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Original Article

Assessing the quality of sleep among nurses working at educational hospitals of Zanjan University of Medical Sciences and its related factors

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ABSTRACT

Background & Aim: Nurses' health due to its direct impact on the society's health is of considerable importance, which is usually neglected. One of the effective factors on individual's health is the quality of their sleep. Considering that nurses would work different work shifts, including night shifts, it is possible for them to suffer from sleep disorders. The present was conducted to evaluate the quality of sleep among nurses working at Educational hospitals of Zanjan University of Medical Sciences and its related factors.

Methods & Materials: The present research was a descriptive cross-sectional study that was conducted at educational hospitals of Zanjan University of Medical Sciences. Nurses working at internal, surgical and ICU departments were evaluated using Pittsburgh Sleep Quality Index. The study had 176 participants. Data were analyzed using SPSS 16 and Chi square test and Spearman correlation coefficient.

Results: In the present study. 14% of the nurses had a desirable quality of sleep but the quality of sleep in most of the participants (86%) was undesirable. Chi square test showed that the quality of sleep was significantly better among the nurses working at ICUs than nurses working at internal and surgical departments ($p = 0.039$).

Conclusion: Most of the participated nurses in the present study had an undesirable quality of sleep, which was worse among the nurses working at internal and surgical departments. This might be due to the heavier workload among the nurses of these departments and the ratio of nurses to the patients.

Introduction

Sleep has an essential role in maintain the general health of every individual (1) and is one of the human's needs that play an important role in their lives (2, 3). Sleep has a vital role in maintaining the mental and social balance of every individual. Sleeping and waking cycles are a biologic rhythm that would be determined by the circadian system and would be affected by different factors such as physiologic factors, work schedule and etc. Sleep deprivation could lead to psychosocial stress, psychological disorders and declined job performance (4). Nurses are one of the significant groups of shift workers who are prone to insomnia and their irregular sleeping and waking pattern not only would affect them and decrease the quality and duration of their sleep, but also would decline their job performance (5, 6). This might endanger the health of their patients too (7). Sleep quality is one of the effective factors in nurses' performance and their sleep disorders could lead to mistakes in the treatment process and patients' care which might cause irreparable damages (8, 9). Results of a study that was conducted by Pi Lay Chain et al on Taiwanese nurses

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indicated that 75.8% of the nurses had low sleep quality (10).

The study of Takashi et al that was conducted on 620 Japanese nurses resulted that only 8% of two-shift working nurses and 6% of three-shift working nurses had a good sleep quality (11). Also results of the study by Sadegh Niat et al showed that the prevalence of sleep disorders among nursing staff was 87.7% and among them, 58.3% had drowsiness during the day and 75.1% had overnight insomnia (12).

In this regard, results of the study by Sanjari et al revealed that sleep disorders are related to occupational mistakes, which could have a direct effect on providing nursing care (13). So considering the importance of sleep quality among nurses and its effect on nurses' activity and consequently the health of the society and also considering the lack of such a study in Zanjan, the present study was conducted to evaluate the sleep quality of nurses and its effective factors.

Methods

The present research was a cross-sectional study that was conducted in 2013 to evaluate the quality of sleep among nurses working at educational hospitals of Zanjan University of Medical Sciences. Study population included all the nurses working at internal-surgical departments and ICUs of the educational hospitals of Zanjan University of Medical Sciences (Ayatollah Mousavi, Hazrat-e-Valieasr and Shahid Behehshti). Samples were 176 nurses who were selected using census method. The inclusion criteria were having at least a bachelor's degree in nursing, working at internal-surgical departments and ICUs, and being present and active at the intended department for at least 6 months. After taking written informed consent from the participants they were asked to complete a questionnaire that was developed in this regard. Data gathering tool was a self-report questionnaire.

For gathering the data in the present study two questionnaires were used. The first questionnaire was for gathering the demographic characteristics of the participants, which contained 9 questions about gender, age, educational level, work history, type of employment, department, working shift, monthly income level and marital status. The second questionnaire was Pittsburgh Sleep Quality Index (PSQI) which is a standard questionnaire with 9 items categorized in 7 dimensions: The first dimension is about subjective quality of sleep which has one question (No. 9). The second dimension is about delay in falling sleep which is indicated by two questions (the mean of No. 2 and part (a) of No. 5). The third dimension is about the duration of sleep which has one question (No. 4). The fourth dimension is about the efficiency and effectiveness of sleep. Its score would be calculated by dividing the total of hours of sleeping by the total hours of being in bed multiplied by 100. The fifth dimension is about sleep disorders, which is achieved by calculating the mean scores of the details of question No. 5. The sixth dimension is about consuming hypnotic drugs which is defined by one question (No. 6). The seventh dimension is about inappropriate performance during the day which has two questions (the mean of questions No. 7 and 8). The score of each dimension could be 3 at most. The score of 0 indicates lack of sleep disorders and the scores of 1 and higher for each dimension indicates the presence of sleep disorders. The sum of the scores of these seven dimensions would give the score of the entire questionnaire which would range from 0 to 21. The higher the achieved score the lower the quality of sleep. Scores from 0 to 5 indicate desirable quality of sleep and higher scores indicate undesirable quality of sleep (14). This

questionnaire has been used in different countries and its validity and reliability has been approved (15-17). In the study of Soleymani et al, the reliability of this questionnaire was reported as 0.87 using test-retest method (18).

The research team visited the selected hospitals at different work shift repeatedly and provided the necessary explanations for the eligible nurses and answered their questions. Then, is they were willing to participate, the sleep quality questionnaire was given to them to be completed. The questionnaires were given to each nurse in a pocket and they were asked to give it back to their department's head nurse after completing in the same pocket. After repeated visits to the hospitals, the researchers tried to gather all of the distributed questionnaires. So, all of the 176 eligible nurses participated in the study.

The present study was approved by the ethic committee of Zanjan University of Medical Sciences under the ethics code of (ZUMS.REC.1392.20). All of the necessary ethical considerations including voluntarily participation and anonymity were accurately regarded.

Achieved data were analyzed using SPSS software version 16. To determine the level of sleep quality descriptive statistics and frequency tables were used. Chi square test was used to determine the difference in the quality of sleep between internal-surgical departments and ICUs and Spearman correlation coefficient was used for determining the relation between demographic characteristics and the quality of sleep among nurses. The significant level for all the statistical tests was set at $p < 0.05$.

Results

From the 176 gathered questionnaires, 12 were incomplete and were excluded from the study. A final analysis was conducted on the data from 164 questionnaires.

Results showed that the mean and standard deviation of the participants' age was 31.32 ± 5.22 years and their age ranged from 22 to 57 years. Regarding the clinical working experience, 37.2% of the participants had 5 to 10 years of experience, 28.7% 1 to 5 years, 26.2% 10 to 15 years and 7.9% more than of 15 years' experience. 68.3% of the participants were married and the rest were single. All of the participants' demographic characteristics are shown in table 1.

In the present study, 14% of the studied nurses had a desirable quality of sleep but the quality of sleep in most of them (86%) was undesirable. Evaluating different aspects of sleep quality shoed that disruption in daily tasks and sleep disorders were the most common dimensions of sleep quality with the prevalence of 157 (95.7%) for both and the least prevalent dimension of sleep quality was consuming hypnotic drugs with the prevalence of 42 (25.6%) (Table 2).

Chi square test showed no significant difference in the demographic characteristics of age, gender, type of employment, marital status, work shift, working experience and quality of sleep ($p > 0.05$), but the difference in the quality of sleep between the nurses working at internal-surgical departments and nurses working ICUs was statistically significant ($p = 0.039$). So nurses working at ICUs had a better quality of sleep. Spearman test showed a significant correlation between educational level and quality of sleep ($p = 0.036$, $r = -0.146$); meaning that the higher the educational level the lower the score of sleep quality which indicated better quality of sleep. Also there was a significant correlation between the quality of sleep and the income level ($p = 0.014$, $r = -0.19$).

Table 1. Demographic characteristics of the participants

Variable		N (%)
Gender	Female	148 (90.2)
	Male	16 (8.9)
Educational level	Bachelor's degree	158 (96.3)
	Master's degree	4 (2.4)
Working experience	Less than10 years	108 (65.9)
	10 to 20 years	53 (32.3)
	More than 20 years	3 (1.8)
Employment status	Official	16 (9.8)
	Experimental official	2 (1.2)
	Training	20 (12.2)
	Agreement	78 (47.6)
	Contractual	47 (27.8)
	Organizational	1 (0.6)
Departments	Internal	35 (21.3)
	Surgical	39 (23.8)
	ICU	90 (54.8)
Shift	Morning	3 (1.8)
	Night	7 (4.3)
	Rotational	154 (93.9)
Marital status	Married	112 (68.3)
	Single	50 (30.5)
	Divorced	1 (0.6)

Table 2. Dimensions of sleep quality

Dimensions of sleep quality	No sleep disorder: score of zero	Moderate sleep disorder: score of one or higher	Total
Disorder in duration of the sleep	20 (12.2)	144 (87.8)	164 (100)
Disorder in sleeping habits	79 (48.2)	85 (51.8)	164 (100)
Consuming drugs for sleeping	122 (74.4)	42 (25.6)	164 (100)
Disorder in subjective quality of sleep	13 (8.1)	151 (91.9)	164 (100)
Disruption in daily activities	7 (4.3)	157 (95.7)	164 (100)
Sleep disorders	7 (4.3)	157 (95.7)	164 (100)
Delay in falling sleep	17 (10.4)	147 (89.6)	164 (100)

Discussion

The aim of the present study was to evaluate the quality of sleep among the nurses working at educational hospitals of Zanjan University of Medical Sciences and it's effective factors. Results showed that most of the nurses had poor quality of sleep and only 14% had desirable quality of sleep. Other studies, like the study of Takashi et al that was conducted on Japanese nurses, the study of Salehi et al and the study of Ghaljaei et al have also approved this finding (9, 15, 17). In the present study, the quality of sleep among nurses working at internal-surgical departments was lower which could be due to their working shifts and heavy workloads. The study of Yailack et al (2014) also revealed that heavy workloads could affect the quality of sleep in nurses (19); in this case the ratio of patients to nurses could be effective too.

The present study showed a significant correlation between the educational level and the quality of sleep meaning that higher educational level is associated with better quality of sleep. The study of Pi Lay Chain on Taiwanese nurses in 2013 also showed that nurses with lower educational levels compared to nurses with higher educational levels had a poorer quality of sleep (10). This correlation could be due to the fact that nurses with higher educational levels mostly work at ICUs with lower number of patients;

therefore, considering the standards for the ratio of patients to the nurses, modification of the current status seems necessary.

In the present study, the dimensions of duration of the sleep and delay in falling sleep were some of the common reported problems among the nurses; this was in line with the studies of Kolagari and Salehi, Nakata et al and Aghaei (5, 9, 20-22)). In the study that was conducted by Bugataz et al in 2014 on Tunisian nurses, participants also reported reduced duration of sleep (23). In the present study, unlike the study of Bugatto et al and some other studies (24-26), no significant relation was observed between age and the quality of sleep. The study of Karaguzlu et married nurses had a better quality of sleep compared to single nurses (27), but in the study of Vidacek et al that was conducted on Ukrainian nurses and the study of Bugataz et al that was conducted on Tunisian nurses, single nurses had a good quality of sleep. However, no significant relation was found between marital status and quality of sleep in the present study (28).

The participated nurses in the present study were working a three-shift work schedule and no significant relation was observed between the quality of sleep and nurses working shift. In this regard, Takashi et al in their study resulted that no significant difference existed between the quality of sleep in two-shift and three-shift working nurses (29).

Considering the high occupational pressure and stress of nurses, this group is more prone to physical and mental problems. Since the health of the society depends on the health of its health teams' members, including nurses, so health systems and organizations should pay more attention to this group of the society. So, using the results of the present study, health managers could apply more effective and useful policies for improving the health of the health teams and consequently improve the quality of provided cares.

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Conflict of Interest

The authors of this study declare no conflicts of interest.

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