Original Research

Evaluation of the Relationship between Depression, Anxiety, and Stress with Sleep Quality in Nursing Students

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Abstract

Background and Objective: Sleep disorder is highly prevalent among students and can cause neurological, behavioral, and physiological changes and academic decline. Current study aimed to evaluate the association between depression, anxiety, and stress with sleep quality in nursing students of Kurdistan University of Medical Sciences, Sanandaj, Iran.

Materials and Methods: This cross-sectional study was performed on 204 nursing students selected by convenience sampling method. Data were collected using demographic characteristics form, Pittsburgh Sleep Quality Index (PSQI), and Depression, Anxiety, and Stress Scale (DASS-21). Data analysis was performed by SPSS software.

Results: In this study, 115 participants (56.4%) were female and 84 students (41.2%) had poor sleep quality. The results indicated a significant and positive correlation between sleep quality score and depression ($r = 0.492$), anxiety ($r = 0.391$), and stress ($r = 0.414$). Moreover, there was a relationship between the mean score of sleep quality with depression and part-time job of students ($P < 0.05$).

Conclusion: The results of multivariate regression demonstrated that by increasing one unit in depression score and part-time job in students, sleep quality score increased by 0.238 and 1.850 units, respectively. According to the results of the study and concerning the relationship between students' part-time job and depression with sleep disorders, provision of special interventions to enhance sleep quality in students seems necessary.

Keywords: Students; Nursing; Sleep; Depression; Anxiety; Life stress

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Introduction

Sleep is an active, repetitive, and reversible behavior that promotes growth, recovery, learning, and memory enhancement (1). One-third of the world population suffers from sleep disorders (2). The prevalence of sleep disorders in general population is reported to be between 15-24 percent (3, 4).

The quality and quantity of sleep affects learning, cognitive abilities, and actions associated with storage of new information and skills in academic environments (5).

Sleep disturbance is a common problem in academic environments and students' sleep quality is expected to be lower than the general population (6). Entering into a new environment, being separated from family, and anxiety induced by academic settings may affect students' sleep quality (7). Entering the academic environment would change the student's sleeping habits, leading to irregular sleeping cycles (8). Inadequate sleep and sleep deprivation cause neurological, behavioral, and physiological changes as well as poor functioning, absenteeism, and drowsiness during class-

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room times. Thus, this problem leads to many scientific, behavioral, and emotional damages (9). On the other hand, there may be a relationship between sleep disorders with psychosocial disturbances (4). Although admission to a university is a positive challenge, academic pressure and homework and time limitation may impose a lot of stress on students (10, 11). Bayram and Bilgel believe that the period of study is a critical period in which students become vulnerable to mental health problems due to scientific and social demands (12). The results of various studies conducted at universities in Nigeria, Norway, and Uganda indicate a high incidence of mental disorders in students (11, 13, 14). In the United States, stress has become an integral part of today's life, with at least 7 people in every 10 people experiencing anxiety and depression throughout their life (10).

Psychological distress leads to academic problems in students by interfering with professional roles and responsibilities (15). Based on the above-mentioned, the purpose of this study was to investigate the relationship between mental distresses and sleep disorder among nursing students.

Materials and Methods

In this cross-sectional study, the population of study included all nursing students of Kurdistan University of Medical Sciences, Sanandaj, Iran, in 2018. The sample included 204 nursing students selected via convenience sampling method. In order to collect information, we used demographic information (age, sex, semester of study, smoking, student work status, regular exercise, and residence in a dormitory), Pittsburgh Sleep Quality Index (PSQI), and Depression, Anxiety and Stress Scale (DASS-21). PSQI has 19 questions and 7 dimensions which identify 7 characteristics of sleep quality, sleep latency, sleep duration, sleep efficiency, sleep problems, sleep deprivation, and daily dysfunction. The score for each feature varies between 0-3 and the overall score is between 0-21, while scores of 6 or above represent poor sleep quality (3). In this study, the internal consistency of this questionnaire was 0.70. DASS-21 has 21 questions and each of the dimensions of depression, anxiety, and stress has 7 questions. Its reliability in the study of Najafi Kalyani et al. in three parts of depression, anxiety, and stress was 0.83, 0.86, and 0.85, respectively (15). In this study, the reliability of dimensions of depression, anxiety, and stress was 0.83, 0.79, and 0.77, respectively. After receiving ethical approval, the research objectives for nursing students were explained and their satisfaction was obtained for participation in the study. In order to comply with the ethical standards, the questionnaires were distributed anonymously and the participants were assured that this information would remain confidential. Data were analyzed by SPSS software (version 18, SPSS Inc., Chicago, IL, USA) using descriptive statistics, Pearson correlation coefficient, and multiple linear regression analysis. The significance level in all tests was less than 0.05.

Results

The questionnaires were distributed among 375 nursing students, only 204 of which were accurately completed (the return rate was 54.5%). The mean age of the subjects was 21.42 ± 3.01 years and the subjects were in the age range of 18-42 years. Table 1 shows detailed information about students' demographic characteristics.

Table 1. Demographic characteristics of nursing students of Kurdistan University of Medical Sciences, Iran, by score of sleep quality

Variable	Category	n (%)	PSQI (Mean ± SD)
Gender	Male	89 (43.6)	6.68 ± 2.82
	Female	115 (56.4)	5.72 ± 3.35
Academic year	One	74 (36.3)	6.35 ± 2.92
	Two	75 (36.7)	5.82 ± 3.11
	Three	45 (22.0)	6.26 ± 3.85
	Four	10 (4.9)	6.40 ± 1.71
Smoking	Yes	19 (9.3)	7.21 ± 3.73
	No	185 (90.7)	6.03 ± 3.08
Residence in dormitory	Yes	111 (54.4)	6.79 ± 3.08
	No	93 (45.6)	5.36 ± 3.08
Regular exercise	Yes	106 (52.0)	5.89 ± 2.95
	No	98 (48.0)	6.40 ± 3.37
Students' part-time job	Yes	25 (12.3)	7.84 ± 3.71
	No	179 (87.7)	5.90 ± 3.01

PSQI: Pittsburgh Sleep Quality Index; SD: Standard deviation

The students' average sleep quality score was 6.40 ± 3.16 and 41.2% (84 students) had poor sleep quality. There was a correlation between the average score of sleep quality and sex, students' part-time job, and residence in the dormitory, as the average score for sleep quality of boys was higher than girls and students living in dormitory more than home-resident students. Moreover, the quality of sleep score in students with a part-time job was higher than other students (higher score is equivalent to poorer sleep quality). Mean scores of depression, anxiety, and stress were 5.89 ± 4.38,

4.19 ± 3.69, and 6.20 ± 4.22, respectively. There was a significant positive correlation between sleep quality score with depression (r = 0.492, P = 0.001), anxiety (r = 0.391, P = 0.001), and stress (r = 0.414, P = 0.001). In other words, by increasing the quality of sleep score, the students' psychological distress levels also increased significantly. Further details are provided in table 2.

Table 2. Correlation between depression, anxiety, and stress with quality of sleep

Variable	Sleep quality	Depression	Anxiety	Stress
Sleep quality	1			
Depression	0.492	1		
Anxiety	0.391	0.649	1	
Stress	0.414	0.744	0.645	1

P = 0.001

There was a relationship between the mean score of sleep quality with depression and students' part-time job (P < 0.05). The results of multivariate regression demonstrated that by increasing one unit in depression and students' part-time job, sleep quality score increased by 0.238 and 1.850 units, respectively (Table 3).

Discussion

The present study aimed to evaluate the relationship between depression, anxiety, and stress with sleep quality among nursing students. It showed that with increasing psychological distress, the quality of sleep decreased.

The study by Seun-Fadipe and Mosaku, similar to our findings, showed a significant relationship between depression and poor sleep quality among students (16). In the study of Tao et al., there was a positive and significant relationship between sleep quality score and depression (17). The results of Teker and Luleci study showed that there was a direct relationship between high anxiety and sleep disorder (18). Staner also argued that anxiety disorders were one of the most common psychiatric distresses associated with sleep disorders (19).

Rezaei et al. also found that there was a relationship between the psychological distress and poor quality of sleep of medical students (20). Overall, college education and student life can lead to changes in students' lifestyle and, ultimately, mood changes and even sleep disorders. Nursing students are more prone to sleep problems because of high stress, concerns about high-volume textbooks, and being in clinical and stressful situations during their study period. Sleep disturbances can be reduced by planning for improvements in sleep quality, providing psychological training, and interventions for students' mental health.

According to the results of our study, there was a significant relationship between mental distresses with quality of sleep among nursing students. Regression coefficients showed that by increasing one unit in depression and students' part-time job, sleep quality score increased by 0.238 and 1.850 units, respectively. The study by Mokros et al. showed that depression was associated with the quality of sleep among medical students (21). In the study of Augner, depression was a predictor of students' sleep disorder (22).

Table 3. The results of multiple linear regression coefficients

Model	Status	B	SE	Lower CI	Upper CI	P-value
Gender	Male	-0.367	0.401	-0.417	1.151	0.359
	Female	-	-	-	-	-
Academic year	One	-0.505	0.902	-2.273	1.263	0.576
	Two	-0.915	0.889	-2.658	0.828	0.304
	Three	-0.282	0.919	1.519	0.094	0.759
	Four	-	-	-	-	-
Smoking	Yes	0.130	0.657	-1.159	1.418	0.844
	No	-	-	-	-	-
Residence in dormitory	Yes	0.619	0.389	-0.144	1.382	0.112
	No	-	-	-	-	-
Regular exercise	Yes	-0.435	0.376	-1.172	0.302	0.247
	No	-	-	-	-	-
Students' part-time job	Yes	1.850	0.604	0.666	3.033	0.003
	No	-	-	-	-	-
Age		-0.073	0.066	-0.203	0.057	0.271
Stress		0.038	0.069	-0.097	0.173	0.577
Anxiety		0.125	0.071	-0.015	0.265	0.080
Depression		0.238	0.068	0.105	0.371	0.001

CI: Confidence interval; SE: Standard error

In addition, there seems to be a two-way causal connection between depression and low sleep quality. As depression can be related to sleep disorders, poor sleep quality can also be considered as a factor affecting mood disorders such as depression. Demirci et al. showed that low sleep quality could predict depression in students, and depression in students could lead to sleep disturbances (23). Regarding the role of depression in the occurrence of sleep disorders, initial screening of students in terms of mental health problems and providing psychiatric counseling, recreational activities, and creating a learning environment with vitality seem essential.

In this study, 41.2% of nursing students had sleep disorders. In a meta-analysis by Ranjbaran and Khorsandi, the pooled prevalence of sleep disorder among university students in Iran was estimated to be 56.0% (4). Regarding the high prevalence of sleep disturbance among students and its negative effects on mental health and educational status, educational and preventive interventions seem to be necessary for the importance of proper sleep and promoting sleep quality and related skills. Among the findings of this study, it can be noted that female students compared to male students, students with part-time job compared to students without part-time job, and students living in a dormitory compared with students living in homes had a more unfavorable sleep quality. Similar to our results, in Barahona-Correa et al. study, the prevalence of sleep disorders in female students was higher than male ones (24). Eslami also concluded that the prevalence of sleep disorders in female students was higher than that of male students (25). Some researchers have stated that the prevalence of sleep disorders in female students is 2 to 5 times higher than others (26, 27). We attribute the high prevalence of sleep disorder in girls to physiological differences, hormonal changes, menstrual cycles, and related disorders (28).

Another finding of the study was that sleep quality of the students living in a dormitory was lower than other students. Along with this finding, Araste has reported that the prevalence of sleep disorders in dormitory students is 2 times higher than other students (29). Students living in a dormitory with specific environmental profile (no personal bedroom, abundance of noise) have a new cultural situation (linguistic, communication, and behavioral differences with other students) that can affect their sleep quality (30). Other factors, such as living with different habits and improper physical environment, also make residents of the dormitory suffer more from sleep disturbances.

There was no literature about the effects of students' part-time job on students' sleep quality. A study by Beachy et al. found that students with part-time job had a greater sense of relaxation, skill, and experience and finally had better sleep compared to other students (31). In Manouchehri et al. study, nursing students with part-time job fell asleep at a shorter time and had longer sleep periods as the result of fatigue (32). Nevertheless, students' part-time job can have a negative effect on students' academic performance. Cross-sectional design along with using self-reported measure instead of objective methods for evaluation of sleep problems are considered as limitations of this study.

Conclusion

The results of this study showed that 41.2% of students had poor sleep quality. Given the adverse consequences of sleep disturbances in students and the relationship between mental distress and sleep disorders, identifying students at risk for mental disorders seems necessary.

Conflict of Interests

Authors have no conflict of interests.

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