



The Relationship Between Stress and Sleep Quality Among Medical Students

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Certificate of Completion



To Community Medicine Dept., Babylon University, College of Medicine

This is to certify that the project work entitled: The Relationship Between Stress and Sleep Quality Among Medical Students have been carried out successfully by Nada Saad Rashid, Krrar Haider Hamza, Sajad Saad Salah, Ruqaya Ali Abd Al-Hussein, Abdullah Hussein Musa, Noor Thaer mohsin, Ali Hussein Abd, Noor-elzahraa haider jawad and Amir Akram Haleem on date 23/5/2022 under the supervision of Dr. Reyadh Al-Mosawi.

Their conduct during the exact time period and has been useful for the community.

Dr. Reyadh H. Al-Mosawi

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Abstract:

Background: Medical students are more vulnerable to stress due to the pressure they are exposed to resulting from their academic requirements. Chronic stress can take a serious toll on the body over time and have long-lasting health effects. Lack of time and stress are causing insufficient sleep duration and difficulty falling asleep or staying asleep at night.

Objectives: the aim of this study is to assess the prevalence of stress on medical students resulting from different academic events and look into the relationship between stress and sleep disorders.

Materials and Methods: This observational, cross-sectional study was conducted at the college of medicine in Babylon University, Iraq, between March and May 2022. The study targeted medical students from all stages, both basic and clinical levels.

Results: 51% of all participants had poor sleep quality. The higher percentage of participating students from all stages, 1st through 6th, had reported poor sleep quality. 95% of participants with poor sleep quality have moderate to severe stress.

Conclusions: Most medical students suffer from stress and poor sleep quality during their academic courses. This research shows that stress is indeed a very important factor that plays a significant part in poor sleep quality.



Introduction:

Sleep is a recurring, easily reversible, and periodic state of mind and body. It is characterized by altered consciousness, relatively inhibited sensory activity, reduced muscle activity, and inhibition of nearly all voluntary muscles during rapid eye movement (REM) sleep. Occurrence of dreaming and changes in brain activity and physiological functioning is made up of cycles of non-REM sleep and REM sleep. These cycles are usually considered essential to the restoration and recovery of vital bodily and mental functions allowing the body to recharge. During sleep, there would be reduced interactions with surroundings. Healthy sleep also helps the body remain healthy and avoid diseases. Without enough sleep, the brain cannot function properly. This can impair your abilities to concentrate, think clearly, process memories, or study and or properly. Insomnia can result from prolonged stress. Stress can be defined as any type of change that causes physical, emotional, or psychological strain. It is your body's response to anything that requires attention or action. Stress is a natural physical and mental reaction to life experiences. Anything from everyday responsibilities like work and family to serious life events such as a new diagnosis, war, or the death of a loved one can trigger stress. Everyone experiences stress to some degree. However, the way you respond to stress makes a big difference to your overall well-being. Stress can be beneficial to your health and helps come with potentially threatening situations. Yet if your stress response doesn't stop firing, and these stress levels stay elevated far longer than is necessary for survival, it can take a toll on your health. Stress can cause irritability, anxiety, depression, headaches, and insomnia. Medical education is perceived as being stressful, and a high level of stress may have a negative effect on cognitive functioning and learning of students in a medical school. Studies have shown that medical students experience a high level of stress during their undergraduate course. Many factors play into the excessive stress that medical students have, for example, lack of time, an overload of lectures,



pressure of mid exams and finals, OSC exams, and the stress when receiving their final grades. These are factors that put medical students under pressures leading to stress which in turn leads to lack of sleep. Studies have shown that the vast Majority of medical students have a poor sleep quality and a third of students sleep less than the recommended 7-9 hours.

Materials and Methods:

An electronic self-administered questionnaire was distributed by the nine members of the research team. To ensure adequate and precise representation the link was exclusively distributed in the college community and website. The questionnaire was completely anonymous to ensure the participants privacy and no names or email addresses were required to maximize the authenticity of the data collected, which was kept confidential and used for research purposes only nonetheless. The questionnaire was composed of two parts assessing the stress medical students are exposed to during their daily life at college and other settings. And the second part was for assessing sleep quality and sleep disorders among students. As a scale to measure stress this study used 10 items related to school life stress from the Stress Factor Questionnaire by Won and Kim (1985) and Stress Response Questionnaire for College Students by Choi which was revised by Park (1991) without making any revisions. Stress that may occur in school life of college students is internal and external mental stimulation related to studies, which reflects the uncomfortable mental state that may appear : tension, concern, depression or nervousness experienced based on pressure or strain caused by school studies or grades. This can be referred to as concerns about grades and exams, discrimination of professors, fear about class, and difficulties or concerns caused by the limit of abilities. This was rated on a 5-point Likert scale (1 point: strongly disagree – 5 points: strongly agree) with total 10 items of the questionnaire used by Kim (2011) where the internal consistency



reliability of the stress scale (Cronbach’s alpha) was .78. To assess sleep disorders, the Sleep Disorders Questionnaire was used. It is a screening tool used by physicians to evaluate sleep quality, insomnia and other sleep disorders. This survey contains self-evaluating questions about sleep latency, trouble falling asleep, the use of medication to help in sleep and other sleeping disorders like leg kicking and snoring. The results are interpreted according to a grading system approved by TOP. Data were collected and imported into Microsoft Excel then analyzed using Statistical Package for social sciences. Frequencies and percentages in addition to tables were used to describe the association between poor sleep quality and stress in medical students. Questionnaire: 1-Do you have trouble falling asleep? 2-Do you take anything to help you sleep? 3-Do you have trouble staying asleep? 4-Do you have any unusual behavior or movement during sleep? 5-Have you been told that you're restless or that you kick your legs during sleep? 6-Are your legs restless and/or uncomfortable before bed? 7-Do you snore? 8-Do you have difficulty staying awake during the day?

Table 1. Questionnaire measuring the stress in college students

No,	Question content
1	I am worried that even if I study hard, my grades will not improve
2	I am annoyed that there are too many test subjects
3	I am having a hard time in university
4	I am at the limit of my capability
5	I am dissatisfied with the professor’s discrimination
6	My university atmosphere is too rigid
7	I am annoyed by having to take tests too often
8	I am afraid to go to class where teachers are overly critical
9	I have too much to worry about besides studying at university
10	I am worried about not knowing how to study effectively



Results:

The characteristics of the study participants are presented in Table 1. The total number of participants was 259; 67.6% (n=175) were female, 32.4% (n=84) were male aged 18–24 years, for the academic level, 5.02% (n= 13) of the respondents were in their 1st stage. 13.9% (n=36) were in their second stage, 15.4% (n=40) were in their third stage, 37.8% (n=98) were in their fourth stage, 9.27% (n=24) were in their fifth stage and 18.5% (n=48) were in their sixth stage. Regarding sleep disorders, it was found that from the total number of participants (n=259) who took part in this research, 75.29% (n=195) were likely suffering from symptoms and signs of insomnia while 24.71% (n=64) did not show such signs may have significant daytime impairment. Stress was prevalent: only 0.39% (n=1) of the total number of respondents (n=259) had a very low level of stress or no stress. More than 39.77% (n=103) of respondents had a severe level of stress, and 7.34% (n=19) had a mild level of stress, while 39.77% (n=103) had a moderate level of stress, the stress score covered the entire possible range, from 10 to 50, with a mean score of 35.20. This research shows that 51% of all participants had poor sleep quality. 53.8% of all participants from 1st stage, 68.1% of 2nd stage, 77.5% of 3rd stage, 77.6% of 4th stage students and 70.8% of 5th and 70% of 6th stage show poor sleep quality. Out of all students with poor sleep quality, about 50% had moderate stress levels, and 45% had severe stress levels.

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Table2. Characteristics of medical students in preclinical years – n=259

Characteristics	N(%)
Gender	
Male	84 (32.43)
Female	175 (67.57)
Age (years)	
< 18	5 (1.93)
19 - 21	124 (47.88)
22 - 24	128 (49.42)
> 24	2 (0.77)
Academic level	
1 st Stage	13 (5.02)
2 nd Stage	36 (13.90)
3 rd Stage	40 (15.44)
4 th Stage	98 (37.84)
5 th Stage	24 (9.27)
6 th stage	48 (18.53)
Insomnia	
Yes	195 (75.29)
No	64 (24.71)
STRESS	
No Stress	1 (0.39)
Mild	19 (7.34)
Moderate	136 (52.52)
Severe	103 (39.77)

Table3. Characteristics of medical students in preclinical years by sleep quality – n=259

Characteristics	Poor sleep quality		P.VALUE	STRESS				P.VALUE
	YES(%)	NO		No stress	Mild	moderate	Sever	
Gender								
Male	57 (67.9)	27 (32.1)		1 (1.2)	8 (9.5)	47 (56.0)	28 (33.3)	
Female	138 (78.9)	37 (21.1)		0 (0.0)	11 (6.3)	89 (50.9)	75 (42.8)	
stage								
1 st stage	7 (53.8)	6 (46.2)		1 (7.7)	2 (15.4)	6 (46.1)	4 (30.8)	
2 nd stage	31 (86.1)	5 (13.9)		0 (0.0)	5 (13.9)	18 (50.0)	13 (36.1)	
3 rd stage	31 (77.5)	9 (22.5)		0 (0.0)	3 (7.5)	22 (55.0)	15 (37.5)	
4 th stage	76 (77.6)	22 (22.4)		0 (0.0)	5 (5.1)	55 (56.1)	38 (38.8)	
5 th stage	17 (70.8)	7 (29.2)		0 (0.0)	0 (0.0)	11 (45.8)	13 (54.2)	
6 th stage	34 (70.8)	14 (29.2)		0 (0.0)	4 (8.3)	24 (50.0)	20 (41.7)	
Age								
<19	3 (60.0)	2 (40.0)		0 (0.0)	1 (20.0)	2 (40.0)	2 (40.0)	
19-21	95 (76.6)	29 (23.4)		1 (0.8)	12 (9.7)	68 (54.8)	43 (34.7)	
22-24	95 (74.2)	33 (25.98)		0 (0.0)	6 (4.7)	64 (50.0)	58 (45.3)	
>24	2 (100.0)	0 (0.0)		0 (0.0)	0 (0.0)	2 (100.0)		
Stress level								
Not stress	0	1 (1.6)						
Mild stress	10 (5.1)	9 (14.0)						
Moderate stress	98 (50.3)	38 (59.4)						
Sever stress	87 (44.6)	16 (25.0)						
Symptoms associated with poor sleep quality								
Yes	55 (87.3)	8 (12.7)		0 (0.0)	6 (9.5)	25 (39.7)	32 (50.8)	
No	140 (71.4)	56 (28.6)		1 (0.5)	13 (6.7)	111 (56.6)	71 (36.2)	



Discussion:

In the present study, 51% of the participants had a poor quality of sleep. This result is similar to other studies taken about 2 years ago. A study showed that 50.9 % of medical students in the United States have poor sleep quality, 55.8% in Ethiopia, and 53% was found in two colleges in Riyadh. The relationship between sleep and stress is evident in this research. The results of the present study showed that poor sleep quality among medical students of all stages and both genders has a strong relationship with cluster and stress level which increases with increased academic requirement. Students with poor sleep quality are more likely to have higher stress than students who have a good sleep quality. This suggests that stress seems to have a strong correlation with age. The results show that older students have a higher prevalence of stress compared to the younger ones. About 96% of students from age 22 and older presented with moderate to severe stress levels. Furthermore, it is important to point out that, students of all ages from 18 and older had shown high percentages of severe or moderate stress levels. The theory that stress had an impact on sleep quality was proven once when looking at the numbers that show the relationship between age and sleep quality. Students aged 24 and higher had a 100% occurrence of poor sleep quality. And about three fourths of those aged between 22 and 24 had also presented with poor sleep quality. With the already pointed out observation of the relationship between high stress levels, poor sleep quality, and age, it was expected to find students of higher stages to suffer from stress. Increasing studying materials, increasing pressure on students, with less time to study and catch up has evidently resulted in higher stress levels. It is obvious that upper stages like fifth and sixth have encountered more academic pressure than stages like first and second. It is predicted and once again proven that students facing more academic stress have worse sleep quality. This study has ironically proven that there is no relationship between poor sleep and the symptoms associated with poor sleep. Those with poor sleep quality might



or might not have any symptoms at all. Similarly, with stress, there was no strong correlation between stress and bad sleep habits or symptoms meaning that those with stress also may or may not have any sleeping symptoms. Moreover, it was noticeable that female medical students have reported to have higher levels of stress compared to male medical students. This suggests that; possibly females might have a lower threshold and are more vulnerable to stress than males. All things considered; stress increases the incidence of poor sleep, and stress in turn increases with higher study load and increased academic pressure, which is elevated with increasing age and stage.

Conclusions:

Medicine is one of the most stressful fields of education because of its highly demanding professional and academic requirements. Psychological stress, anxiety, depression and sleep disturbances are highly prevalent in medical students and as we know Prolonged stress levels have been correlated with HPA axis hyperactivity, decreased sleep duration, as well as reduced REM sleep and delta power, leading to poorer quality sleep, impaired memory, poorer mood regulation, which can, in turn, lead to more stress. In conclusion, the results of the present study showed that poor sleep quality, most widely owned by a group of social humanities, has a strong relationship with cluster and stress level. Students with poor sleep quality are more likely to have higher stress than students who have a good sleep quality.

Recommendations:

For students to: Maintain their circadian rhythm and sleep at night adequately since bad quality sleep at night is associated with decreased activity and increased number of mid-day naps. Manage their stress by seeing a specialist to help them control severe stress levels that affect not only their sleep, but their entire wellbeing. For academic centers



to: Offer their students training in time and stress management to help them cope with academic pressure. Keep good surveillance about the students' health and wellbeing especially during the time of finals. Monitor the professors' and other staff members' performance and interactions with students.

Limitations:

The only limitations we had were having a stress score that can fit to our research subject perfectly. Educational limitations. Availability and access for the information we required for the research.



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