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SLEEP PROBLEMS AMONG MEDICAL STUDENTS OF TAIF UNIVERSITY, SAUDI ARABIA

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Abstract

Background: Sleep disorders are acknowledged as a serious public health issue with far- reaching psychological and social ramifications. The aims of the study were to examine the prevalence of sleep disorders among Taif medical students, Saudi Arabia and investigate any association between sleep disorder and academic performance. **Materials & Methods:** A cross-sectional study was conducted on 285 Saudi male and female medical students from first to six years in Taif University, Saudi Arabia, selected by simple random sample. A self-administered questionnaire using the Pittsburgh Sleep Quality Index was used to collect data. The data were collected and analyzed using SPSS Program version 25. **Result:** Out of a total of 285 participants, males were 154 (54%) while female 131 (36%). The student's age range were 18-25 years. Furthermore, 132 (46.6%) reported their sleep quality to be either very or fairly bad; 157 (55.1%) reported taking more than 30 min to fall asleep; 141 (49.5%) reported sleeping >5 hours per night; 12 (4.2%) reported adequate sleep efficiency and 23 (8.1%) reported no sleep disturbances. In addition, 233 (81.8%) reported not using sleeping medication; and 47 (16.5%) reported having a severe daily dysfunction. Finally, the male students were higher among the poor sleeper group compared with female students. **Conclusion**: It appears that medical students are more likely to experience sleep disorders compared to other university students. First, second, and third-year students are affected more than students in other class years due to poorer subjective sleep quality. Effective health education intervention programs should be implemented to decrease sleep disorders among medical students.

Keywords: Sleep problems, Taif University, Medical students, sleep quality, academic performance.

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Introduction

Sleepiness is one of the factors that affect overall health as sleep is the foundation of human life and our health is closely related to sleep. The prevalence of sleep disturbances ranges from 22% to 65% [1].
Sleep patterns affect many physiological functions in humans, particularly learning ability, memory consolidation, neurocognitive function, and mental health. Insufficient sleep can decrease alertness, attention, and cognitive functions [2].
Studies show a connection between psychiatric illnesses and sleep disorders as they reported sleeping disorder as the early symptoms and signs of tension and depression. Also, numerous clinical situations consisting of hypertension, diabetes mellitus, and coronary artery sickness are more linked with sleep problems. Neglecting sleep issues will result in reduced attention, negative educational performance, decreased popular fitness, and social relationship issues [3].
Sleep problems are common in the general population, with approximately one-third of adults reporting some form of insomnia. A worldwide survey in 10 nations confirmed 32.6% occurrence of insomnia amongst primary care patients, and information from different nations is pretty steady with this result. Medical college students are one subgroup of the overall populace who appear like particularly at risk of bad sleep, possibly because of the lengthy period and excessive depth of study [4].
Medical college students are a subset of the population that might be more vulnerable to sleep problems and sleep deprivation, possibly attributed to lengthy, extensive observed medical duties and excessive educational loads. Sleep problems have an effect on college students. exceptional of life, their popular fitness and educational performance – therefore, it's far critical to hit upon those problems previous to the deepening of the problem [5].
Sleep deprivation in medical college students has been discovered to have an effect on cognitive functions. Numerous researches show that 70-76% of clinical college students have negative sleep patterns. Research on sleep problems in clinical college students is a well-timed subject matter because of its excessive effect on clinical college students' bodily fitness, intellectual fitness, and mental fitness, in addition to their educational performance. In this observation, we adopt to hit upon the superiority of sleep problems amongst Umm Al-Qura University clinical college students via the research of 7 sleep disorders: obstructive sleep apnea, insomnia, narcolepsy, stressed legs/periodic limb motion disorder, circadian rhythm disorders, sleepwalking, and nightmares [6,7].
Research on sleep disturbances in undergraduate medical college students is a precise hobby due to the recognized relation between sleep and intellectual health and the worry that the intellectual requirements of medical school can lead to a lot of stress. Any extra undiagnosed sleep hassle can probably exacerbate intellectual strain in those college students, with ability long time results for each individual's fitness and the general overall performance of the health care system. A substantial body of research backs up the idea that restful sleep is crucial for maintaining good physical and mental health as well as neurocognitive and psychomotor performance. The quantity, quality, regularity, and scheduling of sleep phases are the four main aspects of sleep that generally have an impact on academic performance. Medical college students undergo lengthy and extensive educational years before turning into physicians. Before becoming doctors, medical students must complete several long and challenging academic years. Therefore, it's critical to determine if they have a sleep disorder, whether their sleep disorder has any impact on their quality of life or academic achievement, as well as the severity of the issue. The goal of this study is to compile, organize, and make clear the most recent research on sleep issues among undergraduate medical students worldwide [8].
Numerous studies have been conducted to evaluate medical students' pre-existing knowledge, attitudes, beliefs, and views about sleep. Data on sleep awareness among medical students in Asia can be found in Malaysia, Singapore, China, India, and Nepal. Chinese medical students largely recognized sleep

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disorders as a serious issue, according to a 2013 study by Luo et al., but they had limited knowledge of the actual sleep disorders themselves. For instance, more than half of those students were unaware that bruxism, sleep-talking, and restless legs syndrome are all categorized as sleep disorders. Only a small portion of students knew that sleep disorders can be associated with conditions like diabetes, anemia, the metabolic syndrome, and attention deficit disorder. However, 93% of the students agreed that sleep disturbances were a serious clinical concern and that patients should seek treatment; 81.3% of the students expressed interest in a future in sleep medicine and suggested creating a specific sleep medicine department. It's interesting to note that 44.8% of the students had contacted a doctor regarding sleep issues, while 76.8% of the students believed they or their friends experienced sleep disorders. The study's authors discovered a lack of understanding and numerous misconceptions about sleep among final-year medical students at six medical institutions in Tamil Nadu, India. Examples of incorrect ideas or misconceptions held by medical students include the notions that one may overcome tiredness via willpower or that a person must get at least eight hours of sleep each night. According to the scientists, there are considerable differences in these sleep-related attitudes across students from urban and rural backgrounds. The knowledge of sleep among students at Nepal's Manipal College of Medical Sciences was found to be satisfactory according to a study on knowledge, attitude, and practice (KAP) about sleep. However, the Nepalese students did poorly on the questions about attitudes or views. The study examined several very essential fundamental aspects of sleep physiology, pharmacology, sleep requirements, use and toxicity of hypnotics, effects of sleep deprivation, misunderstandings about sleep hygiene, and respondents' sleep habits. The understanding of sleep medicine among 240 Singaporean medical students was found to be low, with no discernible gender variations in the level of awareness. The authors of that poll suggested a significant curriculum reform in the domain of sleep education, citing the increasing rate of primary care physicians' misdiagnosis and maltreatment of sleep disorders as the most serious effect of a lack of sleep education [8].

A random sample of 505 students in Menoufia University in Egypt, ranging from first to sixth year. Using Pittsburgh Sleep Quality Index (PSQI), it was found that most of the subjects (59%) had poor sleep quality, with higher prevalence in students of the first three years. The most common factors affecting sleep quality were learning difficulties, exam anxiety, and the need to wake up early. Poor sleep quality was found to affect social activities, mood, concentration, showing up late to early classes, and loss of enthusiasm. In conclusion, enhancing sleep quality may improve the academic performance of many medical students [9,10].

There are few studies are available regarding sleep disorder determinants, especially among medical students. Identification and better understanding of sleep disorder determinants among medical students is an essential step to implementing a program for better sleep quality. Therefore, this study was conducted to detect the determinants of sleep disorders.

Materials and methods

Study setting

College of Medicine of Taif University, Saudi Arabia. The study lasted from the November 1, 2022, to November 30, 2023.

Study design

An observational cross-sectional study design was chosen to determine the previous design objectives of the study.

Study Sampling

The study was conducted on 285 Saudi male and female medical students from first to six years at Taif University, Saudi Arabia, and chosen by simple random sample technique. Inclusion criteria: All Saudi

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medical students males and females in Taif University in the academic year of 2022-2023. Exclusion criteria: Male and female medical students who are interns.

Questionnaire design

The data was collected using a self-administered questionnaire [10]. The questionnaire included demographic data such as age, gender, Residency, and No. Family member and Income / Month. It focused on Sleep quality Component optimized questions of the standard PSQI Score. Students who answered the PSQI completely within the study period were enrolled. Students who refused the invitation to participate or did not complete the full questionnaire were excluded from the study. The PSQI was chosen as the research instrument because it is a global analysis tool that can be used to assess sleep disorders, as well as to assess individual questions or the overall result of the study. Its seven components (subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction). The PSQI has a range of 0 to 21 points. Scores above 5 indicate poor sleep quality, while scores below 5 indicate poor sleep disturbance. The total of these seven component scores gives a global score.

Ethical approval

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. This study received ethical approval from the Scientific Research Ethics Committee of Taif University (approval no. HAO-02-T105). Filling out the questionnaire was considered consent or approval for participation in the study.

Statistical Analysis

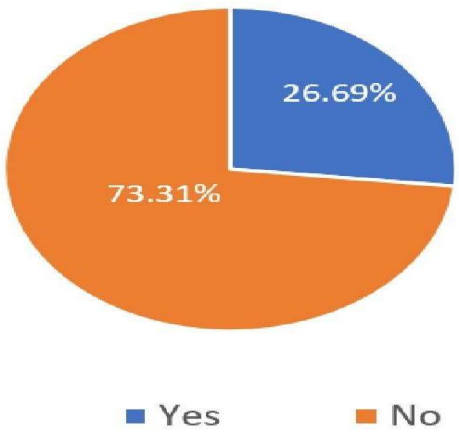
Data entry and statistical analysis were performed using Statistical Package for the Social Science (SPSS) program for Windows version 25. Frequency and range checks were performed. Descriptive statistics such as means, standard deviation was used for the quantitative variables. Percentage was used to determine the prevalence rates of sleep disorders among medical students of Taif University. Proportion and percentage were used for category variables. Chisquare test was used to assess any association between these variables ith p values < 0.05 Defined as statistical significance.

Result

The total Study sample was 285 students. All of them were medical students at Taif University. The age of the study samples ranged between 18 – 25 years old. The mean age of the study sample was 20.98±2.7 years old.

The prevalence of sleep disorders among medical students of Taif University; 85.26% have a sleep disorder, while 14.74% they not have a sleep disorder (Figure 1).

Figure 1. Prevalence of sleep disorders among Study sample.



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The results of the studied student sample revealed that, the male participants were 154 (54%) and (53.9%) of them have a sleep disorder, while the female participants were 131 (36%) and (46.1%) of them have a sleep disorder. The prevalence rate of sleep disorder by gender was found to be insignificant ($p = 0.5$). On the other hand, the prevalence rate of sleep disorder by age was found to be insignificant ($p = 0.9$). In younger students, they have a sleep disorder (57.6%) while in older students (42.4%). Moreover, the prevalence of sleep disorder was found to be higher among students who were living in urban areas (92.6%) than those who were living in rural areas (7.4%); with insignificant statistical difference ($p = 0.2$). On the other hand, students who had a large number of family members ≥ 5 were found with sleep disorder (79.0%) more than those who had a small number of family members (21.0%), with significant statistical difference ($p = 0.03$). Pertaining family income\month, prevalence was insignificant ($p = 0.5$). Sleep disorders were found to be higher among students of low family income\ month < 5000 SR (46.9%) than those of high family income\month > 10000 SR (40.3%) (Table 1).

Table 1. Socio-Demographic factor associated with sleep problem among study sample.

Parameters	**No sleep disorder**		**Sleep disorder**		**P-Value**
	No.	**%**	**No.**	**%**	
Gender:					
Male (154)	23	14.9%	131	85.1%	0.5
Female (131)	19	14.5%	112	85.5%	
Age (years)					
18-21 (162)	22	13.6%	140	86.4%	0.9
22-25 (123)	20	16.3%	103	83.7%	
Residency					
Urban (266)	41	15.4%	225	84.6%	0.2
Rural (19)	1	5.3%	18	94.7%	
Family member					
< 5 (66)	15	22.7%	51	77.3%	0.03
≥ 5 (219)	27	12.3%	192	87.7%	
Family Income:					
Low: < 5000 SR (130)	16	12.3%	114	87.7%	0.5
Middle: 5000-10000 SR* (37)	6	16.2%	31	83.8%	
High :>10000 SR (118)	20	16.9%	98	83.1%	

SR*=Saudi Riyals.

The Pittsburgh Sleep Quality Index scores ranged from 0 to 21. A value of Pittsburgh Sleep Quality Index above 5 indicates poor sleep quality while the value below 5 indicating good quality sleep. It was found that, 94.39% of study sample regarding PSQI of >5 indicating poor quality sleep, while 5.61% was found to be < 5 indicating good quality sleep (Figure 2).

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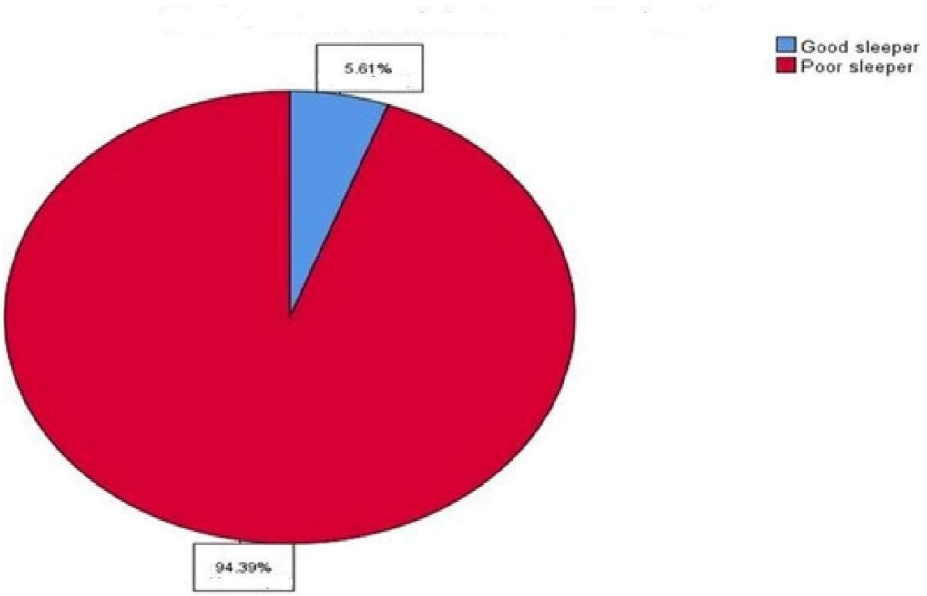
Figure 2. Pittsburgh Sleep Quality Index Score of medical students of study sample.



Compared to normal sleepers, statistically significant differences were observed with time taken to fall asleep and subjective sleep quality. 39.6% reported having fairly good quality, while 36.8% experienced fairly bad. More than 30% reported falling asleep in 30-60 minutes. The majority 50% slept < 5 hours per day. Mild disturbances were observed in 68% of the study sample. The sleep efficiency was less than 65% among 234(82%). Only 18% used sleeping medication, and 90% presented daytime sleep dysfunction. (Table 2).

Table 2. The Pittsburgh Sleep Quality Index among study sample.

Sleep quality component:	Categories	Frequency	%
Subjective sleep quality	Very good	39	13.7%
	Fairly good	113	39.6%
	Fairly bad	105	36.8%
	very bad	28	9.8%
Sleep latency	≥ 15 min	53	18.6%
	16-30 min	75	26.3%
	31-60 min	92	32.3%
	> 60 min	65	22.8%
Sleep duration	> 7	42	14.7%
	6-7	41	14.4%
	5-6	61	21.4%
	< 5	141	49.5%

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Sleep disturbance	None	23	8.1%
	Mild	194	68.1%
	Moderate	64	22.5%
	Severe	4	1.4%
Sleep efficiency	> 85	12	4.2%
	75 to 84	16	5.6%
	65 to 74	23	8.1%
	< 65	234	82.1%
Use of sleep medication	Not during past month	233	81.8%
	Less than once week	33	11.6%
	Once or twice a week	8	2.8%
	Three or more times a week	11	3.9%
Day dysfunction	None	27	9.5%
	Mild	121	42.5%
	Moderate	90	31.6%
	Severe	47	16.5%

Discussion

This study was conducted in the Medical College of Taif University to assess the problem of sleep quality, which was reported by students as a cause of their attention deficit in lectures, getting late, or even frequent absenteeism.

Using the Pittsburgh Sleep Quality Index questionnaire, about ninety-five percent (94.39%) of the medical college students suffered from poor sleep quality. The result of the present study is higher than the studies in Hong Kong (57.5%) and Lithuania (40%) [11,12]. On the other hand, a lower prevalence of poor sleep quality was reported from a Chinese study (19%) and from Brazil (28.2%) using the PSQI questionnaire [13,14].

This difference may be attributed to measurement tools used, differences in basic demographics such as age, gender, and marriage status of those who have applied to university medicine. In addition to these problems, cultural differences would be a major factor contributing to the variability of sleep difficulties in different countries. Memory and learningare significantly impacted by sleep, and sleep deprivation negatively impacts these functions. Furthermore, those who are classified as "poor sleepers" are more likely to make serious medical errors than medical students who obtain enough sleep [7, 15].

Gender and sleep quality have also been related; our results show that female had higher-quality sleep than men, which is in agreement with previous studies which reported as male students were higher among the poor sleeper group (54%) compared with female students [8, 16].

Medical students are further vulnerable to academic stress and enjoy less leisure time compared to students of other disciplines, which might have aggravated their poor sleeping patterns. When we analyzed mean global PSQI scores, we found results between 10 and 11, values that are higher than those reported in another study. The similarities and differences between the results of this study and those from other countries could be attributed to the fact that students in medical schools face similar or slightly different stressors related to studying basic and clinical sciences [9, 17].

Regarding the grades of the studied students in the college, it was found that a higher score of PSQI

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was detected among the youngest students in the college, who are in preclinical years, higher than the older students in clinical years. This may be attributed to the extensive academic curriculum during the first three years of medical school, which covers the fundamentals of medical subjects such as anatomy, physiology, pathology, and pharmacology. Our findings are consistent with findings in the literature that there is a high frequency of altered components of sleep quality, a high frequency that is not considered a condition or problem and may have negative health impacts [18].
In summary, our study examined the quality of sleep among medical students at a medical college in Taif, Saudi Arabia. The results indicated deficiencies in specific PSQI components, indicating the need for further research in various parts of the nation and the globe to track the characteristics of these students and facilitate the application of the findings to health promotion initiatives.

Limitation
The data was collected by a self-administered questionnaire, and the questionnaire might contain inaccurate answers, although we tried to minimize this defect by having direct contact with the subjects.

Conclusion
The current study found a high prevalence of poor quality of sleep among medical students. Medical students suffer from poor sleep quality that will lead to unhealthy behaviors like consuming a lot of susceptible to chronic diseases. If these problems are neglected, they will reflect on the health care provided to their future patients. A part of primary health care practice is to prevent and detect the risk factors of the diseases. In the light of conclusion, effective steps should be taken to raise awareness of the significance of sufficient support and counseling, guidance, and mental health prevention programs for medical students as part of their clinical rotations. Unhealthy food and less likely to exercise. Incontestably, they are more to find out how stressed-out medical school students are, how well they sleep, and what factors are related to these variables, another long-term study might be done.

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Conflict of interest
The authors declare that there is no conflict of interest regarding the publication of this article.

Consent to participate

Informed consent was obtained from all the participants.

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