

The Impact of Shift Work on Nurses' Stress, Fatigue, and Sleep Quality

Dr. Wang Mika*

Department of Nursing, Kinjo Gakuin University, Nagoya, Japan

Abstract

To look into how Japanese nurses who work shifts are affected by stress, exhaustion, and sleep quality. Design: Self-administered surveys were used in a descriptive correlation design.

Methods: 653 nurses in Japan were given questionnaires on stress, exhaustion, and sleep quality (the Pittsburgh Sleep Quality Index; PSQI-J) between January and February 2015.

Results: Those who felt more tired also felt more stressed ($r = 0.774$, $p = 0.000$), less satisfied with their sleep ($r = 0.411$, $p = 0.000$), and less healthy overall ($r = 0.323$, $p = 0.000$). Moreover, there was a strong correlation between PSQI scores and reported levels of stress, weariness, and health. The PSQI revealed that nurses with stress-relieving resources were younger ($t = 2.842$, $p = 0.005$), reported being in better overall health, and needed less time to fall asleep. **Conclusions:** This study found a link between stress and sleep quality among Japanese nurses who work shifts. Also, nurses who participate in stress-reduction exercises may have improved health and better sleep.

Introduction

Higher acuity sectors are more difficult for nurses because of the demanding circumstances they work in. Work satisfaction is eroded by increased stress. So that nurses can continue to provide high-quality patient care, stress and its effects must be managed. Medical errors and stress have been demonstrated to be directly related. In fact, when nurses worked more than 12 hours, there were more mistakes made. Low performance and exhaustion are the outcomes of severe stress and the erratic schedule of nursing. The scheduling of nurses in Japan recently changed from three eight-hour shifts to two uneven shifts. The benefits of working two shifts include having more spare time after work. In Japan, full-time nurses put in a 40-hour workweek. The two-shift approach is currently more prevalent at bigger hospitals in cities. The eight-hour day shift and the sixteen-hour night shift make up the two shifts model. During the work week, nurses frequently switch shifts; however it is best practise for them to take the next day off if they work the longer night shift. Even though the night shift is lengthy, if the patients are stable and cooperative, it allows a two to three hour break. Sleep is [1-5] crucial for reducing weariness and improving focus during work tasks. Research on Japanese shift-work nurses found that getting enough rest and sleep before the night shift reduced weariness. During the 16-hour night shift, nurses were more worn out if their break and nap lasted less than two hours. Also, nurses working the night shift [6-9] who took breaks before midnight felt more worn out than those who took breaks after midnight [8]. The deeper into the shift breaks were taken, the less exhaustion was actually observed. Last but not least, it has been demonstrated that the quality of shift work nurses' sleep is correlated with both elevated levels of weariness and impaired work performance. Sleep quality decreases for nurses who work rotating shifts.

Materials and Methods

The general health of shift workers has also been linked to shift work. Shift employment and diseases like cardiovascular disease, depression, hypertension, and breast cancer have been linked in a number of studies. Similar to this, shift job nurses' total work performance is impacted by their sleep quality. The purpose of this study was to look at the connection between stresses, exhaustion, and sleep quality among Japanese nurses who work shifts.

Procedures study plan

In order to research shift work nurses in Japan, a descriptive correlation design with anonymous self-administered surveys was adopted. 653 nurses working two shifts in an acute care hospital were participants. Head nurses and nurse managers were excluded from the study since they are not directly responsible for patient care, and nurses who frequently take sleeping pills were also excluded because this could affect how the study variables related to sleep quality were measured.

Participant and environment

This research was carried out in a Japanese acute care facility with about 900 beds, 26 nursing units, and 700 full-time nurses. This hospital served about 500,000 persons in need of outpatient care and about 306,000 people who were hospitalised between April 2014 and March 2015.

Procedure

The Graduate School of Health Sciences at Kobe University's Institutional Review Board gave its approval to this work (approval number: 307). The study was completed after the Helsinki Declaration. Each head nurse/nurse manager on nursing units handed out questionnaires to 653 nurses during January and February 2015. Prior to the trial, the questionnaire was piloted with one nurse to make sure the items could be read. Participation was optional, and over the course of a two-week period, completed surveys were placed in sealed envelopes and placed in designated collection bags.

Unrelated factors

Demographics, stress levels, sleep quantity and quality, sleep

*Corresponding author: Dr. Wang Mika, Department of Nursing, Kinjo Gakuin University, Nagoya, Japan, E-mail: mika@gmail.com

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satisfaction, degrees of weariness, and health status were revealed by the questionnaires. Exercise, smoking, drinking alcohol, the atmosphere in which people sleep and wake up, activities done on days off from work, and stress management were also included in the questionnaire. Age, gender, height, weight, marital status, where you lived with your family, and the number of children were all basic demographic inquiries. The individuals [10-13] were also questioned about their exercise habits, smoking habits, sleeping arrangements, and leisure pursuits. Using a self-administered visual analogue scale, the current stress levels of shift-work nurses were examined (VAS). The VAS consists of a horizontal line of 10 cm (100 mm), with a score of 0 mm signifying "no stress at all" and a score of 100 mm. Results are scaled in mm, with larger values representing more stress. The Pittsburgh Sleep Quality Index, Japanese version, was used to measure the quality of the sleep (PSQI-J). A self-administered questionnaire called the PSQI-J measures the quantity and quality of sleep during the previous month. The PSQI-J contains seven component scores: daytime dysfunction, habitual sleep efficiency, sleep disturbance, usage of sleeping medicine, and sleep quality, sleep latency, and duration. On a scale of 0 to 3, each item is rated. The sum of these component ratings runs from 0 to 21, with a greater number indicating lower-quality sleep. The cut-off point for the PSQI-J is 5.5. The PSQI-J has established reliability with a reported range of 0.64 to 0.87. A VAS similar to the one described in the section on stress was used to assess each of the following: sleep satisfaction, fatigue, and health level. Participants were asked to score their overall satisfaction with their sleep for both their typical nighttime (when not working) sleep and their sleep connected to a nap before or after working a night shift. Both their current level of weariness and their level of fatigue while working the night shift were rated by the participants. Finally, as they completed the survey, participants were prompted to rate how well they felt generally.

Analytical statistics

In order to examine the results, IBM Statistics SPSS 22.0 was used. Using Pearson's correlations, correlations between stress levels and related variables were computed. The methods employed by nurses to manage or reduce stress were investigated using bivariate analysis using the independent-sample T test. The statistical significance cutoff for each analysis was set at $p < 0.05$.

Results

435 of the 653 people who received the questionnaire responded, representing a 66.4% response rate. 30 people who routinely used sleeping pills were excluded. As a result, we looked at 405 participants' data. The average age was 29.2 6.8 years, 91.5% of the population was female, 83.9% were single, 70.5% lived alone, and 89.1% were childless. The nurses had a variety of wards to work on, including post-surgical (30.5%), internal/medical (23.8%), post-surgical and internal/medical combined (14.5%), operating department (6.0%), and other (10.3%).

Stress ratings and stress management techniques

The maximal stress levels measured varied from 7 to 100 mm, with a mean of 68.8 mm (SD: 21.8). Almost 70.3% of the participants ($n = 282$) said they actively manage their stress. The majority of respondents ($n = 76$) stated that they spent time with friends or family, exercised or did some physical activity, ate out, slept or took a nap, went shopping, drank alcohol, took a trip, and performed karaoke.

How the participants used their free time was another question. In total, 213 people (53.8%) said they went out, while 183 people (46.2%) said they stayed in. The majority of respondents ($n = 166$)

said they spent their time shopping, watching TV or a movie, doing housework or cleaning, hanging out with friends or family, sleeping, resting or reading, going out to eat, and engaging in physical activity or exercising. Table 2 displayed nurses' levels of stress, exhaustion, and sleep quality.

Ratings for sleep duration, sleep satisfaction, and sleep quality

An average night's sleep lasted 361.6 65.0 minutes (6.0 1.08 hours). The VAS score for an average night's sleep contentment was 47.3 23.5 mm. The PSQI instrument (Japanese version), which has a score range of 0 to 13, was used to gauge how well people slept. After calculations, the mean total scores were 6.2 2.4, and 61.3% of nurses indicated that the quality was above the 5.5 cutoff mark. This indicates that the quality of more than half the nurses' sleep had diminished. The averages for these people were as follows: daytime dysfunction (0.9 0.8), habitual sleep efficiency (0.3 0.6), sleep disturbance (0.9 0.5), and sleep quality (1.4 0.6).

Discussion

In addition to reporting higher levels of present stress, nurses who performed the 16-hour shift also reported higher levels of weariness and poorer sleep quality, as well as lower levels of health and sleep satisfaction. Similar to this, Lin demonstrated that among Taiwanese nurses who work shifts, higher weariness is linked to poor sleep quality and lower health status. This finding implies that nurses who perform the 16-hour night shift have a harder time reducing work-related stress and exhaustion. In Japan, nurses who worked two shifts that included an 8-hour day shift and a 16-hour night shift appeared to be more exhausted, which could have an adverse effect on their performance. According to Caruso, shift workers who work long hours may be more prone to accidents, injuries, chronic illnesses, and mistakes brought on by weariness. In this sample, nurses who reported using stress-relieving techniques tended to be younger, had higher self-reported health scores, and fell asleep more quickly. Further research in this area should involve nurses of different ages, those employed in small and medium hospitals, and those caring for patients with diverse levels of acuity. Future research might concentrate on intervention plans that target particular methods to improve sleep quality and lessen stress and exhaustion. Only nurses working in one advanced treatment hospital were study participants. The participants in this study were also young, with a mean age of 29 years and employment in a workplace with high levels of acuity. The descriptive correlational approach does not infer any cause-and-effect linkages, despite the fact that the results do provide light on the relationship between shift work, sleep, weariness, and stress. Moreover, the convenience sample method creates bias and restricts the results' generalizability. The majority of the sample was female, hence the results could also be biased against women. The study's instruments were chosen based on their intended use and psychometric characteristics. Self-report instruments are known to compromise internal validity even with careful selection.

Conclusions

This study demonstrated a link between stress and sleep quality as well as exhaustion in Japanese nurses who work shifts. The best use of nutrition, stress management, and other breaks during lengthy shifts are some of the effective tangible strategies to reduce stress and tiredness among shift-work nurses.

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Competing Interests

Regarding the publishing of this paper, the authors state that they have no conflicts of interest.

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