

Impact of Rotating Shifts on Nurse's Health Working in Public and Private Sector Hospitals of Peshawar



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Abstract

Background: Shift work refers to a work schedule that is performed in rotations, typically is divided into morning, evening, and nightshift or a set period of times by which different groups perform their duties accordingly. Little is known about shift work in Pakistan, especially in the Peshawar region. Implication for individual Nurses' need to care for their own health as well as with patient care. The objective of this study was to identify the effects of shift work on the health of nurses working in public and private hospitals of Peshawar.

Methods: The study design was cross-sectional study. In May 2017, 199 nurses participated in this study by completing a self-administered questionnaire which comprised of demographic data health outcomes after taking consent from the participants in 2 public and 1 private hospital in Peshawar.

Results: The study found that Rotating shifts affect nurses physically as well as psychologically; there is a positive association between shift work and health problems such as sleep disturbances and sleep-related impairment, fatigue, anger, satisfaction with social roles outside of work, and lower cognitive abilities.

Conclusion: Shift work is essential for any organization to provide 24 hours services to the patient. In nursing, shift work is mandatory and required to provide continuous quality care to the patients, but it has some adverse effects on the health of nurses as well as on patient safety.

Keywords: Rotating shifts, nurses, hospitals, public, psychological, social life

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Introduction

Shift work is the practice of organizational workforce to provide services across, all 24 hours throughout the week (1). Therefore shift work are practiced in overlap shifts based on the period of time and organizational work schedule, like morning, evening, and night or day, and night (2). In hospital settings and home facilities, shift work plays a vital role to make sure continuity of care. Nurses play a vital role in healthcare and consist of the largest force of the healthcare industry (3). Nurses change their shift to provide care to the patient according to the hospital schedule, so change in shift cause disturbance to circadian rhythms, which leads to negative risk factors on health like cardiovascular diseases, obesity, diabetic Mellitus, and cognitive impairment (4). The quality and quantity of sleep depend on the circadian phase which brings a change in wake quality, like sleep in the day became shorter and less consolidated than sleep at night (5). The circadian clock directly affects the night shift worker to remain alert in the day but also indirectly affect the ability to sleep in daytime hours, so due to this direct and indirect effect, the number of accidents is more in the night than a day (6). Shift work includes several risks for nursing staff, leading to

psychological and physiological problems, increased risk of errors, and decreased quality of work (7). The risk of obesity, duodenal ulcer, and cancer (8) is linked with working in the adverse circadian phase (9). This negatively affects energy balance while impairing glucose tolerance and insulin sensitivity (10). Shift work has been linked with gastrointestinal problems such as the increased risk for peptic ulcer disease, gastro-esophageal reflux disease, inflammatory bowel disease, and irritable bowel syndrome (11).

Pakistan is among developing countries, where private and public sector hospitals operated and provide care to patients. Nursing professionals are in extreme shortage in the region, where the nurse-to-patient ratio is 1:50000 (12). Many studies provide guidance that rotating shifts can cause human errors, injuries, and compromise patient care (13). The nurse plays a vital role to maintain the quality care standard of health organizations. In the provision of care, it can make errors or harm a patient but it also affects the health of nurses. There is a dearth of study to identify the impacts of the rotating shift on the health of nurses and to provide awareness and guidelines for all the nurses to work on these problems and to prepare themselves for providing quality care to the patients.

The nurses and all health workers in hospitals are

assigned in every shift to provide care to the patients. These rotating shifts have benefits for the patients to provide the care without interruption, but they affect the health of nurses and other health workers, as their routine changed. Here we will highlight the previous study which relates rotating shifts with nurse's health.

A study conducted by Khan et al in 2021 at Australia focus on 12 Paramedics working on a rotating shift are at an increased risk of developing chronic health issues due to continuous circadian rhythm disruption. Results showed that fifteen paramedics who worked rotational shifts experienced sleep restriction during the night shift compared to pre-shift, day shift, and days off. The night shift was also associated with higher levels of stress, fatigue, and sleepiness (14). Conclusion indicated that shift-related issues have a compounding negative impact on an already stressful occupation with high rates of physical and mental health issues.

Books et al 2020 conducted a qualitative study in 2020 in Indiana State of USA to identify the effects of rotating shift on the health of nurses. The results shown that rotating shifts leads to lack of sleep, unhealthy coping mechanisms such as caffeine use, but surprisingly, few reported using over the counter or prescription sleep aids, it also reported depressed moods, family stressors, and a general perception that night shift work had a negative effect upon their health (15).

A study conducted in 2019 from the researchers of university of Pittsburg USA, among the intensive care unit nurses. Results show lower health and wellness after working night shifts compare to after working day shifts. The finding of this study demonstrates that sleep-related impairment was highly correlated with greater emotional distress, greater fatigue, and worse memory and concentration (16).

Chang, W. P. in 2018 conducted a study where a sample of 132 female persons was recruited for study; the results show that female evening-shift or night-shift nurses display significantly lower cortisol and experience significantly poorer sleep quality than day-shift nurses (17). A greater cortisol in the female shift nurses represents better sleep quality. Furthermore, the results prove that cortisol is a mediating variable influencing the sleep quality of female shiftwork nurses.

A study conducted in 2016 at Modena, Italy to identify the impact of rotating shifts on the psychological and physiological health of nurses through "standard shift work index". Result of the study identified the presence of chronic fatigue, sleep alterations, cardiovascular, and minor psychiatric symptoms more frequently, although they were younger and with less family responsibilities, study also show that many of them suffer from chronic discomfort and mild somatic alterations, predisposing to the development of psychological and physical diseases (18).

Wong et al in 2010 showed that abnormal eating behavior and shift work were positively associated among Nurses working in hospital. Results show, when Nurses perform four or more than four shift duties in a month, they were present with complain of abnormal eating. The

proportions of participants having abnormal emotional (66.4%), external (61.4%) and restraint (64.0%) through Dutch eating behavior questionnaire scores (19).

Admi et al in 2008 conducted a study in tertiary care hospitals of Israel in 2008. The goal of this study was to explore and describe the health complaints and sleep patterns of hospital nurses who are working rotating shifts. Results shown that shift work nurses complained more than the daytime nurses about difficulties falling asleep, headaches on awakening, and excessive daytime sleepiness (20). The daytime nurses complained more about snoring, early morning awakening and mid-sleep awakenings. The study also included that rotating shift affect the sleep pattern where female complain more than male nurses, but shifts does not affect their performance and attendance.

Portela, L. F et al conducted study in 2004 that rotating shift work also has a negative effect on social life, can make difficulties in scheduling family activities. It also disturbs planning, usually made for holidays and other social activities. It also decreases chances for childcare and makes it hard to give enough time to family as well (21). Rotating shift work disrupts valuable timing of family, such as evenings and nights timing, when family activities usually occur.

Methodology

The study design was a Quantitative cross-sectional descriptive which was completed in eight-day from May 01, 2017, to May 8, 2017. A sample size of 199 nurses, included nurses working in tertiary care hospitals of Peshawar; one of them is medical teaching hospital (Lady reading Medical teaching hospital Peshawar) and two private hospitals Northwest general hospital and Pakistan international medical college hospital Peshawar. Both male and female nurses having different designations were the participants through simple random sampling. The nurses who had experienced shift work for more than one year are participants because they were better representatives for this study.

Permission for data collection of staff nurses from all the three tertiary care hospitals (Lady Reading Medical Teaching Hospital Peshawar, Northwest general hospital, and Pakistan international medical college hospital Peshawar) was taken. Informed consent was obtained from the participant before data collection; the objective and purpose of the study were explained to all the participants and were attached with the consent form.

The data collection instrument was a structured questionnaire, which was reviewed by expert nursing professionals, and a pilot study was conducted on 15 students, and later changes were made for a better understanding of questions. The questionnaire was based on demographic data and associated effects related to rotating shifts on nurses' health.

The questionnaire consists of three Sections, the consent form, the demographic information and the survey questionnaire.

The questionnaire covered five sections:
Section 1: it includes demographic information such as age, gender, department, designation, years of experience,

marital status and Institute of working.

Section 2: Years of experience in Nursing and rotating shift work, knowledge about the effects of shift work on Nurses health

Section 3: Physical health

Section 4: Psychological health

Section 5: Social health

The survey was conducted through unstructured interview and questionnaire after consent. The interviewer helped and assisted the participants in the understanding of the question and what is meant by the statements.

Results

The response of all the participants were excellent, total 199 participants has completed the questionnaire.

The participants included in this study were from the three tertiary hospitals of Peshawar, among the participants 60.8% (n=121) were males and 39.1% (n=78) were females. The participants having the age of 25+ were 56.2% (n=112) while the age below 25 were 43.7% (n=87) (see table 1), more over majority of participants were Bachelor in nursing qualification which was 70.8% (n=141), followed by diploma in nursing 27.1% (n=54), and master in nursing 2% (n=4) (see table 1). The participants of the study include majority of staff nurses which have 5 or above years of experience, which are 53.7% (n=107), while the staff below experience from 5 years were 46.2% (n=92).

Table 1: Socio-demographic Profile of the Study Participants

Demographic details	Total (n=199)	%
Age (In years)		
<25	87	43.7
25 +	112	56.2
Gender		
Male	121	60.8
Female	78	39.1
Education Level		
Diploma in Nursing	54	27.1
Bachelor in Nursing	141	70.8
Master in Nursing	4	2.0
Experience		
<5 years	92	46.2
5 + Years	107	53.7
Marital Status		
Single	44	22.1
Married	155	77.8

The impacts are analyzed based on three sections: 1: Physical impacts 2: Psychological Impacts and 3: Social impacts of rotating shifts work.

Analyzing the responses of participants, 75% of Nurses responded that their sleep pattern is disturbed. They are not getting proper sleep; their sleep pattern is interrupted due to rotational shift work. It means that they have complained of sleeplessness, insomnia, and other sleep disorder.

69% of Nurses have an occasional headache while working a shift. Headache is a common physiological, as well as a psychological problem, is seen in a greater number of health care providers working in shifts for the hospital. Mealtimes have not remained in shift work 60% of Nurses answered that their mealtimes are disturbed by shift work.

In shift work eating behavior has changed, they are not able to have their meal on time. On the night shift, late-night intake of food changes the normal routine and a whole day spent in sleep does not use any food during sleep so mealtime and shift work are associated with each other. 59% of Nurses answered that are not spending enough time with their families. Married Nurses have difficulty in the night shift, especially when they have children. Night shift consists of twelve or more hours, detached for such a time from a child is hard to face. Reduction in interest to participate in daily, social, and community activities. 57% of Nurses Responded that their interest has been reduced in social activities due to rotating shift work (see figure 1). Their interest is decreased due to schedule conflict. 54% of Nurses said that they do not participate in their community activities due to rotational shifts. They do not have adequate time to be part of the activities in their communities.

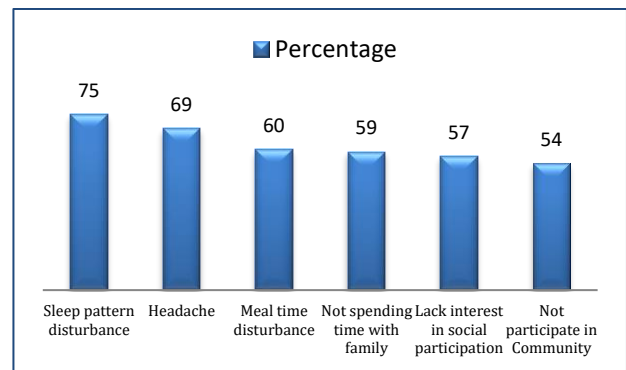


Figure 1: Impact of rotating shifts

Impact on Physical Health

This study identified that 29% of Nurses are suffering from physiological problems like: Gastrointestinal, Headache, and fatigue are the main physiological problems and cardiovascular disorders in long term. 69% of Nurses have an occasional headache while working a shift. Headache is a common physiological, as well as a psychological problem, is seen in a greater number of health care providers working in shifts for the hospital. 38% of Nurses said that they have problems with their stomach while doing work in a shift. It disturbs the eating behavior of a health care professional. Missing meals, taking meals frequently, or late-night meals, and laying or sleeping after meals could raise the problem with the stomach, while 47% of Nurses answered that are feeling fatigued (See Figure 2)

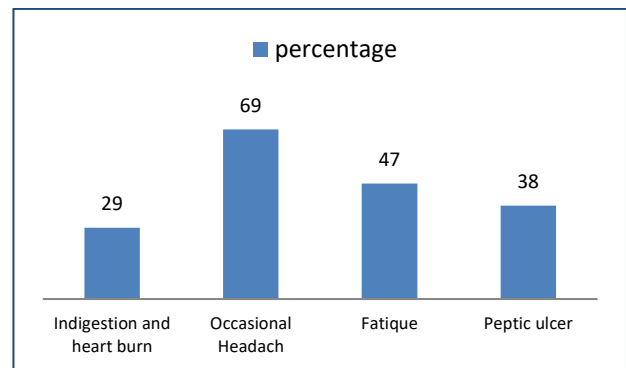


Figure 2: Physical impacts of rotating shifts

Impact on Psychological Health

This study shows that 24% of Nurses get to sleep for four hours (see table 4), which is considered not healthy sleep, such a type of sleep can affect health, loss of concentration and other big problems arise. 42% of Nurses get to sleep for four to six hours (see table 2), which is not enough but considered normal because six hours of sleep is considered normal. 33.5 % person Nurses sleeping for six to eight hours. Six to eight hours are considered a normal sleep range. But for some individuals, six-hour sleep is not enough. After getting six hours of sleep they are feeling fatigued.

Table 2: Sleeping hours of the participants

Total (n=199)		%
Work Experience		
5 +	107	53.7%
<5	92	46.2%
Sleep Timing		
4 Hours	48	24%
4-6 Hours	84	42%
6-8 Hours	67	33.5%

75% of Nurses responded that their sleep pattern is affected from rotating shifts. While among these participants 57% face Sleep deprivation (sleep insufficiency), 61% face insomnia (inadequate sleep quality and quantity (see table 5). The study also reported that rotating shifts also affect eating behaviors, among the participants 60% of nurses reported that their mealtime are disturbed by shift work. While 63% of participants described that they face cognition difficulty in work like communication or social skills.

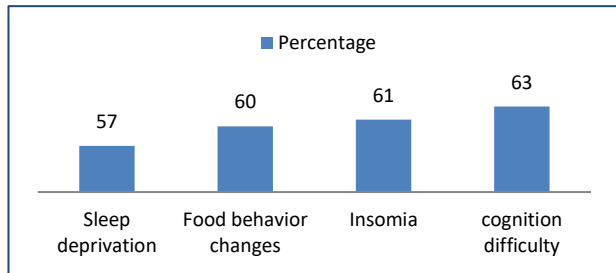


Figure 3: Psychological impacts of rotating shifts

Impact on Social Health

Most (74%) of Nurses answered that they are unable to set a routine for daily activities. 57% of Nurses responded that their interest has been reduced in the social activities due to schedule conflict from rotating shift work. Just short off two thirds (59%) of the participants answered that they are not spending enough time with their families. Married Nurses have big problems in the night shift, especially when they have children, detached for such a time from a child is hard to face. 54% of Nurses said that they do not participate in their community activities.

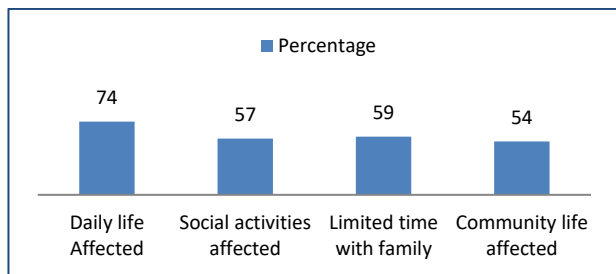


Figure 4: Social impacts of rotating shifts

Discussion

The study demonstrates that there are negative impacts from rotating shifts on the health of nurses. Findings revealed that rotating shift not only affect the physical health of the nurses, but also affect psychological and social health. Among the participants in physical health, the numbers of headaches (n-69) were reported high in comparison to fatigue (n-47), peptic ulcer (n-38), and indigestion and heartburn (n-29). In psychological impacts majority of the participants (n-63) reports cognition difficulty, the rest were insomnia (n-61), Food behavior change (n-60) and, sleep deprivation (n-57) respectively. Furthermore, in social impacts, most of the participant's reports that their daily life is affected (n-74), while (n-59) found that they have limited time for family, in (n-57) their social activities were affected and (n-54) report that their community life is affected.

The strength of the study is that it covers the physical impacts, psychological impact, and social impact, affected by rotating shifts among nursing staff. The majority of our participant's experience is more than 5 years, which makes it a good representation of the study.

The study is also some limitations:

A small sample size of the study from three tertiary care hospitals doesn't draw a clear picture of impacts.

The study doesn't focus on specialized shifts, which could be further investigated based on the night shift and day shift regularly or alternately. The design of this study is quantitative cross-sectional therefore we can't determine the association between these symptoms.

The study shows that rotating nursing staff faces physical and psychological symptoms with a high risk of chronic diseases, impose circadian strain (22, 23), while the participants of our study also presented with physical and psychological symptoms. Another study suggested that rotating shifts among paramedics cause higher levels of sleepiness and fatigue (24), while our study indicated that rotating shifts cause fatigue (physical impact) and insomnia (psychological impact). The finding of a study shows that the shift workers were associated with a higher prevalence of insomnia (25) and sleepiness during the night shift (26). In this study, the rotating shift nurses reported insomnia and cognitive difficulty as psychological impacts. Social supports have a good response to work stress, so low social support is associated with the development of stress (27). In this study, we found that there is a social impact of rotating shifts among nurses in the form of, affected daily life, limited time for family, or inactive community participation.

Conclusion

Shift work is essential for any organization to provide 24 hours services to the patient. In nursing, shift work is mandatory and required to provide continuous quality care to the patients, but it has some adverse effects on the health of nurses as well as on patient safety. An adverse effect may be physiological, psychological, or social. Shift workers had experienced gastrointestinal, headache, and fatigue. There is a positive association between shift work and mental problems. Disturbed sleep pattern is seen mainly in night shift work. Their sleep pattern is disrupted due to rotational

shift work. It means that they have complained of sleeplessness, insomnia, and other sleep disorder. In shift work eating behavior changes, late-night intake of food changes the normal routine. 57% of Nurses responded that their interest has been reduced in the social activities due to rotating shift work.

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