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Relationship Between Sleep Quality with Job Stress and Quality of Life of Operating Room Technologists Working in University Hospitals Affiliated to Iran University of Medical Sciences in 2016-17

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ABSTRACT

Introduction: Sleep is a restorative process for the psyche and body, and lack of sufficient sleep with good quality causes a variety of physical and mental disorders in people over time. Stress is a personal experience caused by pressure or desire in an individual, which affects their ability to cope with problems, in other words, the individual's inference of their performance is affected by stress. The World Health Organization (WHO) interprets the quality of life in terms of perception and understanding of each individual's position in life, taking into account the cultural conditions and social value system in which they live.
Method: In this descriptive-analytical study, the sample size was 134, which was calculated using the sample size formula and included the operating room technologists working in educational hospitals of Iran University of Medical Sciences who were willing to participate and the questionnaires were given to them. The questionnaires included the following items: 1) Demographic information such as age, sex, work record, marital status and educational level, 2) Pittsburgh Sleep Quality Index (PSQI) 3) Kahan et al. job stress questionnaire 4) The 26-question quality of life questionnaire (WHOQOL-BREF).
Results: There was a significant relationship between quality of life and sleep quality. The quality of sleep and life as well as job stress did not have a significant relationship with any of the demographic variables. There was no significant difference in average quality of sleep and occupational stress among single and married people. There was no significant difference in quality of life between single and married people.
Discussion: To identify the variables that have an impact on the quality of sleep, job stress and quality of life and also affect the performance and health of the operating room technologists, the authorities are in a position to improve these three variables by holding workshops to take advantage of coping strategies, stress management and sleep pattern adaptation to improve the quality of life of people.

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Introduction

Sleep is a restorative process for the psyche and body, and lack of sufficient sleep with good quality causes a variety of physical and mental disorders in people over time, including insomnia, chronic pain, respiratory distress, obesity and anxiety. Therefore, it is essential to consider questions such as sleep time, sleeping and waking hours, as well as the necessary timing of sleep that can affect the quality of sleep [1, 2]. Most people who work as shifters suffer from the disruption of normal sleep pattern [3]. Nurses are exposed to stress in the workplace and work in the morning, evening and night shifts irregularly; therefore, they are subject to insomnia, and the irregular pattern of sleep and waking in them reduces the quality of sleep, duration of sleep and job performance [4]. Sleep disorder can be detrimental for performing the tasks in the workplace, resulting in a poor

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quality and quantity, as well as severe loss of professional performance [5]. Sleep disorder is one of the most important reasons for reduced quality of life, poor well-being and memory disturbance, which can be a function of high levels of stress and work pressure [6]. The prevalence of sleep quality problems among the Asian population is 26.4-39.4% [7]. Among the employed nurses, 75.8% had PSQI (Pittsburgh sleep quality questionnaire) score ≥5, indicating a low sleep quality (moderate to high disorder) and 39.8% of nurses had a low sleep quality according to personal assessments [8]. The majority of studies on quality of sleep in nurses have measured the function of working shifts on individual self-perceptions of sleep quality. These results show that over 57% of nurses working in shifts have a low quality of sleep. Socio-demographic factors and occupational characteristics are other influential factors on sleep quality [9]. Herandi et al. showed that the sleep quality of nurses is reduced with increasing age and number of night shifts, causing increased anxiety in 53% of nurses [5]. Considering the inevitability of some stressors in the nursing profession and the need to prevent the mental and behavioral effects of stress, application of approaches and measures to improve the quality of life and teaching of coping strategies are among the duties of healthcare organization managers [10]. Stress is a personal experience caused by pressure or desire in an individual, which affects the ability to cope. In other words, the individual's inference of their performance is affected by stress [11]. Job stress is a harmful physical and mental response that occurs when the occupational requirements do not match and coordinate with the capabilities, support resources and needs of the employed person [12, 13]. Although the job stress is present in all the occupations, it becomes more important and prevalent in professions that are concerned with healthcare of people [14]. Due to the critical nature of their job, nurses are continuously exposed to stress [15]. Job stress in nurses (as important members of healthcare system) has a great effect on the quality of clinical care. Every week, nurses quit their work 80% more than other professional groups because of exhaustion or incapacity due to stress [16]. The stress to which an employee is exposed in the work environment has several causes and factors, including poor working conditions, high workload, shift work, long working hours and conflict of jobs [17]. In a study by Bhatia et al., the prevalence of occupational stress in nurses was 87.4% [18]. In a study by Babak Moeini et al. on a population of nurses, 40% of them had high mental stress, 51.5% had moderate and 5.9% had severe stress [19]. In the study by Zariya and Latifzadeh, 50.5% of nurses had a high level of job stress, 41.6% had moderate and 7.9% low stress levels, and these results were related to age, sex, marital status, educational level, employment status, shift work, work experience, workplace and the number of children [20]. In a study conducted by Zowani et al., among the stressors in physical environment of the operation room, light had the lowest (34.7%) and the fear of disease transmission (58%) the highest impact on stress [21]. Among the psychosocial stressors, insufficient skill (32%) and lack of weekly holidays (44%) had the lowest and highest effect on stress, respectively [22]. The results showed that work-related demands, external and excessive work commitment are associated with higher levels of anxiety and depression but social support, rewards and recognition of skills reduce the mental health problems. World Health Organization (WHO) interprets the quality of life in terms of perception and understanding of each individual's position in life, taking into account the cultural conditions and social value system in which they live, crystalized in relation to the main goals, perceptions and impressions of the individual in life. Quality of life has a wide range and is influenced by physical and psychological conditions, individual beliefs and social relationships of the individual. Also, attention to the psychological and physical aspects of quality of life can increase the efficiency of individuals and prevent psychological disorders [23]. Difficult jobs have a negative impact on the individual's understanding of quality of life, as well as the environmental and social dimensions of quality of life [24]. Since nurses are the largest group providing services in the healthcare system, they must have a decent quality of life to be able to provide services to clients in a desirable manner. This is possible if nurses are in an optimal situation in terms of mental status, job satisfaction and various aspects of life [25]. Although working is a very important source for livelihood and social status, it can lead to dissatisfaction and exhaustion of physical and psychological forces. The workplace is composed of physical, psychological and social stimuli, each of which can be considered as a source of stress [26]. Professional activity has the greatest impact on the quality of life of operating room nurses (79.2%), and 50% of professional activities are influenced by the stresses associated with hospital ward, responsibilities, tasks, risk conditions, intra-team professional relationships and type of work outside the operating room [27]. In a study by Zare et al., the quality of life of the operating room staff was shown to be low, but the relationship between marital status, age and work experience with quality of life was not statistically significant, and increasing work experience increased the quality of life [28].

Because of the importance of sleep quality, job stress and quality of life, the present study aims to investigate the relationship between sleep quality with job stress and quality of life in order to identify the effective factors and use the results to provide new solutions for improvement of quality of life and reduction of occupational stress levels.

Method

In this descriptive-analytical study, the sample size was 134, calculated using G*Power 3 [29] for MANOVA with the following specifications: type I error equal to 0.05, power of test equal to 0.90, and effect size equal to 0.08. The target population included the operating room technologists (those with associate diploma or BSc degrees) working in educational hospitals administered by Iran University of Medical Sciences. The questionnaires involved the following items: **1)** Demographic information such as age, sex, work experience, marital status and educational level, **2)** Pittsburgh Sleep Quality Index (PSQI) with validity of 72.2% and reliability of 93.6% [30], which was used to evaluate sleep disorder. This questionnaire involves questions in seven areas including personal view of sleep quality, sleep time, sleep latency, effective sleep and sleep efficiency, restless sleep, use of somniferous drugs and impaired daily functioning, **3)** Kahn et al. job stress questionnaire, which contains 15 questions in six sub-categories such as demands, control, manager support, colleague support, communication and role. The answers are measured based on Likert scale as always (1 point), often (2 points), sometimes (3 points), rarely (4 points) and never (5 points). The total score ranges between 15 and 75 and the leveling is as follows. If the scores of the questionnaire range from 15 to 30, the level of job stress in this community is weak. If the scores of the questionnaire are between 30 and 45, the degree of job stress is moderate. If the scores are above 45, the job stress is in a good level. Reliability and validity of the questionnaire have been estimated by Rasouli et al. based on total Cronbach's alpha coefficient of 0.79 [4, 31**]** To measure the quality of life, the 26-question quality of life questionnaire (WHOQOL-BREF) was used. The validity and reliability of this research questionnaire was investigated on 1167 people living in Tehran. The

participants were divided into two groups: those with and without chronic diseases. The retest reliability for sub-scales was as follows: physical health: 0.77, mental health: 0.77, social relations: 0.75 and environmental health: 0.84 [32]. Operating room technologists were informed of the type of study and were assured that their information would only be used for research purposes. If a participant did not show interest to be involved in the study, they were replaced by another person randomly selected from the population. The questionnaires of personal information, sleep quality, occupational stress and quality of life were completed by the operating room technologists. Multivariate analysis of variance (MANOVA) followed by a univariate multiple regression analysis were used to assess the potential relationship between dependent variables (sleep quality, life quality, and job stress) and independent variables (age, gender, etc.).

Results

The mean age of subjects was 34.12 years. Out of 134 participants, 60 were men (44.8%) and 74 were women (55.2%). There were 64 subjects (47.83%) aged 20-30 years, 37 subjects aged 30-40 years and 33 subjects over 40 years. 46 participants (34.3%) were single and 88 participants (65.7%) were married. There were 50 staff (37.3%) with an associate diploma and 84 staff with a BSc degree. 82 employees (61.2%) had work experience of less than 10 years, 37 employees 10-20 years and 15 employees (11.2%) more than 20 years. Mean score of job stress was 42.44±7.33, indicating a moderate level of job stress. Mean quality of sleep was 8.58±2.9, which indicates a poor sleep quality of operating room technologists. The mean and standard deviation of quality of life was 60.44±18.47, which is in a moderate range. The results of MANOVA analysis are presented in Table 1. As it can be seen, the quality of sleep, quality of life and job stress did not show an overall significant relationship with any of the demographic variables. Shapiro-Wilk and Kolmogrov-Smirnov normality tests presented in Table 2 showed a normal distribution for sleep quality and job stress. Therefore, the t-test was used to compare the mean of these two quantifiers between single and married participants. No significant difference in mean of sleep quality and occupational stress was observed between single and married individuals. Since the distribution of quality of life data was not normal, Mann-Whitney test was used to compare the mean quality of life between single and married groups, which did not show a significant difference.

Table 1 :MANOVA statistical analysis (relationship between Sleep Quality, Job Stress and Quality of Life with demographic variables)

Demographic variables	**p-value**
Age	0.884
Sex	0.304
Education	0.468
Marital status	0.985
Work experience	0.720

Table2 : Statistical tests of Kolmogorov-Smirnov and Shapiro-Wilk

Variable		**p-value (Shapiro-Wilk)**	**p-value (Kolmogorov-Smirnov)**
Job stress	Single	0.774	0.200
	Married	0.725	0.171
sleep quality	Single	0.156	0.178
	Married	0.181	0.058
Quality of Life	Single	0.033	0.015
	Married	0.000	0.000

Discussion

Sleep reduces stress, anxiety and nervous pressure, and helps a person to recuperate energy for better concentration of the senses, better adaptability and enjoyment of daily activities. People with sleep disorders have not only fatigue, but also suffer

from problems with cellular repair, memory and learning impairment, increased stress and anxiety, as well as reduced quality of daily life [33]. Excessive job stress in nurses leads to job fatigue, employee conflict and frequent displacements, health disorders, inability to perform duties, vulnerability in occupational communications, reduced quality of provided care and eventual dissatisfaction and career exclusion [33, 34]. The results of this study indicate that there is no significant relationship between sleep quality and occupational stress, which means that the reduced quality of sleep does not change the occupational stress of the operating room technologists. These findings were not consistent with those of Aghahosseini [34], Dorian et al. [33], Moreno et al. [35], Baljani, Rahimi and Safari [36]. According to our results, the education level has no significant relationship with the quality of sleep, which is not in line with the results of Chien et al. who showed that nurses with a lower level of education had more sleep disorders [8]. The job stress and sleep quality of single and married operating room technologists were not significantly different, which was inconsistent with the findings of Aghahosseini [34] but was in line with the results of Khaghanizadeh et al. [16], Madid [37] and Izadi et al. [38] who showed that job stress and sleep quality were significantly correlated with marital status. There is no significant relationship between age and sex with sleep quality, which is inconsistent with the results of Palhares et al. as well as Harandi and colleagues who showed that age and sex are effective upon sleep disorder [23-5]. Failure to achieve a proper balance between effort and rest in an individual leads to loss of control over workload and lack of energy for individual goals and commitments, and this imbalance results in fatigue, poor performance and a lower quality of life [39]. Greenhouse et al. argue that imbalance, especially work imbalance, leads to a high level of stress, decreased quality of life and a reduction in the individual's effectiveness in the workplace [40]. Managing the balance between the roles of work and family is related to individual quality of life, because such a balance reduces the conflict between work, family and stress, which are considered as the main causes of a distorted quality of life [41]. According to the results, there is a significant relationship between quality of life and sleep quality, which means that reduced sleep quality causes a lower quality of life and vice versa, which is consistent with the results of Palhares et al. who showed that sleep disorder affects the quality of life of people. In addition, the sleep quality, quality of life and job stress were not significantly correlated with any of the demographic variables [23], which was in line with the findings of Bagheri et al. who concluded that the statistical tests show no significant relationship between mean sleep quality and quality of life with individual variables (age, sex, marital status, and clinical experience) [42]. Parande et al. showed that there is no significant difference between quality of life with variables of gender, marital status and education level, which are consistent with the results of our study [43]. However, these results are inconsistent with those of Fattahmoghaddam who showed that female nurses had a higher quality of life [44], as well as the results of Hazhiri who indicated a higher quality of life in men than women [45].

Conclusion

To identify the variables that have an impact on the quality of sleep, job stress and quality of life and can affect the performance and health of the operating room technologists, the authorities are in a position to improve these three variables by holding workshops to take advantage of coping strategies, stress management and sleep pattern adaptation to improve the qualityoflife of people.

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