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Original Article

The Relation between sleep quality and primary dysmenorrhea Students University of medical sciences Shahroud

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ABSTRACT

Background & Aims: Dysmenorrhea is one of the most common illnesses in women and its outbreak has varied in various studies. Some women, shortly before or at the onset of the menstrual period, experience frequent and overt bouts and change behavioral patterns and overeating. The aim of this study was to determine the relationship between dysmenorrhea and sleep quality. Material & Methods: This study cross-sectional study, On the 300 student's university Medical Sciences Shahroud data was collected by classified random. Questionnaire on demographic information, dysmenorrhea and Pittsburgh Sleep Quality Index (PSQI) standard completed by students. Data were analyzed using SPSS. 18. Findings: Results indicated the group have severe menstrual pain, poor sleep quality scores than the other groups .Mean score sleep quality in the students who used the pain medication were significantly higher, Also score the quality of sleep in patients with a family history of dysmenorrhea and excessive bleeding was significantly higher (P≤0.05). Conclusion: Considering the relationship between dysmenorrhea and sleep quality among students, Poor sleep quality was significantly associated with the physical and emotional complications and negatively effect on student academic performance. Is necessary appropriate measures reduce the severity of dysmenorrhea.

Keywords: Dysmenorrhea, sleep quality, medical students

Introduction

Dysmenorrhea is one of the most common illnesses in women and its prevalence has been mentioned differently by different studies [1]. The studies conducted in Iran also have reported dysmenorrhea as one of the most common complaints of girls and women such that it can be said that approximately 70-80 percent of Iranian women and girls suffer from dysmenorrhea [2-5]. Dysmenorrhea is one of the main reasons for absence from school and workplace that annually wastes 600 million work hours and 2 billion dollars economically [6, 7]. Moreover, it can be a reason for family and personal failures and it has been shown that the girls with dysmenorrhea have lower success and more problems regarding adaptation with school compared to the girls without dysmenorrhea [8]. A comprehensive study was done on 16-56-year-old participants and it was proved that dysmenorrhea can affect women in all stages of reproduction ages and harm their ability to work and their health [9]. Some women get afflicted with alternative oversleeping, change in behavioral patterns, and overeating in a short while before or simultaneously at the beginning of menstruation [10]. Sleep is one of the most basic needs of human that greatly affects his quality of life, physical and mental health, ethics, and the quality of doing his tasks; it is considered as an important health variable [11, 12]. Sleep is a physiological reversible phenomenon during which the responses to the stimuli decrease [13]. It reduces stress, anxiety, neural pressures and helps the individual recover energy for a better concentration, adaptation, and enjoying daily activities [14, 15]. Insufficient sleep leads to drowsiness, decreased consciousness, bad temper, the problem in concentration, educational decline, reduced normal daily performance, and increased mistakes, neural, behavioral, and physiological changes; it results in harmful consequences for cardiovascular and immune systems [16-19]. Due to the importance of the sleep quality and its effect on the students' efficiency and regarding the fact that no study has been conducted so far for investigating the status of dysmenorrhea

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among female students of Shahroud University of Medical Sciences, it was decided to conduct a study aiming at determining the relationship between dysmenorrhea and the sleep quality of students at Shahroud University of Medical Sciences.

Method

This is an analytic cross-sectional study conducted on 300 students living at dormitories of Shahroud University of Medical Sciences. Convenience sampling was used in this study. The inclusion criteria included 18-25 years of age, being single, lack of any physical and mental disease, lack of experiencing a terrible event in the recent year, lack of consuming cigarettes, alcoholic drinks, and hypnotic sedative drugs. The exclusion criterion was the unwillingness to cooperate. The researcher explained the objectives of the study to all students who were willing to participate in the study, assured them that their information would be kept confidential, and collected the data. A questionnaire was used as the instrument of the study which included three parts. The demographic information, the information about medical history and dysmenorrhea of the individual, and the sleep quality were respectively evaluated in the first, second, and third parts of the questionnaire using Pittsburgh Sleep Quality Index. Some of the faculty members of Shahroud School of Nursing and Midwifery were provided with the questionnaire so as to determine the validity of the first and second parts. After that, the necessary modifications were done. Test-retest reliability was used to determine the reliability. The reliability and validity of Pittsburgh Sleep Quality Index have been confirmed in the previous studies [20]. The first part of the questionnaire consisted of demographic information (age, major, educational level, body mass index (BMI) and regular physical exercise, appropriate silence in the room, drinking tea, and being exposed to the smoke of cigarette and Hookah) and the second part consisted of the information related to menstruation history (Age of the first menstruation, length of the menstrual cycle, duration of menstrual bleeding, bleeding volume, intensity of period pain, use of painkillers, family history of dysmenorrhea, improvement of pain after using painkillers, and regular physical exercise during menstruation). A Visual Analogue Scale (VAS) was used to measure pain intensity. This instrument is standard and its reliability and validity have been confirmed in different studies. In this method, the individual is instructed to mark the climax of her pain intensity on a ruler. The beginning point of the ruler represents "lack of pain" and the end of the ruler represents "very severe pain". According to this criterion, the individuals were divided into painless (zero), mild pain (1-3), moderate pain (4-7), and intense pain (8-10) groups. The third part of the questionnaire was the Pittsburgh Sleep Quality Index which consisted of 10 items that measure sleep quality in 7 areas including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction. Its score domain ranges from 0 to 21 and its cutpoint is 5. Data analysis was done by SPSS 18, descriptive and inferential statistics (frequency, one-way ANOVA, and t-test). The significance level was considered as 0.05.

Findings

Among 300 questionnaires that were distributed among participants, 20 questionnaires were excluded because of incomplete answers. As such, a total of 280 questionnaires were analyzed. Results of the analysis indicated that the average age of the participants was 20.8, 59% of whom studied for their bachelor's degree and 5% of whom studied for their Ph.D. The mean of their accommodation in the dormitory was 23 months and 6 days (Table 1). The age of menarche in 52.5% of them was 14-17 years old and that of 47.5% of the students was 10-13. The average length of the menstrual cycle was 26-35 days. Duration of menstruation in most of the students (49.6 percent) was 3-6 days. Among the students with dysmenorrhea, 30.7 percent suffered from intense dysmenorrhea and 65.45 percent suffered from mild to moderate dysmenorrhea. 52.1 percent of the participants had a family history of painful menstruation. 63.9 percent of the students used painkillers so as to relieve pain, 88.3 percent of whom has reported the improvement of menstruation signs after using painkillers. The menstruation pain intensity had reduced in 79.6 percent of whom over time (Table 2).

Table 3 generally shows the average score of each scale of Pittsburgh Sleep Quality Index. The mean of the total score of sleep quality (PSQI) was 9.9 in the students with the confidence interval of (9.4-10.4). The findings of the present study showed that 82.7 percent of the participants had an unfavorable sleep quality. In this study, the relationship between many variables and students' sleep quality was investigated; the results of which are shown in Table 4. The results of one-way ANOVA indicated that the group which was categorized in the intense menstruation pain group had a more unfavorable score of sleep quality compared to the other groups. Among the students of different majors, the students of occupational health had the highest average score of sleep quality while the students of the operating room had the lowest average score of sleep quality. There was not a significant relationship between sleep quality and duration of menstruation bleeding, the age of menarche, eating before sleeping, and major. However, the students who used painkillers had a significantly higher average score of sleep quality ($P \leq 0.05$).

Discussion and Conclusion

The results of this study showed that 96.1 percent of the students suffered dysmenorrhea, of whom 65.4 percent suffer from mild to moderate dysmenorrhea and 30.7 percent of the individuals suffered from intense dysmenorrhea. Shabani et al. (2010) conducted a study and showed that 74 percent of the students in the research suffered from moderate to intense

dysmenorrhea [21]. The prevalence of dysmenorrhea in the study of Ansal et al. was reported as 64 percent [22].

The findings of the present study showed that approximately all students in the 2, 3, and four groups of menstruation pain suffered from dysmenorrhea and reported the use of painkillers to relieve pain; of whom, 87.3 percent reported the improvement of menstrual pain in the form of "often or always". In the study of Shabani, 75 percent of the students with dysmenorrhea used painkillers that often or always improved their pain in 90 percent of the cases [21].

82.7 percent of the students in this study had an unfavorable sleep quality and the average score of sleep quality in the individuals with menstrual pain was significantly high, indicating their unfavorable sleep quality. Some studies have reported considerable changes of sleep in the women with menstrual pain [23]. However, the results of the study of Arajoo et al. (2011) showed that menstrual pain does not significantly change the sleep pattern. Arajoo mentioned that the reason for this issue has been the population of adolescent women that none of them reported the feeling of intense pain and awakening from sleep [12].

In the preset study, there was a significantly direct relationship between the sleep quality score and family history of dysmenorrhea, bleeding volume, and being exposed to the smoke of cigarettes. 52.1 percent of the students had a family history of painful menstruation; this finding is in line with the study of Ansal in Turkey and the study of Shabani et al. Ansal reported the prevalence of dysmenorrhea as approximately 50 percent [22] and Shabani et al. showed that in 57 percent of the individuals, there was a positive family history of dysmenorrhea [21]. Probably, this is because of the education of the mother's behavior during menstruation period that somehow leads to the conditioning of the pain.

Due to high prevalence of dysmenorrhea among students and its effect on the sleep quality and since insufficient sleep and change in the pattern of sleep leads to neural, behavioral, and physiological changes resulting in educational decline and decreased normal daily performance of the students, and because the findings of this study indicated that dysmenorrhea can negatively affect the students' sleep quality, it is necessary to provide facilities, preferably physiological and non-medication ones, so as to eliminate or alleviate this illness.

Limitations of the study

Dysmenorrhea consists of two types: primary and secondary. The secondary dysmenorrhea results from pelvic diseases and is diagnosed by sonography. One of the limitations of this study was lack of access to sonography for all participants and also its high cost. Therefore, in this regard, the researchers considered the age of the individuals that should be 18 to 25, being single, and lack of any physical and mental disease as sufficient.

The application of the research findings in the clinical setting

The results of this study showed that there is a relationship between dysmenorrhea and students' sleep quality, resulting in physical and mental side effects and negative impact on students' educational performance. Hence, awareness in this regard and acquiring necessary ability to use different methods of pain relief including traditional medicine, complementary medicine, aromatherapy, etc. for reducing the intensity of dysmenorrhea and increasing the students' sleep quality can considerably affect the improvement of physical and mental health, the educational performance, and higher efficiency of the individuals in the society.

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Table 1. Demographic characteristics of participants

Standard deviation	Mean	Variable
1.6	20.8	age
Percent (%)	Frequency	Variables
	Major	
5.4	15	medical
64.2	180	Paramedical
30.4	85	health
	Body mass index	
34.3	96	thin
60.7	170	normal
4.3	12	Overweight
0.7	2	obese
	Physical activity	
16.8	47	yes
	The suitability of silence in the room	
62.9	176	yes
	Tea consumption	
85	237	yes
	Passive smoker	
7.5	21	often
35.4	99	sometimes

Table 2. Menstrual characteristics of the students studied

Bleeding of menstruation	Frequency	Percent (%)
few	12	4.3
moderate	219	78.2
massive	49	17.5
Physical activity in menstruation period		
Never	135	48.2
rarely	125	44.6
mostly	15	5.4
Always	5	1.8
Severity of dysmenorrhea		
no pain	11	3.9
Mild	78	27.9
moderate	105	37.5
sever	86	30.7
History of dysmenorrhea		
yes	146	52.1
no	70	25.0
she don't know	64	22.9
Use of pain reliever		
yes	179	63.9
Time of painkiller consumption		
before pain	28	15.6
between pain	145	81.0
after pain	6	3.4
Respond to painkillers		
rarely	21	11.7
almost	103	57.5
always	55	30.8

Table 3. Mean and standard deviation of seven scale scores and total sleep scores in participants

Scale	Mean	Standard deviation
subjective sleep quality	1.17	0.66
sleep latency	1.6	0.93
sleep duration	2.12	1.05
habitual sleep efficiency	1.85	1.21
use of sleeping medications	0.58	1.00
sleep disturbances	1.37	0.62
daytime dysfunction	1.30	0.98
Total score of Sleep Quality	9.91	4.22

Table 4. Comparison of sleep quality score among participants living in dormitory

variable	Mean± Sd.	P-value
Time of painkiller consumption		
yes	3.99±10.9	<0.001
no	3.29±8.52	
Bleeding of menstruation		
few	3.93±9.66	0.024
moderate	3.64±9.69	
massive	4.74±11.36	
History of dysmenorrhea		
yes	4.0±10.58	0.026
no	3.97±9.28	
She don't know	3.37±9.37	
Severity of dysmenorrhea		
no pain	3.33±6.09	
Mild	8.84±8.88	<0.001
moderate	3.49±10.27	
sever	4.24±11.56	
Passive smoker		
often	3.47±10.38	0.037
sometimes	5.11±10.95	
Passive smoker	3.77±9.55	
The suitability of silence in the room		
yes	4.47±9.75	0.069
no	3.99±10.72	
Educational level		
Bachelor	3.90±10.00	0.788
M.D	4.08±9.71	

*t-test