

Assessment of Sleep Disorders Among Rotating Shift and Day-Shift Nurses in a Tertiary Care Hospital in Swat.

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Abstract

Background

Due to disruptions in circadian rhythms, sleep disorders are prevalent among nurses, particularly those working rotating shifts. These disorders affect their physical, mental, and emotional health, influencing job performance and the quality of patient care. Understanding the sleep patterns of rotating shift and day-working nurses is vital to developing targeted interventions.

Aim: This study aimed to assess and compare the prevalence and severity of sleep disorders among nurses working rotating and day shifts in a tertiary care hospital in Swat.

Methods: A descriptive cross-sectional design was employed with 160 nurses selected through convenience sampling. Data were collected using a structured questionnaire covering demographic details and sleep-related complaints. Statistical analysis, including chi-square tests, was conducted using SPSS version 26.

Results: The findings revealed that 71.9% of nurses reported sleeping six or more hours without night shifts, while 28.1% slept less. Sleep quality was rated as reasonably good by 53.1%, but 12.5% experienced poor sleep. Rotating shift nurses reported significantly higher sleep disturbances, with difficulty falling asleep and waking during the night being prominent. A significant association ($p = 0.01$) was found between rotating shifts and secondary employment, exacerbating sleep problems.

Conclusion: Rotating shift nurses are more prone to sleep disorders than their day-working counterparts. The findings emphasize the need for healthcare institutions to implement flexible scheduling, sleep hygiene education, and mental health support to mitigate sleep-related issues and improve nurse well-being and patient care outcomes.

Keywords: Sleep disorders, rotating shifts, day shifts, nurses, circadian rhythm, patient care

Introduction

Sleep disorders, as recognized by healthcare, are conditions that incapacitate the quality, length, and rhythmicity of sleep, impacting a person's physical and psychological wellbeing. Among

nurses, rotating shift work alters circadian rhythms. (1). The natural sleep-wake cycle or biological clock causes insomnia, excessive daytime sleepiness, and other disorders. (2). This issue influences professional work and individual wellbeing, making it an important area of study in health care. Day shift nurses are routine, but shift work disrupts the circadian rhythm, and thus, stress in nursing can lead to sleep problems. (3). A comparison of rotating shifts and day-working nurses' results analyzed their concerns and differences regarding their sleeping time. Knowledge of these differences is crucial to design appropriate strategies aimed at their improvement and the outcomes for their patients. (4).

Sleep disorders are highly prevalent among nurses, particularly those working rotating shifts, due to irregular work schedules and disrupted circadian rhythms. (5). Studies indicate that a significant proportion of nurses' experience conditions such as insomnia, excessive daytime sleepiness, and shift work sleep disorder, which can negatively impact their cognitive performance, mental health, and overall wellbeing. (6). Rotating shift nurses are at a higher risk than day-shift nurses, as frequent schedule changes interfere with natural sleep-wake cycles. (7). Factors contributing to sleep disturbances include long working hours, high job stress, exposure to artificial light at night, and inadequate recovery time between shifts. Addressing these issues through proper scheduling, workplace interventions, and sleep hygiene education is essential to improving nurses' health and ensuring optimal patient care. (8).

Nurses are the most critical and hardworking in the healthcare system since they attend to patients around the clock. This work pattern means that workers are always on shift, and their working schedules disrupt their usually required sleep pattern. (9). Working in shifts disrupts natural body rhythms by exposing workers to the opposite phase of their circadian rhythm and, thus, they are fatigued. Conversely, day-shift nurses who maintain schedule disruptions are minimal regarding their circadian rhythms. But they experience demands of workload pressure, hence affecting their sleep quality. (10). These differences are helpful in pointing to the realization that different schedules present different problems regarding sleep and therefore, sleep problems are best solved based on the specific schedule. Exploring these dynamics is beneficial for the nurses' health and the quality of healthcare. (11).

Circadian rhythm is a biological oscillator that provides time-keeping information about the daily sleep-wake cycle by synchronizing the physiology to the light-dark cycle. Nurses working rotating shifts alter this tempo, thus making the body work at abnormal hours. (12). This causes, for example, shift work sleep disorder (SWSD), which is characterized by insomnia and excessive sleepiness. However, whether day-shift nurses are protected from circadian misalignment, stress-related factors undermine their sleep quality. (13). Mitigating these risks entails learning about the biology of the circadian rhythm and exploring the possibility of capturing shift work for rotating workers that promotes improved alignment of their internal clock. This alignment is necessary for better quality of sleep and better overall health of the patient. (14).

The effects of sleep disorders on nurses are multifaceted and affect cognitive, emotional, and physical wellbeing. Lack of sleep results in fatigue, reduces the capacity to make good decisions and focused attention, and affects memory focus, all of which are disastrous within the medical field. (15). Working in shifts, and especially with rotating shifts, nurses are at higher risk of making such mistakes. At the same time, the day-shift nurses may suffer from mental tiredness due to the grueling demands of the shift's consistent work load. (16). These challenges significantly impact not only the nurses' health but also the safety and quality of the patients. Because of this, it is crucial to apprehend and attend to improvements in sleep connected with those discrete areas to develop safer and efficient health care facilities. (17).

Thus, sleep disorders in nurses are an essential problem investigation that has profound consequences for nurses' health, job satisfaction, and efficiency. Overcoming these challenges can only be achieved by coordinating organizational support and individual strategies with changes at the level of systemic policies. (18). It is for this reason that enhancing sleep health is important to healthcare institutions in that it is likely to create a strong workforce that will

enhance the outcome of health care services. This study aims to make these dynamics more understandable to bring positive change to the nursing profession. (19).

Research methodology.

The research used a descriptive cross-sectional methodology to evaluate sleep disorders among hospital nurses employed in rotating shifts and day duties at a tertiary facility in Swat. A total of 160 registered nurses participated in the study, and researchers selected them using convenient sampling. The research study included all registered nurses who worked at the hospital. The data collection process depended on using a structured questionnaire containing validated questions for maximum reliability and data accuracy. The questionnaire divided its questions into (1) personal background inquiries and (2) patients' sleep problems and concerns. The tool attained strong psychometric properties, exhibiting internal reliability at $\alpha = 0.83$, test-retest reliability at 0.85, sensitivity at 89.6%, and a specificity of 86.5%. A thorough evaluation based on this method enabled researchers to explore sleep disturbances in nurses at various levels, which yielded essential data about sleep disorders that affect this occupation.

Data Analysis Procedure

The data were analyzed using SPSS version 26. Both descriptive and inferential statistics were utilized to evaluate the data. Descriptive statistics summarized demographic information and the occurrence of sleep complaints, while inferential statistics identified the relationships among the variables. These statistical techniques provided a thorough understanding of sleep disorders affecting nurses in the tertiary care hospital. The analysis yielded insights into the factors that impact sleep quality and their effects on the wellbeing of nurses.

Results and analysis

The demographic characteristics of registered nurses working in a tertiary care hospital were assessed across several variables. Most nurses (95%) were between 30 and 51 years old, with a smaller proportion (5%) under 30 years. Most of the nurses were male (79.4%), while 20.6% were female.

Variable	Frequency	Percentage
Age		
Under 30 years	8	5%
30 to 51 years	152	95%
Gender		
Male	127	79.4%
Female	33	20.6%
Marital Status		
Single	71	44.4%
Married	85	53.1%
Divorced	2	1.3%
Widowed	2	1.3%
Nursing Education		
General Nursing	52	32%
Bachelors	100	62.5%
Master	7	4.4%
PhDs	1	0.6%
Working Experience		
1 to 3 years	79	49.4%
3 to 6 years	35	21.9%
6 to 10 years	23	14.4%
More than 10 years	23	14.4%

Second Job		
Yes	39	24.4%
No	121	75.6%

Figure 1: Education Level of Participants

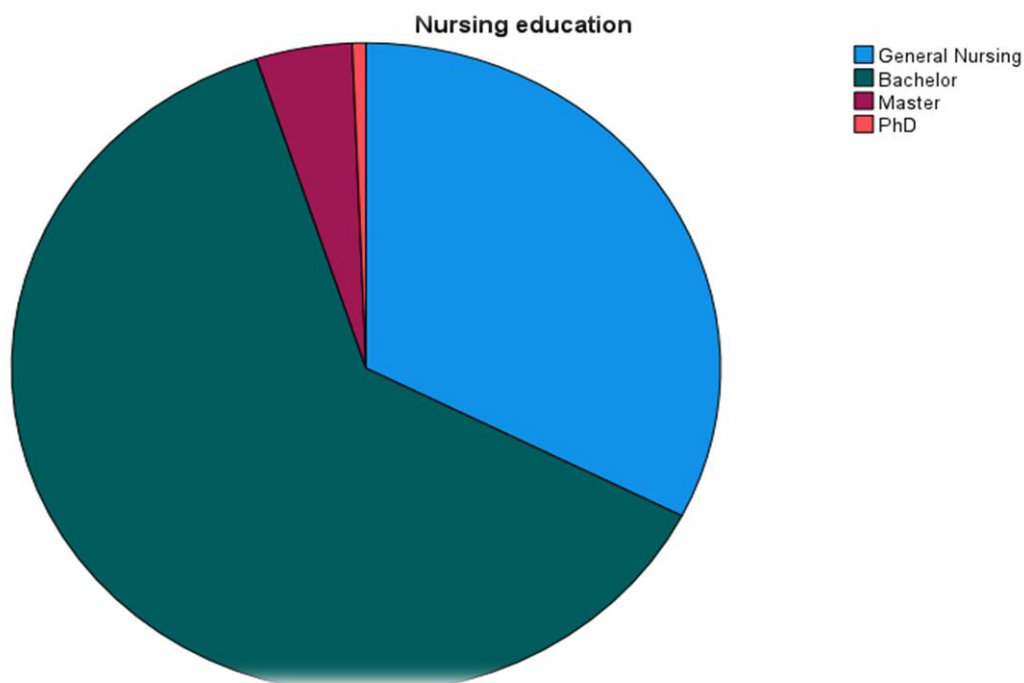


Figure 1 illustrates the distribution of nursing education levels among the participants in our study. The educational qualifications were classified as General Nursing, Bachelor's, Master's, and PhD degrees.

Sleep Complaints Among Participants

Some significant findings were made about sleep problems among the participants. When the average sleeping hours without a night shift were elicited, about 71.9% of nurses would have slept six or more hours, and about 28.1% would have slept less than 6 hours. As for the quality of sleep, 53.1% rated their sleep as reasonably good, while 34.4% considered it good, and only 12.5% poor and 9.4% reasonably bad. (Table 2)

Table 2: Sleep Complaints Among Participants

Sleep Complaints	Frequency (n)	Percentage (%)
Average Sleep Duration Without Night Shift		
Less than 6 hours	45	28.1%
6 or more hours	115	71.9%
Sleep Quality		
Good	55	34.4%
Fairly good	85	53.1%
Fairly bad	15	9.4%
Bad	5	3.1%
Difficulty Falling Asleep Within 30 Minutes		
Not during the last month	60	37.5%
Less than once a week	70	43.8%
Once or twice a week	15	9.4%

Three or more times a week	15	9.4%
Waking Up During the Night		
Not during the last month	50	31.3%
Less than once a week	80	50%
Once or twice a week	20	12.5%
Three or more times a week	10	6.3%
Waking Up Too Early and Difficulty Getting Back to Sleep		
Not during the last month	65	40.6%
Less than once a week	55	34.4%
Once or twice a week	30	18.8%
Three or more times a week	10	6.3%
Difficulty in Concentration		
Not during the last month	60	37.5%
Less than once a week	65	40.6%
Once or twice a week	20	12.5%
Three or more times a week	15	9.4%
Use of Medicines to Help Sleep		
Never	100	62.5%
Less than once a week	40	25%
Once or twice a week	15	9.4%
Three or more times a week	5	3.1%

Association Between Socio-Demographic Variables and Holding a Second Job.

The Chi-square analysis determined the connection between having a second job and some demographic variables, especially to highlight whether working rotating shifts was more common among nurses with second jobs. This association has a significant p-value (0.01) between second job status and having rotating shifts, meaning there is a significant association between the two. (Table 3)

Table 3: Association Between Socio-Demographic Variables and Holding a Second Job Among Nurses

Variable	Second Job (Yes)	Second Job (No)	Total (Yes)	Total (No)	Chi-Square Value	p-value
Age Group						
Under 30 years	5 (12.8%)	3 (7.6%)	8	8	2.31	0.51
30 to 51 years	34 (87.2%)	118 (92.4%)	152	152		
Gender						
Male	30 (76.9%)	97 (77.5%)	127	127	0.02	0.89
Female	9 (23.1%)	26 (22.5%)	33	33		
Marital Status						
Single	16 (41%)	55 (44.5%)	71	71	0.18	0.91
Married	22 (56.4%)	63 (51.6%)	85	85		
Divorced/Widowed	1 (2.6%)	4 (3.2%)	2	2		
Nursing Education						
General Nursing	12 (30.8%)	40 (32.5%)	52	52	0.03	0.98
Bachelors	26 (66.7%)	74 (60.3%)	100	100		

Master/PhD	1 (2.6%)	6 (7.2%)	8	8		
Work Experience						
1 to 3 years	20 (51.3%)	59 (48.8%)	79	79	0.21	0.88
3 to 6 years	7 (17.9%)	28 (22.9%)	35	35		
6 to 10 years	6 (15.4%)	17 (13.8%)	23	23		
More than 10 years	6 (15.4%)	17 (13.8%)	23	23		
Rotating Shifts						
Yes	27 (69.2%)	62 (50.8%)	89	89	6.27	0.01
No	12 (30.8%)	59 (49.2%)	71	71		

Discussion

This research aimed to evaluate how common and serious sleep problems were among nurses on rotating and day shifts at a major hospital in Swat. The findings showed big worries about how well nurses slept, which was affected by age, gender, if they were married, their education, how long they'd worked, and if they had another job. Also, this study looks into how having a second job might be linked to working shifts. This part compares what we found to what other studies have said before looking at where they're similar and different. (20).

The age distribution in this study was such that the majority of participants (that is, between thirty and fifty-one years) made up 95% percent, while the smallest percentage of participants (5%) were below the age of thirty. This is in line with results from other studies that have also shown that the nursing workforce mostly comprises older people, while younger nurses tend to leave the job because of stress or burnout. (21). Notwithstanding, the young nurses who are 30 and under in our study suggest that only a few younger nurses have qualified to be nurses compared to the older generation. (22). This indicates that attention directed at developing strategies for young nurses to stay in the hospitals should be seriously considered. (23).

The gender distribution in the study disclosed that nurses were mainly the predominant group (79.4%), while the female nurses were the minority (20.6%). This might be closely related to patterns in other countries, where the nursing profession that has not been previously considered a female-dominant perspective has existed. (24). Contrary to that, the findings of our study detail a specific population trend in Swat, where nurses surpass females for cultural or regional reasons. This might not only explain that cultural perceptions influence gender distribution among areas, but also that male involvement in nursing is on the rise in some areas. (25). Most of the nurses who participated in the study were married (53.1%), followed by those who were single (44.4%). These numbers are in tandem with research that shows most nurses are married. Yet, the study found that only a few of them got divorced or were widowed (2.6%), which may indicate the cultural aspect or the stability of the nursing Workforce in Swat. Other studies have also demonstrated this fact. (26). Nurses can be influenced by marriage, which one can take as a Positive or negative factor depending on the person's work-life balance and School level, and married nurses are more likely to face family-related Issues. In nursing education, the results revealed that the (27).

Most nurses had a bachelor's degree (62.5%) and 32% were Those who had pursued general nursing. These results correlate with the Findings in other places where nurses also have a bachelor's degree in Nursing. On the other hand, only a few of the participants in our survey had a Master's degree (4.4%) or a Ph.D. (0.6%) (28).

The lower number of master's and PhD holders in this study is an indicator that there should be further progress in the development of advanced nursing education programs to improve nursing care and enhance the leadership of nurses in healthcare. (29) The work experience data showed that 49.4% of nurses had 1 to 3 years of experience, while 21.9% had 3 to 6 years, and 14.4% had between 6 to 10 years or more than 10 years. (30) This distribution of work experience is typical in many settings, as younger nurses tend to have less experience. In comparison, older nurses with more years of experience are more likely to take leadership or administrative roles. (31). However, other studies have found that nurses with over five years

of experience report fewer work-related sleep disturbances than their less experienced counterparts, suggesting that experience may influence resilience to stressors and fatigue. (32). A critical finding of the research is that the prevalence of second jobs among nurses is relatively high at 24.4%. This number can be comparatively pronounced in other regions where second jobs are infrequently observed among nurses. Thus it leads one to infer that the financial strain would also be one of the significant reasons for secondary employment in Swat. (33). Nurses with second jobs might place themselves in more fatigue and poor sleep quality. The findings corroborate with earlier reports that secondary jobs contributed to more stress, resulting in sleep disorders among the nurses. Secondary occupations have been tied to many irregular night shifts, which could cause further stress-related sleep problems. It was (34).

In the study on sleep complaints, a report indicates that for most of the nurses (71.9%), there are at least six hours of sleep apart from the night shift period. However, 28.1% of nurses said they sleep less than six hours, a finding very much in line with other studies whereby many people have insufficient sleep due to erratic working hours. (35) Furthermore, sleep quality is rated fairly good among 53.1% of participants, while only 12.5% rated it poor, thereby implying that while many suffer from moderate sleep disturbances, a significant part of the workforce suffers from poor sleep quality. This indicated ongoing problems with bringing about active sleep for nurses working in shifts. (36).

Thirty percent of nurses (43.8%) needed more sleep to doze off for under 30 minutes, while finally, nine percent of journalists reported this problem having three or more days a week. These results resemble previous studies wherein most nurses had trouble sleeping due to work-related stresses and odd schedules. (37). Also, waking up at times in the night, as well as waking before the morning on most bright, wondrous days, had more or less the same usage track, 50% reported waking up less than once each week, thus further verifying evidence from earlier investigations on identifying sleep disruptions as common phenomena among nurses, particularly rotators (38).

Medicinal therapy for sleep was also reported that 62.5% of nurses used no medication for sleep, while 25% used it less than once a week. This is quite similar to the conclusions arrived at by studies that say that many resort to using medications to sleep;. However, most prefer non-pharmacological methods of treatment, not so many, only 3.1%, use it at least three times a week, which will show there is still a need to find effective strategies that will help in the management of sleep problems without necessarily using medication. (39).

The Chi-square test to analyze the link between having a second job and engaging in whichever rotating shifts showed a significant association ($p = 0.01$), which indicated that nurses with second jobs had an increased likelihood of working on rotating shifts. This finding, in turn, correlates to the literature that claims such secondary employment mainly involves irregular shifts, thus aggravating sleep problems and creating stress. Hence, policy measures would need to be incorporated, considering the health factors relating to the second job on nurses' sleep quality. (40).

Conclusion

The study highlighted the high prevalence of sleep disorders among nurses, particularly those working rotating shifts and holding secondary jobs. Key factors such as age, gender, marital status, and work experience were linked to sleep disturbances, with many nurses reporting poor sleep quality and difficulty sleeping. The findings emphasize the need for healthcare institutions to implement policies addressing work schedules, fatigue management, and sleep hygiene to improve nurses' wellbeing and prevent burnout. Future research should explore the long-term health effects of sleep disturbances and evaluate targeted interventions to enhance sleep quality among nurses.

Recommendations

A new shift scheduling system with forward-rotating shifts was implemented to decrease circadian rhythm disturbances, support nurses' rest periods, and reduce fatigue symptoms. To promote better nursing, health practitioners should consider offering different work schedules that enhance rest opportunities.

Hospitals should establish training programs that include sleep hygiene education and stress management strategies. Hospitals should provide training for nurses that teaches them about establishing consistent sleep patterns and building proper rest spaces while developing relaxation methods.

Research must explore how additional jobs affect nurse's psychological condition. Work institutions need to develop flexible scheduling systems that enable nurses to maintain their primary work responsibilities while preserving their sleep quality.

The institution needs to develop complete mental health resources by adding counseling services and stress management programs to its existing protocols. Workers who undergo regular mental health assessments with support group access experience lower work stress levels, which inhibits sleep disturbances.

Early intervention programs with regular health monitoring services and counseling support nurses working night or rotating shifts. Proactive medical monitoring helps to avoid serious long-term effects from sleep disorder problems.

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