

# The Correlation between Sleep Quality and Quality of Life in Nurses Working in the Intensive Care Units of Shahid Modarres and Shohaday-E 17 Shahrivar Hospitals Affiliated to Saveh University of Medical Sciences

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## Abstract

**Background and purpose of the study:** Due to the nature of nursing practice, nurses face a variety of stressful situations in the workplace. They are at risk of insomnia since they work irregularly in the morning, evening and night shifts. The irregular sleep-wake pattern in nurses decreases their sleep quality and sleep duration, and also leads to their poor occupational performance. The present study was conducted to determine the correlation between sleep quality and general health of nurses working in Intensive Care Units affiliated to Saveh University of Medical Sciences. **Methodology:** The present descriptive study was conducted on 200 employed nurses. The data were collected through a questionnaire covering the participants' demographic information, the Pittsburg Sleep Quality Index (PSQI), and the Short Form Health Survey (SF-36). Finally, the collected data were analyzed through SPSS, version 21, software. **Results:** The results indicated a significant inverse correlation between sleep quality and total life quality scores of the participants, so that their life quality decreased as the quality of their sleep decreased. Moreover, the results showed a significant difference between sleep quality of nurses with a fixed shift schedule and those with rotating shifts ( $p=0.001$ ), so that nurses working the same shift had higher sleep quality. **Conclusion:** The results of this study signified that reduced sleep quality of nurses could affect different aspects of their life quality.

**Keywords:** General Health, Sleep Quality, Nurse

## Introduction

Health is the right of every human being as a vital social goal that must be provided by governments, (Takahashi et al., 2009). Health has various dimensions including physical, psychological and social health that should be granted to all human beings for being able to play their role in society (Takahashi et al., 2006). One of the most important areas of sustainable development in human society is the healthcare sector which is directly related to human health and is responsible for maintaining and restoring health to the human beings. This accomplishment requires a healthy and spirited therapist such as the nursing staff (Memarian, 2007). Nurses are the largest professional staff in the healthcare system, who constitute about 40% of the total staff of a hospital and to which 55% of the total costs of a hospital is dedicated (Shahraki, 2010). The health and well-being of the nurses, as health and care providers, have a great impact on the quality of care services provided for patients. Thus, nurses are required to be healthy to maximize their efficiency in nursing (Mehrabi & Ghazavi, 2005). As one of the healthcare providers, nurses are also demanded to meet the needs of patients (Maghsoodi et al., 2015). Certainly,

nurses with a poor general health will not be able to provide proper healthcare services alongside physical and mental supports to the patients; this upsurges the risk of occupational mistakes and inaccuracies that ultimately brings serious outcomes for both nurses and patients (Hojati et al., 2009). Shift work has uncontrollable unpleasant impacts on the natural life of most nurses working as such. Long

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working hours endanger the health and wellbeing of the nurses (Madide, 2005). Research has shown that shift work has negative effects on the nurses' occupational performance, sleep quality, physical and mental health, social life, excessive drug intake and tolerance of occupational stress (Brown-De & Eskes, 2006). According to the Institute of Occupational Safety and Health (NIOSH), nursing has been ranked 27 out of 130 occupations in terms of mental diseases (Zarifnezhad, 2007) Due to their occupational nature, nurses undergo a variety of stress and tension in the workplace. Their irregular morning, evening and night shift works expose them to insomnia. Since sleep is an important and complex biological pattern (Bagheri et al., 2007), irregular sleep-wake cycle reduces sleep quality, sleep duration and occupational performance (Suzuk et al., 2004), accompanied by increased occupational and social incidences, likelihood of aggressive behaviors as well as decreased social interactions that are more apparent amongst nurses than other individuals (Garbarino et al., 2003). Furthermore, several findings have indicated that nurses are subject to various mental problems including depression and anxiety (Soleimany et al., 2008). Therefore, sleep disorders are important to be noticed amongst the nurses. Irregular shift works decline sleep quality and quantity and leads to drowsiness during the day (Memarian, 2007). A majority of shift-working people report sleep disorders; In general, sleep disorder is the most important complaint of shift-workers (Mehrabi, & Ghazavi, 2005). The findings of a study have indicated that about %87.7 of nurses suffered from sleep disorder in Iran, amongst which %58.3 had daily drowsiness while %75.1 underwent insomnia (15). A study has found that about one-third of nurses uses sleep medications (Bagheri et al., 2007). With regard to the fact that the irregular shift-work hours have a significant effect on the physical and mental health, personal and social life and occupational performance and efficiency of nurses on the one hand, and the fact that the aforesaid shift-work impacts on the health and wellbeing of nurses can directly affect the patients, as the most important users of nursing services; on the other hand, It can be stated that nurses with a poor general health will not be able to afford good healthcare services such as physical and psychological supports for their patients. This impact, in turn, can increase the risk of occupational mistakes and incidences that can ultimately endanger the patients (Brown-De & Eskes, 2006). Consequently, the present study intended to investigate the correlation between sleep quality and general health in nurses working in the ICUs of the hospitals affiliated to Saveh University of Medical Sciences.

## Materials and Methods

The present descriptive-correlational study intended to investigate the correlation between sleep quality and general health in nurses working in the ICUs of Shahid Modarres and Shohaday-e 17 Shahrivar Maternity Hospitals affiliated to Saveh University of Medical Sciences in 2018. To this end, about 200 nurses working in the intensive care units (ICU, CCU, IDU, ED, PICU) of Shahid Modarres Hospital, who complied with the research inclusion criteria (nurses with a minimum Bachelor's degree in nursing and a minimum one-year job experience in ICUs), were selected out of the total research population once the letter of recommendation was received from Saveh University of Medical Sciences and Permit License obtained from Shahid Modarres and Shohaday-e 17 Shahrivar Maternity Hospitals. The researchers visited the intended healthcare centers in the morning, evening and night shift works and provided the ICU-nurses with Pittsburgh Sleep Quality Index (PSQI) and the 36-Item Short Form Health Survey (SF-36) standard questionnaires after giving complete explanations about the purpose of the present study and ensuring the confidentiality of their responses. The subjects (nurses) were asked to complete the questionnaires and they were ensured of being provided with the results of research if they would like to.

Data collection tools included demographic survey questionnaire and Farsi version of PSQI for assessing the sleep quality of nurses as well as the Farsi version of SF-36.

Pittsburgh Sleep Quality Index (PSQI) is a 19-item self-report questionnaire that assesses sleep quality over the past one-month time interval. It consists of seven sections, each of which is rated on a 0-3 scale and the overall score of PSQI ranges from 0 to 21. Higher scores signify poor sleep quality i.e.  $\geq 5$  is considered as undesirable sleep quality. The reliability and validity of the PSQI was estimated ( $r=0.89$ ) by (Soleimani et al., 2008).

The Short Form Health Survey (SF-36) is a 36-item questionnaire consisting of 7 sections, each of which is rated on a 0-100 scale. Higher scores are indicative of higher quality of life while lower score resembles lower quality of life. The reliability and validity of SF-36 were estimated ( $r=0.9$ ) by (Montazeri et al., 2014)

Descriptive statistics, central tendency indices and inferential statistics such as Chi-Square test, and Kruskal-Wallis were used for data analysis by means of SPSS<sub>21</sub>.

## Results

According to the demographic information, about %95 of the participants was female while %5 was male nurses. Moreover, %66 was married whereas %34 were single. The mean score and SD of age range was equal to  $30.6 \pm 6.5$  years in the static shift group and

28.3±7.2 years in the dynamic shift work group. Almost %28 of the subjects had static morning shift work, %68.5 were dynamic shift-workers and %3.5 were static evening and night shift-workers.

The overall mean ± SD score of the nurses' quality of life equated to 82.19±9.10. The mean score of the overall quality of life and distinct dimensional quality of life of the intended ICU-nurses is displayed in Table (1).

Table 1: Mean score of different dimension of quality of life in nurses working in intensive care units in Saveh.

Dimensions of Quality of Life	Mean ± SD	Minimum Score	Maximum Score
Physical Performance	23.56 ± 3.61	13.30	27.30
Physical Role	5.00 ± 1.33	3.25	6.50
General Health	13.58 ± 2.52	5.40	17.80
Social Performance	3.33 ± 0.88	2	5.50
Mental Health	19.35 ± 3.37	7.50	25.67
Vitality	11.16 ± 2.20	4.25	15.75
Limitations	3.49 ± 1.01	2.33	4.67
Physical Pain	2.67 ± 0.87	1.50	5.00
Overall Score	82.19 ± 9.10	58.35	99.13

The results of the present study showed that about %73.8 of the subjects had poor sleep quality while %26.2 had good sleep quality. Besides, the static evening and night shift-work group had a lower sleep quality and a lower mean score in their quality of life than the dynamic shift-workers (Table 2). Based on Spearman correlation coefficient ( $P < 0.05$  &  $r = 0.40$ ), there was a significant positive correlation between the sleep quality and overall quality of life scores in all intended nurses i.e. the lower the nurses' sleep quality, the lower their quality of life.

Table 2: Mean score of nurses' sleep quality in terms of shift works in Shahid Modarres and Shohadaye-e 17 Shahrivar Hospitals in Saveh

Shift Works	Mean ± SD of Sleep Quality	Mean ± SD of Quality of Life
Static Morning Shift Work	3.2 ± 8.2	71.6 ± 12.11
Dynamic Shift Works	13.12 ± 6.6	58.1 ± 15
Static Evening and Night Shift Works	16.10 ± 4.9	42 ± 8.11

Additionally, the results of Chi-square test demonstrated that there was a statistically significant difference between the sleep quality of static shift-working nurses and dynamic shift-working nurses ( $P = 0.001$ ) indicating a more desirable sleep quality amongst the static shift-working nurses.

## Discussion

The results of the present study on nurse's general health indicated that sleep quality has a significant negative impact on the general health of nurses i.e. the higher the sleep quality score, the higher the general health of the nurses. It was found that about two-third of nurses (%63.3) had a highly desirable general health while the general health of nearly one-third (%36.7) of the nurses ranged from moderately desirable to undesirable. Suzuki et al. showed that %31.2 of nurses experienced desirable general health while %68.8 reported to have poor health (Suzuki et al., 2004), which was not consistent with the results of the present study. Takahashi et al. found that %72.2 of nurses had desirable general health (Takahashi et al., 1999), which was in line with the present findings. Considering sleep quality, about two-third of nurses (%65.7) had a desirable sleep quality while one-third (%34.4) had poor sleep quality. A Taiwanese Study (2010) found that %57.3 of the participants had undesirable ( $PSQI > 5$ ) sleep quality (Shao et al., 2010). Its preceding studies had also reported that a majority of nurses suffered from poor sleep quality (Chung et al., 2009), inconsistent with the results of the present study. Moreover, a study on 190 American nurses displayed that night shift-working nurses presented higher fatigue as well as lower sleep quality than morning shift-workers (Kunert et al., 2007). Erin et al. found that dynamic shift-working nurses had a lower general health than static shift-workers. They believe that static shift works can better enhance the general health of nurses (Pease et al., 2003).

Several studies have been conducted on the sleep quality and general health of nurses in Iran. According to (Soleimani et al., 2008), a study in Iran University of Medical Sciences) and (Baqeri et al., 2007), nearly one-third of their intended subjects reported poor sleep quality so that they took sleep medications to be able to sleep properly, the results of which were consistent with the present study. Based on the findings of the present study indicated that poor sleep quality has a significant negative effect on different dimensions of nurses' quality of life i.e. the lower the sleep quality, the lower the dimensions of life quality. The highest negative effect of sleep quality was

respectively imposed on the dimensions of general health, mental conditions and physical pain of the nurses while the lowest effect was on nurses' energy level.

Ford and Kamerow found that there was a significant relationship between sleep quality and severe depression. They concluded that the health and wellbeing of nurses can be enhanced through holding proper health programs, creating appropriate facilities and modifications in psychotherapeutic training programs for nurses, increasing nursing staff that will successively results in lower working hours, avoidance of overtime work and reduced number of shift works (Ford & kamerow, 1989).

## Conclusion

With respect to the fact that the health of society is dependent on the health and well-being of nurses, the ICU-nurses should regularly evaluate their sleep habits and quality, as one of the vital health components, due to their high workload work sensitivity. The present study indicated that poor sleep quality can significantly affect nurses' quality of life in different dimensions. It should be noted that the limitations of the current study including individual differences, adaptability to different occupational shift works, accuracy, honesty and psychological conditions of nurses could have a significant effect on their responses and the results, which were beyond the control of the researchers. Cross-sectional nature of the study was another limitation for which prospective researchers are recommended to eliminate these problems in their research design.

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