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The relationship between quality of sleep and quality of life in nurses

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Abstract

Introduction: Sleep is essential for physiological and psychological balance and hemostatic adaptation. The nursing profession is related to shift working and sleep disorders. The present study was conducted to investigate the relationship between sleep quality and quality of life in nurses.

Materials and Methods: The present descriptive-analytical and cross-sectional study was performed on two-hundred nurses of 5th Azar hospital in Gorgan city, Iran. The nurses were selected by stratified sampling and then in each section by simple random sampling. Data collected through demographic characteristics, the Pittsburgh Sleep Quality Index (PSQI), and the Short Form Quality of Life Questionnaire (SF-12). The data were analyzed using descriptive statistics, paired t-test, Wilcoxon test, and SPSS-16.

Results: Based on the findings, fifty-six (28%) nurses had good sleep quality and one-hundred and forty-four (72%) nurses had poor sleep quality. Nurses with good sleep quality had a PSQI test score of 39.87 ± 5.7, and nurses with poor sleep quality had a test score of 33.96 ± 7.05. Among nurses with good sleep quality, they had no poor quality of life, 30.9% had a medium level of quality of life, and 69.1% had good quality of life. In nurses with poor sleep quality, 11.8% had poor quality of life, 51.4% had a medium level of quality of life and 36.8% had good quality of life (P<0.001).

Conclusion: It seems that reducing the quality of sleep of nurses can reduce their quality of life in various dimensions.

Keywords: Nurses, Quality of life, Quality of sleep

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Introduction

Sleep is an active physiological state. It is necessary for maintaining biochemical, hormonal, and metabolic functions, the proper performance of the body, physiological, and psychological balance alongside hemostatic adaptation (1). The sleep-wake cycle is controlled by the circadian timing system, which is controlled by different factors, including physiological function and working schedules (2). Nurses constitute the most extensive professional group in the health care

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system so that 40% of the entire staff of a hospital. These health care providers, while meeting the needs of patients, may work 24 hours a day (3). Nursing is associated with different work shifts, especially night shifts (4). Night work has adverse physical and psychological effects on nurses' social and family life (5-8). Shift work can be associated with adverse effects on occupational performance, sleep quality, physical health, mental health, social life, indiscriminate use of sleeping pills, and reduced levels of work stress tolerance (5).

Nurses are facing fatigue and drowsiness due to decreased sleep time (9). Sleep deprivation is associated with the decreased activity of the immune system, dysfunction in hypothalamic-pituitary-adrenal axis, decreased glucose tolerance, increased blood pressure, and cardiovascular activity (10-13). Nurses with sleep deprivation complain of cognitive impairment, increased daily drowsiness, anxiety, fatigue, and physical pain, affecting their personal, family, and social lives (14,15). Sleep deprivation during the day may lead to catastrophic human errors and occupational accidents, increasing the likelihood of medical malpractice (16). Nurses who work more at night shifts spend more hours sleeping during the day to compensate for their lack of sleep and increase sleep quality (17).

A study by Bagheri et al. at Imam Hosein Hospital of Shahrood investigating the relationship between sleep disorders and quality of life of nurses showed a significant relationship between sleep quality and various dimensions of quality of life. Also, night workers had lower scores of sleep quality and quality of life than others (18). Salehi et al. evaluated one-hundred and twenty nurses in Imam Khomeini Hospital in Tehran, and showed that 62.5% of nurses had poor sleep quality, 33.3% had relatively poor and only 4.3% had good sleep quality. Also, nurses with irregular shift work had lower sleep quality than others (19). Chan et al. conducted a study on nurses in local hospitals in Hong Kong and demonstrated that 70% of 163 nurses suffer from insufficient sleep (20). Also, Soleimani et al. assessed general health and its relationship with sleep quality of five-hundred and twenty nurses with fixed and rotational shifts working in Iran University of Medical Sciences hospitals. They indicated that 22.5% of nurses had good general health and 10.2% had somewhat poor, 62.9% had good sleep quality. In contrast, 37.1% had poor sleep quality. There was a significant direct relationship between general health and sleep quality, and the quality of sleep in nurses with fixed shifts was better than those with rotational shifts (21).

Momeni et al. conducted a cross-sectional study on one-hundred and eighty nurses in ICU wards of Mazandaran University of Medical Sciences and concluded that most of these nurses have a poor quality of working life and sleep (22).

Thapa et al. also conducted a cross-sectional study on one-hundred and forty-eight nurses in Nepal, and demonstrated a significant relationship between gastrointestinal disorders such as stomach pain, nausea, and back pain with poor sleep quality (23).

Considering the stressful nature of nursing, and rotational work shifts, especially at night, which affecting the occupational performance and efficiency, the present study aimed to assess the quality of sleep and life quality in nurses working in 5th Azar Hospital of Gorgan city, Iran.

Materials and Methods

The statistical population of this descriptive-analytical and cross-sectional study concluded all nurses who working in the 5th Azar Hospital of Gorgan city. The participants were selected by stratified sampling among a total number of 400 nurses working in this hospital. They were selected by random sampling from each ward and in proportion to all hospital nurses. The required number of samples was obtained based on the sample size formula of 180 people, including about ten drop-outs, considered 200 nurses. The researchers obtained the ethical approval from the university officials and necessary arrangements with hospital and ward officials for entering different wards of the hospital. They explained the purpose of the study and how to fill out the questionnaires for the participants. The inclusion criteria included having at least a bachelor's degree in nursing, employment as a nurse in the hospital, and having at least one year of work experience. The exclusion criteria included any medical illness affecting the quality of sleep and quality of life (including diabetes, thyroid disorders, orthopedic problems, and dementia), presence of any psychiatric illness, the presence of apparent stress during the last trimester (such as first-degree relatives mourning, divorce, family

tragedy), and taking psychotropic medications, and substance or alcohol abuse.

Research instrument

A) The demographic questionnaire: It contained gender, age, marital status, ward, years of occupational experience, and the number of offspring.

B) Pittsburgh Sleep Quality Index (PSQI): PSQI was used to measure the quality of sleep patterns in adults. This questionnaire identifies optimal sleep from inadequate sleep by assessing sleep characteristics over the past month. The scores range between zeros to three. The total score ranges between 0-21. The scores of 8 and above are considered significant sleep disorders. The validity and reliability of the Pittsburgh Sleep Quality Questionnaire have been confirmed in several studies (24). Also, the validity and reliability of this questionnaire were confirmed in Iranian studies (25).

C) The Short Form Quality Questionnaire (SF-12): SF-12 includes 12 questions related to physical function, role limitation due to psychological problems, energy/vitality, mental state, social functioning, physical pain, and general health perception. According to this questionnaire, the minimum and maximum scores for each dimension are between 0-100. The scores higher than 35 are considered as good quality of life, a score of 25-34 is considered the average quality of life, and a score lower than or equal to 24 is considered as poor quality of life (26). Montazeri et al. evaluated the validity and reliability of this scale in Iran. The reliability and validity of 12 questions of psychological and physical components were reported to be 0.72 and 0.73, respectively.

The correlation between the questions of 4 subscales of the physical component was high with the total score of physical component, and the questions of 3 subscales of psychological component showed a high correlation with the total score of psychological dimension (27).

The necessary permission to conduct the research was obtained from the Gorgan University of Medical Sciences ethic committee (IR.GOUMS.REC.1397.136). The questionnaires were self-reported by nurses when they were not on working shifts. The collected data were analyzed after coding and entering the SPSS statistical software version 16. Data analyzed descriptive statistics, paired t-test, Shapirovilk test, and Wilcoxon test.

Results

Two hundred nurses from different wards enrolled in the present study. In terms of age, the mean age of the participants was 34.06 years, and most of them were older than 35 years old. In terms of gender, sixty nine nurses (34.5%) were male, and one-hundred and thirty one nurses (65.5%) were female. Also, eighty eight cases (44%) were single (none of the nurses chose the option of divorce or the deceased spouse), and one-hundred and twelve nurses (56%) were married.

One hundred sixty of them had fixed night shifts, and 80% of participants had rotational shifts. In terms of children, one-hundred and seven nurses (53.5%) had no children, forty-three nurses (21.5%) had one child, thirty-four nurses (17%) had two children, and sixteen nurses (8%) had three children. Table 1 presents the distribution of the nurses in the different wards.

Table 1. Distribution of nurses working in different wards

Ward	Number	Percentage
Dialysis	18	9.0
Intensive Care Unit	13	5.6
Psychiatry	20	10.0
Emergency department	20	10.0
Surgery (male)	7	5.3
Surgery (female)	13	5.6
Orthopedic (male)	16	8.0
Orthopedic (female)	14	7.0
Oncology	15	5.7
Burn	20	10.0
Neurosurgery	15	5.7
Ophthalmology	14	7.0
Ear-Nose-Throat	15	5.7

The mean work experience among nurses was 9.25 ± 7.43 years. In this study, the mean score of the SF-12 test was 35.59 ± 7.19. The lowest score was 14, and the highest score was 64. According to the level of dissatisfaction with the quality of life, seventeen cases (8.5%) had poor life quality, ninety-two nurses (46%) had relative life quality, while ninety-one nurses (45.5%) had good life quality. The mean score of PSQI was 10.48 ± 6.97. The lowest score was 3, and the highest score was 19. Based on this questionnaire, fifty-six nurses (28%) had good sleep quality, and the other nurses (72%) had not satisfied sleep quality. The relationship between nurses' sleep quality and their quality of life was also investigated. This study observed that nurses with good sleep quality had the mean score of SF-12 equal to 39.87 ± 5.7 while this score was 33.96 ± 7.05 in nurses with poor sleep quality. Independent T-Test showed that this difference was significant (P<0.001). In addition, seventeen nurses (30.9%) had the medium level of life quality, and thirty-eight (69.1%) had a good quality of life. In cases with poor sleep quality, seventeen cases (11.8%) had poor quality of life, seventy-four cases (51.4%) had the medium level of life quality, and fifty-three nurses (36.8%) had a good quality of life. Chi-Square statistical test showed that this difference between them was significant (P< 0.001).

Table 2 presents the correlation between sleep quality and demographic variables included age, gender, marital status, working shifts and work experience. Based on the results, the correlation between sleep quality and all demographic variables was significant exceptionally gender.

Table 2. The correlation between sleep quality and demographic variables

Variables		Good sleep quality	Poor sleep quality	P
Age (year)	<30	55 (36%)	31 (64%)	<0.001
	30-35	24 (68.6%)	11 (31.4%)	
	>35	66 (83.5%)	13 (16.5%)	
Gender	Male	17 (24.6%)	52 (75.4%)	>0.05
	Female	39 (29.7%)	92 (70.3%)	
Marital status	Single	32 (36.3%)	56 (63.7%)	0.01
	Married	23 (20.5%)	89 (79.5%)	
Shifts	Morning shifts	5 (13.9%)	31 (86.1%)	0.048
	Rotational shifts	50 (31.2%)	110 (68.8%)	
	Work experience (year)	4.7 ± 2.7	95.9 ± 4.7	0.02

Table 3 presents the correlation between life quality and demographic variables included age, gender, marital status, working shifts, work experience, and poor sleep quality. Based on the results, the correlation between life quality and all demographic variables was significant exceptionally gender and work experience. Also, this significant correlation was seen between quality of life and poor sleep quality.

Table 3. The correlation between demographic variables and quality of life

Variables		Poor life quality	The medium level of life quality	Good life quality	
Gender	Male	3 (3.4%)	30 (43.5%)	36 (52.2%)	>0.05
	Female	14 (10.7%)	62 (47.3%)	55 (42%)	
Age (year)	<30	9 (10.5%)	25 (29.1%)	52 (60.5%)	<0.001
	30-35	1 (2.9%)	20 (57.1%)	14 (40%)	
	>35	7 (8.9%)	46 (58.2%)	26 (32.9%)	
Marital status	Single	10 (11.4%)	28 (31.8%)	50 (56.8%)	0.003
	Married	8 (7.1%)	63 (56.3%)	41 (36.6%)	
Work experience		27.11 ± 4.70	17.8 ± 2.7	42.7 ± 6.7	0.078
Poor sleep quality		17 (11.8%)	74 (51.4%)	53 (36.8%)	<0.001
Shifts	Morning shifts	6 (16.7%)	25 (69.4%)	5 (13.9%)	<0.001
	Night shifts	1 (25%)	1 (25%)	2 (50%)	
	Rotational shifts	10 (6.3%)	66 (41.2%)	84 (52.5%)	

The relationship between sleep quality and work department was evaluated. The psychiatry, intensive care, and emergency departments had more nurses with poor sleep quality. On the other hand, the burn and surgery wards had more nurses with good sleep quality. The Chi-Square statistical test showed that the differences between different wards were not significant (*P*=0.38). The relationship between sleep quality and nurses' workload is shown in Figure 1.

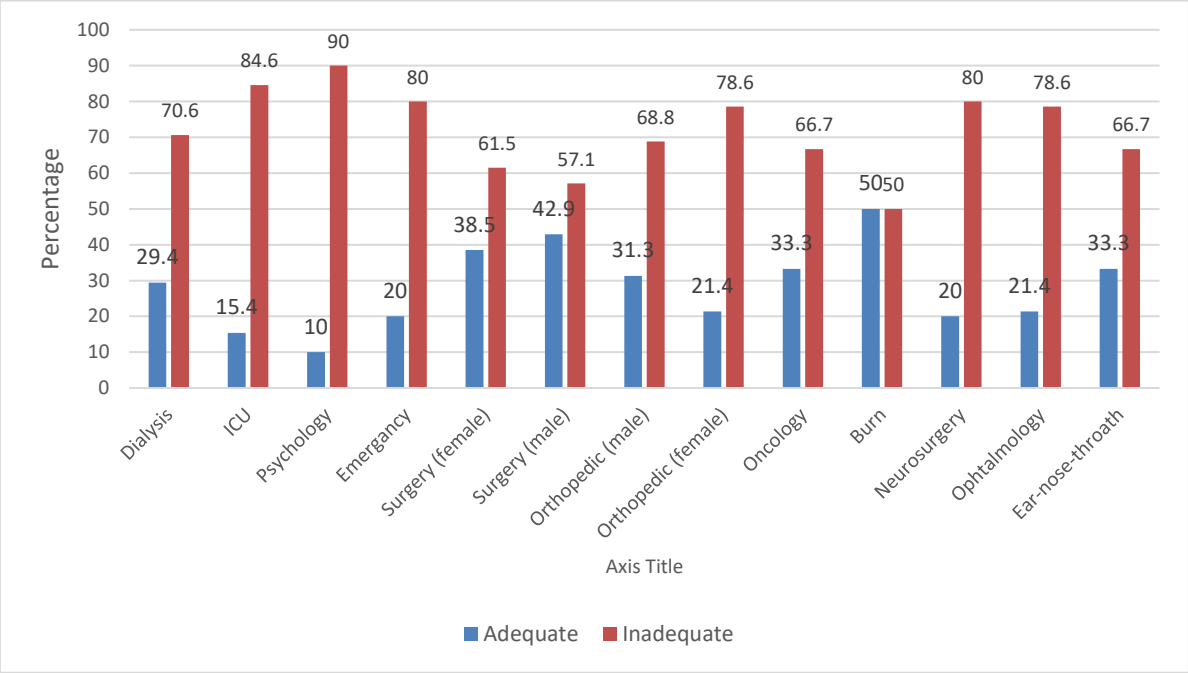

Figure 1. The percentage of sleep quality in nurses working in different hospital wards

The relationship between the ward and nurses' quality of life showed that most of the nurses had a good quality of life in male surgery and male orthopedics wards. On the other hand, in female orthopedics, gynecology, and neurosurgery, most nurses had poor quality of life. However, Chi-square test results showed that working wards do not significantly affect the quality of life (*P*= 0.08). The relationship between the work department and the quality of life of nurses is shown in Figure 2.

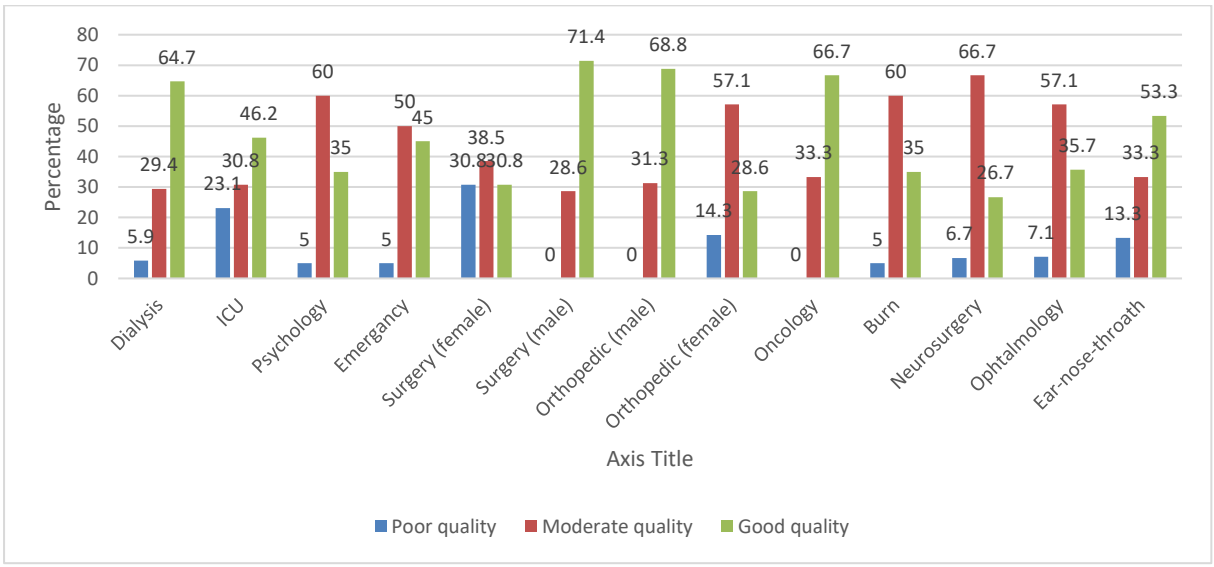

Figure 2. The percentage of life quality in nurses working in different hospital wards

Discussion

This study was performed on two-hundred nurses from different wards of 5th Azar Hospital of Gorgan city, Iran. The PSQI score was 10.48 ± 6.97 among nurses. After dividing the nurses' sleep quality into good quality and poor quality, 72% of them had poor sleep quality. Based on the study by Salehi et al. 62.5% of nurses had poor sleep quality and only 4.3% of them reported the good quality of sleep. Also, irregular shifts were related to the poor sleep quality (19). These results support our findings.

Also, Thapa et al. in a study conducted on one-hundred and forty-eight nurses in Nepal showed that nurses with poor sleep quality suffer from gastrointestinal disorders. It seems that poor sleep quality had adverse and significant effects on different dimensions of people's quality of life (23). A study by Bagheri et al. showed a significant relationship between sleep quality and different dimensions of quality of life. They showed that 77.7% of nurses had poor sleep quality, and those who worked at night had lower sleep quality and lower scores of life quality than others (18). Bahri et al. evaluated two-hundred and sixty nurses working in Gonabad and Birjand cities, demonstrating that 56.2% of nurses had poor mental health and 69.2% of them have poor sleep quality (28). In the present study, sleep quality was significantly associated with aging, which is in line with results of Ferri et al. study. The increasing age combined with the difficulty of nurses' work acting as chronic stress reducing the sleep quality (29). In our study, there is no significant relationship between quality of sleep and gender. Although in Bahri et al. study, this relationship was significant (28). The reason for this difference could be due to cultural differences. In the present study, the sleep quality score of single nurses was significantly better than married nurses, which is consistent with the results of Ferri et al. study (29). It seems that these results in married people can be a result of stress and having many responsibilities, financial worries for living, and children training. In the present study, nurses with longer history of work experience (about ten years and above) had poorer sleep quality than less experienced nurses. This result is different from finding of Bahri et al. study, indicating that nurses with higher work experience have better sleep quality (29). The above results suggest that the nursing profession, due to the difficulty of night shifts and rotating shifts, can gradually reduce the quality of sleep. As Ghaljaei et al., Soleimani et al., Salehi et al., and Chan et al. stated, nurses with rotating shifts had lower sleep quality. It seems that rotating shifts and fixed night shifts harm sleep quality and consequently on the quality of life in nurses due to disrupting the physiological cycle of sleep and wakefulness (19,20,21,30). In Momeni et al. study, it was observed that nurses working in the intensive care unit had moderate to poor levels of sleep quality (22). In line with the above results, we observed that working in an intensive care unit was associated with poor sleep quality. One of the main limitations of the present study is the relatively small sample size, and lack of considering other factors affecting sleep and quality of life, such as the presence of certain personality disorders such as obsessive-compulsive disorder in nurses. Also, future studies can compare the incidence of sleep disorders and quality of life in nurses working in hospitals with peers of the same age, unemployed, or retired as a case study to evaluate the effects of hospital environment on sleep quality and quality of life.

Conclusion

Based on the results, nurses with fixed night shifts, working in wards of emergency and intensive care unit, and those who are married and older, have a poor quality of sleep than others, affecting their quality of life in different dimensions. Therefore, it is suggested that hospital managers, consider these issues to plan the number of nurses and their shifts.

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