

Assessment Sleep Quality and its Relationship with Test Anxiety among High School Students in Qom- Iran

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Abstract

Background

Test anxiety is a special case of a general anxiety which is of particular importance in students, because students will be the future of the country and the society activists. On the other hand, sleep quality and sleep disorders, have correlation with ailments, poor performance, decreased quality of life and increase of associated costs; This study aimed to determine the quality of sleep and its relationship with test anxiety among students in Qom city, Iran.

Materials and Methods

This study was a cross-sectional study, which was performed among 250 students who were going to pass the exam preparation classes. In order to collect data Pittsburgh Sleep Quality Index (PSQI) questionnaires and Test Anxiety Inventory (TAI) questionnaire were used. Data were analyzed using SPSS-16 with descriptive statistics and statistical methods, independent t-test, ANOVA and Pearson correlation coefficient.

Results

In this study, 50% of participants were boys (n=125) and 50 percent were girls (n=125). 81.4% of subjects had poor sleep quality and 69.6% had average to high score for test anxiety. Based on the results of anxiety test and sleep quality index there was a significant correlation between anxiety and sleep quality with gender (P=0.003, r=0.447).

Conclusion

School children had poor sleep quality and high test anxiety, and due to their direct and significant correlation, attention to this category of students, especially for girls, is important. Therefore, anxiety and promoting sleep quality control programs are recommended in this group.

Key Words: Iran, Sleep quality, students, test anxiety.

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1- INTRODUCTION

Nowadays, students in each country are under special attention of planners and policy-makers, for they are recognized as potential capitals of that country and they play important role for the future. The importance of this role is that they will not only be the main part of different areas, but also they will be the main body of the managers of each country. So, without providing a secure platform, especially regarding health and good academic performance, they won't find their way to progress, because their health would guarantee the health of the country by now and future (1). Here the anxiety and poor sleep quality not only are the factors affecting the health of adults, but also affects student's health (2-4).

Test anxiety is one of situational anxieties, which can be seen in all social economy classes; and has a close relationship with the academic performance of students in educational centers. Test anxiety is determined with disturbing thoughts, increased heart rate, and flooding back emotions during or after the exam, and sometimes is so severe that it limits the student's daily life (5). Part of poor academic performance of students and adolescents is attributed to insufficient sleep (6). Sleep problems can cause anxiety, depression, low self-esteem in children, the persistence of these problems from childhood to adolescence, will be related with use of alcohol and drug in future (7). In some studies have also shown that reduced sleep quality during the test time, and poor sleep affects their academic performance and decrease this performance (8).

University entrance exam is one of the biggest test holding in Iran, and every year a large numbers of people in different fields of study attracted in order to qualify for the competition to go to university exam in the meantime, many students participate in the exam preparation classes

or prepare themselves from the early years of high school to pass the test, to strive their academic fate. Due to the above mentioned and considering that our students during their studies and to scientific progress had to attend the university entrance exam. This study aimed to determine the quality of sleep and its relationship with test anxiety among students in Qom city, Iran.

2- MATERIALS AND METHODS

2-1. Study Design and Population

This was a cross-sectional study that was done among 250 of students who were participated in pre-university entrance exam preparation classes in Qom- Iran.

2-2. Methods

For this purpose, using multistage sampling 5 institutions were selected among different institutes in Qom. Then, 50 person were selected from each institute to include in the study. The study's execution time was a month before the entrance examination for the university by 2016.

2-3. Inclusion criteria

Regarding the inclusion criteria, including exam preparation classes, participated in the exam for the first time, not treated with medications anxiety or sleep disorders.

2-4. Measuring tools

In order to collect data, the Pittsburgh Sleep Quality Index (PSQI) and Test Anxiety Inventory (TAI) were used. Pittsburgh Sleep Quality Index that investigates people's attitudes about sleep quality in the past four weeks, and has 7 items. Each item has a score from zero to three. In the Iranian version of the questionnaire validity was 0.86 and reliability was 0.89 (9). Total score of this questionnaire is 0 to 21 score. 6 and higher scores indicating poor sleep quality is considered.

TAI test anxiety questionnaire consisting of 25 items which are four choices for each subject to answer it based on a scale (never =0, rarely=1, sometimes = 2, often = 3). In this test, a minimum score of zero and the maximum is 75. Whatever, the person receives a higher score, indicating greater anxiety. Score below 25 means low stress, anxiety 25-50 middle anxiety and more than 50 is considered high anxiety. This questionnaire has been standardized by Shokri and colleagues in Iran (10).

2-5. Ethical considerations

Because of moral considerations, questionnaires were completed with their satisfaction and samples were collected with knowledge of the aims of the study.

2-7. Data analyses

In order to analyze the information gathered using SPSS statistical software version 16.0 and descriptive statistics, independent t-test, ANOVA and Pearson correlation coefficient significant at 0.05 and power of 0.9 was used.

The Pearson correlation coefficient was used for evaluating the correlation between sleep quality and test anxiety and to evaluate the correlation between mean aged, sleep quality and test anxiety. Independent t-test was conducted to evaluate sleep quality and test anxiety score differences according to gender. ANOVA test was employed to assess differences of test anxiety and quality of life based on field of education, birth and parental education.

3- RESULTS

In this study, 50% of participants were boys (n=125) and 50 percent were girls (n=125). 52% (n=130) were studying in the field of the experimental sciences, 28.8% (n=72) in Mathematics and 19.2% (n = 48) humanities. 39.6% (n = 99) were the first child of the family, 30% (n = 75), second number of the family, 16.4% (n=41), the third child of the family and 14% (n = 35) were fourth child and family above.

In terms of father's education, 6.8% (n = 17) were illiterate, 24.8% (n = 62) had high school diploma, 30.8% (n = 77) had diploma, 37.6% (94 patients) had university education. In terms of mother's education, 9.2% (n = 23) were illiterate, 33.6% (n = 84) had high school diploma, 40% (n = 100) had diploma, 17.2% (43 patients) had university education. The mean and standard deviation (SD) of Pre-university grade point average (GPA) score was 16.73 ± 2.98 , that 22.4% had average of 10 to 15, and 32% had 15 to 17 and 45.6% had an average of more than 17.

In this study, mean and SD of quality of sleep score in school children was 8.51 ± 2.97 (of the total score 21). That due to the cut-off point Pittsburgh Sleep Quality Index 81.2% (n=203) had poor sleep quality and 18.8% (n=47) had good sleep quality. Details of the components of sleep quality are shown in **Table-1**. Mean and SD score of test anxiety was 51.39 ± 18.25 in the participants; anxiety among 30.4% of students was low and among 48.4% of students was moderate and 21.2% of students was high, respectively (**Table-2**). The correlation matrix between test anxiety and sleep quality indicators showed that there was a significant relationship between test anxiety and sleep quality ($r=0.447$ and $P=0.003$) (**Table-3**). T-test results showed a significant differences according to gender in mean sleep quality scores ($P=0.009$) and test anxiety ($P=0.006$), so the sleep quality

score and also test anxiety in the girls was significantly more than the boys. But the ANOVA test did not show a significant difference in mean sleep quality scores and test anxiety based on the field of study ($P>0.05$) (**Table-4**). The statistical test also showed no correlation between test anxiety

and sleep quality by birth and education of parents of students ($P>0.05$). Pearson's correlation coefficient showed no significant correlation between the two variables of sleep quality and test anxiety with the mean aged of participants ($P>0.05$).

Table-1: Descriptive measures of sleep quality components by the studied samples

Sleep quality components	Mean	SD	No sleep problems		Moderate		Sever		Very serious problem.	
			n	%	n	%	n	%	n	%
Mental sleep quality	1.28	0.73	44	17.6	112	44.8	53	21.2	41	16.4
Delayed sleep	1.91	1.01	21	8.4	119	47.6	67	26.8	43	17.2
Helpful sleep duration	1.99	0.95	25	10	115	46	79	31.6	31	12.4
Sleep efficiency	1.01	0.55	63	25.2	121	48.4	46	18.4	20	8
The sleep aid	.19	.018	171	68.4	46	18.4	23	9.2	10	4
Sleep disorder	1.10	0.64	62	24.8	121	48.4	45	18	22	8.8
Morning performance	1.03	0.68	59	23.6	119	47.6	51	20.4	21	8.4
Overall score	8.51	2.97								

Table-2: The frequency distribution of the status of test anxiety by the studied samples

Test anxiety	Number	Percent
Low	76	30.4
Average	121	48.4
High	53	21.2
Total	250	100

Table-3: Correlation matrix between test anxiety and sleep quality indicators

Variables		Mental sleep quality	Delayed sleep	Helpful sleep duration	Sleep efficiency	The sleep aid	Sleep disorder	Morning performance	Overall score
Test anxiety	r	0.421	0.632	0.511	0.503	0.194	0.316	0.345	0.447
	P-value	0.005	0.002	0.007	0.013	0.031	0.018	0.025	0.003

Table-4: The comparison between the mean and SD of sleep quality and test anxiety in the participants based on gender

Variables		Sleep quality		Exam stress	
		Mean (SD)	P-value	Mean (SD)	P-value
Gender	Boy	7.75 ± 2.66	0.009	45.14 ± 14.17	0.006
	Girl	9.27 ± 2.43		57.64 ± 20.55	
Field of Study	Mathematics field	8.70 ± 3.12	0.145	51.53 ± 19.22	0.136
	Experimental field	8.44 ± 2.48		53.93 ± 20.11	
	Humanities field	8.40 ± 2.08		48.71 ± 18.82	

SD= Standard Deviation.

4- DISCUSSION

In this study it was found that test anxiety situation is not favorable conditions in the studied samples, so as about 70% have medium or high test anxiety. A similar result can be seen in the results of Jafarbegloo (11) and Latas (12) observed. In a study conducted by Moghimian 20% of the samples examined in the study had severe test anxiety (13).

In a study conducted by Dortaj on new students 40% of the samples were with medium test anxiety and about 12% have had severe test anxiety (14). The test anxiety level of current study was higher than its prevalence in studies by Lashkaripour (15), among high school students in Zahedan and Yazdani (16) in the city of Najaf Abad, Iran, which can be caused by anxiety of such an important exam like entrance exam. Although, this issue is predictable in a month before the exam however, it shows the worrisome situation in the students of this school level. In this study it was found that sleep quality items are not in good condition, and about 81% had poor sleep quality. In a study by Mohammadi (17), 73% and in a study by Rahmati (18), 63% and in a study by Tsui (19), 49% of students had poor sleep quality, which is less than the current study. It seems that time for the exam and special circumstances of this time would be effective in the results. To confirm the above findings, it can be noted in Aghajanloo study (20). In his study, 86% of students suffering of poor sleep quality during the test. However, in each course level is affected by living conditions which can impact on many physiological processes, such as sleep and here sleeping habits and daily habits are one of the first to enter university at the beginning of change (21). The results showed that anxiety level among female students was significantly higher than the males. Ahmadiyan study also showed that test anxiety among high school girls were

higher than boys (22). However, other researches on the subject suggest that the epidemiology of test anxiety in girls are more than boys. That some of the studies can be noted are Latas (12), Farooqi (23), Moaddeli (24) and Lashkaripour (15). In this study, sleep quality of girls compared the boys, showed a more unfavorable trend. Although, studies of Ghoreishi (25) and Soltani Shal (26) have shown no relationship between sleep quality and gender, but studies conducted by Mohammadi (17) and Rocha (27), Golabi (28) and Kaneita (29) showed poor sleep quality for girls than boys. Previous studies suggest that the prevalence of sleep disorders in women can be due to physiological differences. Hormonal changes in women and the menstrual cycle and related disorders can be considered among the causes of inappropriate sleeping for girls than boys (27). Perhaps one of the reasons is that girls can be more sensitive than boys and girls are under the influence of daily stresses expressed by curriculum competing performance; so, if test anxiety caused by the exam also be added to the terms of sleep quality it will be worsen.

In this study, the degree of test anxiety had no significant relationship between sleep quality and field of the study of students in the field of mathematics, science and humanities and test anxiety and sleep quality were relatively similar; which can be caused by the excitement and stress of the exam which is considered the same conditions for all academic disciplines. Moaddeli (24), Cheraghian (30) and Dortaj (14), also showed that there was no significant relationship between field of study and test anxiety. The study conducted by Alimirzaee (31), also indicate a lack of sleep quality associated with the field of study. At current study, also, no significant relationship was found between test anxiety and sleep quality variables of birth, and parents' education. In this regard, studies by Yazdani (16),

Cheraghian (30), Dortaj (14), Perez-Chada (32) and Curcio (33) confirmed the current findings. Age also had no significant correlation with anxiety and sleep quality that seems to be because of the age of the participants which was so close to each other. The study showed no significant correlation between GPA and test anxiety and sleep quality.

Some studies such as Yazdani (16), Vitasari (34) Perez-Chada (32) and Zailinawati (35) showed a significant correlation between the two mentioned variables of academic performance; but it seems, in the present study due to the large and difficult test conditions, it is not easy to investigate the subject of the study. However, Moghimian (13), Cheraghian (30), Anisa (36) and Wang (37) confirmed the findings of this study. There was direct significant correlation between test anxiety and sleep quality by the current study. In other words, by increasing the amount of test anxiety questionnaire score sleep quality was increased. Or more precisely with test anxiety, poor sleep quality was increased. Although, this study cannot exactly explain causal relationships, but previous studies have confirmed this.

So that, Kaneita admitted that sleep disorders and mental health of Japanese students has bilateral relationship of cause and effect (29). Aloba has shown a significant relationship between sleep quality and mental health of Nigerian students (38). Trockel (39), Eller (40) and Taylor (41) showed similar results, too. However, human health is associated with sleep quality and quantity such as insomnia and sleep loss which can affect the quality of life. (42)

4-1. Limitations of the study

This study was a cross-sectional study and cannot suggest a causal relationship between quality of sleep with test anxiety. In other words, this study could not determine if there is any precedence

between poor sleep quality with test anxiety. The results, are also based on the student's self-report about their status especially sleep quality and test anxiety so it can be taken into account as another limitation of the study.

5. CONCLUSION

The results of this study indicate that students participating in the entrance examination suffered from high test anxiety and poor sleep quality, which can be considered as one of the concerns of the educational system. The situation was worst among girls compared the boys, and they suffered more test anxiety and poor sleep quality. The study also showed that increase in test anxiety was along with poorer sleep quality. Therefore, it is suggested there is a need for educational programs to control anxiety and promoting sleep quality to be implemented in this group of students.

6- CONFLICT OF INTEREST: None.

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