3%	3.24	0.13	1.09	0.67	2.09
18.4 - 29.9	32	53.3%	2	3.3%			0.8	0.56	1.31
≥ 30	9	15%	5	8.3%			1	-	1

Table 3: The association between day napand GPA among the studied sample (n=60)

Variable	Day nap Yes		No		x^2	P	OR	95%	CI
	No.	%	No.	%					
GPA									
≥ 3.5	20	33.3%	4	6.7%	6.74	0.001∗	2.18	1.46	3.42
2.0- 3.49	25	41.7%	5	8.3%			1.79	1.12	2.18

≤1.99	3	5%	3	5%			1	-	-

Table 4: The association between residence and GPA among the studied sample (n=60)

Variable	Habitat (Residence)				x^2	P	OR	95%	CI
	Home with family		Dormitory						
	No.	%	No.	%					
GPA									
≥ 3.5	16	26.7%	8	6.7%	9.15	0.05∗	1.23	1.08	3.36
2.0- 3.49	24	40%	6	8.3%			2.09	1.41	2.09
≤1.99	4	6.7%	2	5%			1	-	-

Discussion

Sleep is a critical and important element that maintaining the overall health. It is important for our physical, intellectual and emotional health. Some articles concluded that sleep has an important role in memory consolidation and learning.[15]

Our study results reveal that sleep quantity has a significant effect on the students' academic performance. We highlighted the importance of having adequate sleep time that can result in a good academic achievement. This fact is in harmony with what had been reported by Bahammam, who concluded that decreased nocturnal sleep time is negatively associated with academic performance among students.[16] Similar findings had been reported by numerous of studies, they concluded that good sleep quality and quantity along with healthy sleep habits have a significant positive effect on the students' academic performance. They argue that the integrity of learning and memory processes are crucial for better academic performance, accordingly they stated that short sleeping hours may result in decreased ability on education-related activities and thus poor academic achievement.[17,18,19,20]

Inversely, Zimmerman et al and Eliasson et al concluded that there was no significant association between students' sleeping hours and their academic performance, they believe that other factors such as students' mood, stress and personal characteristics may have major contributions in academic achievement.[21,22]

Living status had been studied too, it has been found that 73.3% of the surveyed subjects are currently living with their families and it was shown a significant association with the students' achievement. This finding was in agreement with Zimmerman et al who stated that students usually consider the reactions of their families, and consequently they have to achieve better academic results.[21]

Conclusion and Recommendation

Sleep quantity should be a major concern for university students, for whom academic achievement is a priority. It had been concluded that sleepiness and low sleep quantity were prevalent among nursing students which was affecting their academic performance and daytime functioning. Thus students with symptoms of sleep disorders are more likely to obtain poor grades in classes and accordingly poor academic achievement. So there should be suitable programs to help students to identify the physical as well as psychological symptoms as early as possible and therefore, providing adequate guidance to improve their academic as well as physical performance. Additionally, any student that performs poorly in academics should be monitored and referred to the concerned professional for help.

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