Original Article

Assessment of Shift Work Disorders and Its Associated Factors Among Nurses Working in a Tertiary Care Hospital

Shezadi Sabah Imran ,[1] Laiba Khan ,[2] Musarat Ramzan ,[3] Khola Waheed Khan ,[4] Robina Mushtaq ,[5] Sadia Nadeem [6]

Abstract

Objective: This study aimed to to assess the frequency of SWD among nurses working in a tertiary care hospital and to assess the factors related to the SWD among nurses.

Study Design: A hospital based cross-sectional study was conducted.

Place and duration of study: The study was conducted at Pakistan Ordinance Factories hospital, Wah Cantt, Pakistan from September 2025 to November 2025.

Material and Methods: The study was done on 118 nurses of a tertiary care hospital from September 2025 to November 2025. The sample was collected using convenience sampling. A 19-item questionnaire was used to collect data on the shift work schedule of nurses, their physical health, mental wellbeing, sleep pattern and fatigue endured while working the shifts. SPSS version 23 was used for analyzing the collected data. ANOVA was applied to assess the difference in shift work disorder scores in relation to age groups, duration of night shifts, and frequency of night shifts while independent t test was used to assess difference in shift work disorder among male and female nurses.

Results: Out of total 118 nurses 69% nurses had SWD. The mean score of shift work disorder (SWD) among the participants was 24.13 ± 7.75. A significant difference in SWD scores was observed across different age groups (p value= <0.001) and duration of work (0.004), as revealed by ANOVA.

Conclusion: Our study indicates a high prevalence of Shift work disorder among nurses of the hospital emphasizing the fact that nurses employed in shifts are more prone to sleep disorders. These findings call for managing shift work in the hospital.

Keywords: Cross sectional study, Disorder, Nurses, Shift work

1. Introduction

Shiftwork is a working pattern in which the staff work before 7 am and after 2 pm in hospitals.(1) In hospitals, there are different types of shifts, like day shifts, night shifts, and rotating shifts. As a necessary component of the health care system, providing 24-hour services has given rise to the phenomenon of shift work. The staff who mostly work in shifts include doctors, nurses, technicians, and other support staff. They work in different departments like emergency, labor and delivery, surgery and intensive care. As a result, hospitals often have policies and procedures in place to manage shiftwork, including regular breaks, flexible schedules, and support programs for staff members.(2,3) Shift work disorder (SWD) is a primary sleep disorder classified as Circadian Rhythm Sleep Disorders. The circadian rhythm is an endogenous biological cycle that follows an approximately 24-hour pattern. The characteristic feature of Shift Work Disorder (SWD) is insomnia and/or excessive sleepiness that are temporally associated with a repeated work schedule overlapping the usual sleep period. These symptoms must be present for at least one month and directly associated with the shift work pattern.(1,3) Shift Work Disorder (SWD) is influenced by several factors, including age, duration and frequency of night work, the number of shifts separated by less than 11 hours of rest, and the total number of consecutive night shifts worked

Community Medicine department, Wah Medical College, National University of Medical Sciences, Pakistan ,[1,3,4,5,6] Fazaia Medical College [2]
Correspondence: Shezadi Sabah Imran, Wah Medical College, The Mall, Wah Cantt **Email:** : sabahimran00@yahoo.com

These factors are positively associated, whereas gender and flexibility remain negatively related. SWD is positively associated with decrease in productivity and increase in cost, leading to inefficient performance at work place. In addition, short rest periods of less than eleven hours between two shifts have also been reported to be associated with the presence of SWD. [4,5] Compared to nurses without mental health issues, nurses with mental health issues made noticeably more errors. However, with increasing international competition and rising patient expectations for high-quality healthcare, the prevalence of depression among nurses has intensified. Several nurses take multiple jobs or switch them frequently to satisfy their financial obligations because these are low-paying jobs.[6] According to the literature varying levels of employment pace, diversity, control, social support, and competing expectations contribute to a variety of mental health disorders. Also, studies have shown that they struggle to complete their work since they don't have enough time to give their clients the crucial emotional support. Another theory regarding the harmful effects of long work hours on health is the adoption of unhealthy coping mechanisms such as excessive coffee intake, alcohol and drug usage, and cigarette smoking. Also, nurses have psychological challenges such as dealing with irritated, argumentative, or even hostile residents and witnessing the decline of those with whom they have formed close bonds.[7,8] Due to their lower levels of awareness, cognition, and attentiveness, night employees are more likely to be involved in motor vehicle accidents, which increases the risk of injuries, workplace accidents, and errors in quality control. When compared to daytime workers, night shift workers are said to have greater body mass indices, elevated cholesterol, and elevated triglyceride levels. Peptic ulcers are more common in night and rotating shift employees than in day workers when it comes to digestive issues. It has been demonstrated that demanding work schedules have an impact on healthcare workers' physical health, including diabetes, cardiovascular illness, menstruation issues, subfertility, and less than ideal pregnancy outcomes. Lastly, breast and colon cancer rates were much higher in nurses who had worked shifts for a long time. In fact, the World Health Organization's International Agency for Research on Cancer concludes that shift employment is undoubtedly harmful to people.[9,10] The studies carried out in Ethopia and Banglore, India revealed prevalence of shift work disorder as 33.610 and 43.07.[11]

The healthcare system in Pakistan mainly depends on nurses, who put in long shifts to take care of patients. It is crucial to conduct research on SWD among Pakistani nurses for a number of reasons. First, SWD has been linked to a number of unhealthy effects, such as exhaustion, drowsiness, poor cognitive performance, and an increased risk of accidents. In a hospital context where accuracy and focus are crucial, these effects can have major repercussions for both nurses and patients. Second, studies on SWD among Pakistani nurses can shed light on the particular difficulties experienced by medical personnel in the area. Although there is an expanding corpus of research on SWD in different countries, socioeconomic and cultural factors can have a big impact on the prevalence and severity of the illness. Understanding the particular causes of SWD among Pakistani nurses can help in the development of interventions and policies that are appropriate for the region. The objectives of the study were to assess the frequency of SWD among nurses working in a tertiary care hospital and to assess the factors related to the SWD among nurses.

2. Materials & Methods

A hospital based cross sectional study was done on 118 nurses of Pakistan Ordinance Factories hospital, Wah Cantt, Pakistan from September 2025 to November 2025 after taking approval from ethical review committee (WMC/ERC/IRB/108 Dated: Sept 02,2025). The sample size was estimated on Calculator.net using prevalence of

25.6% 7 at 95% confidence interval and 5% margin of error; the population size was 195.

Both male and female nurses of all age groups who had been working in shifts for at least six months were selected using convenience sampling technique and invited to participate. Those who replied positively were invited to take part in the study. The objectives of study and the procedures implemented to ensure the confidentiality were described to the participants. Informed consent was taken from the participants. Those nurses having any psychological disorder were not included in the study. The questionnaire used for the study consisted of 19 questions; four questions were about demographic details in which name was optional to maintain confidentiality, four questions inquired about shift work schedule, two were about psychological and physical well-being and last ten questions were used to assess shift work disorder. Likert scale of 1-4 was used to summarize the scores of the shift work disorder. The cut off score for determining shift work disorder was 20. Those who scored 20 and above are considered to have Shift work disorder while those scoring below 20 didn't have shift work disorder. The pilot testing of the tool used to assess shift work disorder was done on 15 nurses and relaibilty of the tool came out to be 0.857.

SPSS version 23 was used for analyzing the collected data; frequencies and percentages were derived for qualitative variables including age group, gender, duration and frequency of shift work, frequency of nurses having various effects like change in mood, appetite, weight and frequency of nurses having shift work disorder. Mean and standard deviation were calculated for numerical variables like shift work disorder stress score. To assess the normality of data Shapiro-wilk test was applied. After checking the normality of data, ANOVA was applied to assess the difference in shift work disorder scores in relation to age groups, duration of night shifts, and frequency of night shifts while independent t test was used to assess difference in shift work disorder among male and female nurses.

3. Results

Among the surveyed nurses, 16 (13.6%) were male and 102 (86.4%) were female. In terms of age distribution, 56 nurses (47.5%) were between 18 and 30 years, 44 nurses (37.3%) were within the 31–42 age range, and 18 nurses (15.3%) were above 42 years of age. The frequency of participants based on duration of experience and weekly frequency of shift work among nurses are presented in Figures 1 and 2, while Figure 3 illustrates the frequency of nurses diagnosed with shift work disorder that is 69%.

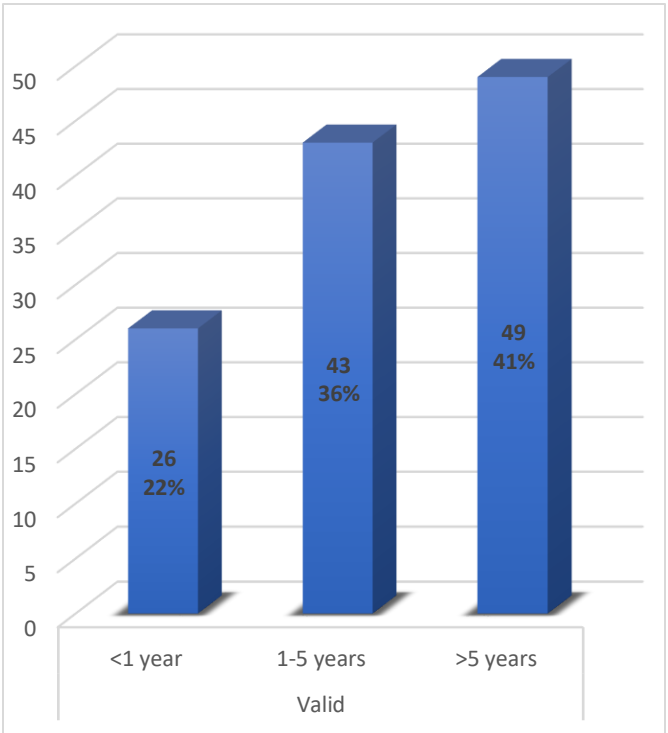

Figure 1: Frequency of participants based on duration of experience

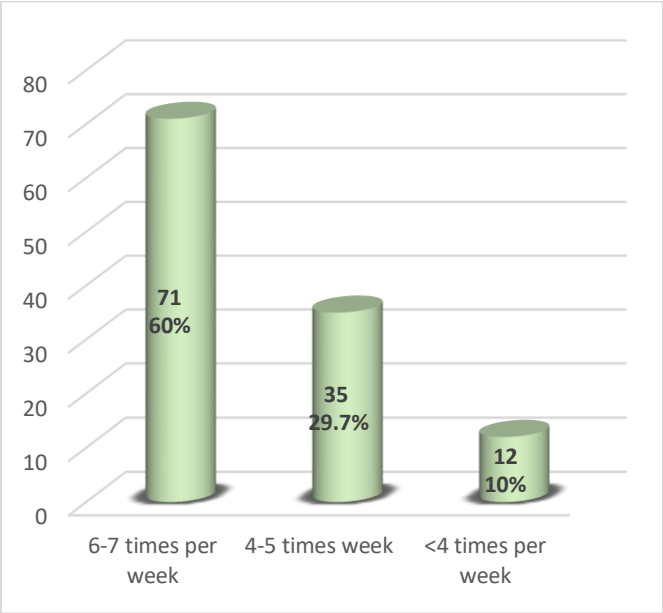

Figure 2: Weekly frequency of shift work among nurses

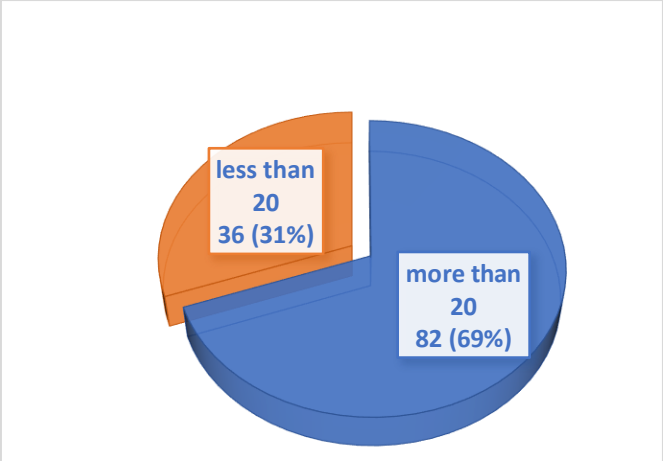

Figure 3: Frequency of nurses having shift work disorder

Among them, 96 (81.4%) reported significant mood and behavioural changes, while 22 (18.6%) did not. Similarly, 86 nurses (72.9%) perceived notable changes in appetite or weight, whereas 32 (27.1%) reported no such changes. The mean score of shift work disorder (SWD) among the participants was 24.13 ± 7.75. A significant difference in SWD scores was observed across different age groups and durations of work, as revealed by ANOVA. Post hoc analysis using Tukey's HSD indicated that nurses aged over 30 years and those with one to five years of shift work experience showed higher levels of SWD. In contrast, there was no significant differences between gender or frequency of night shifts with SWD scores (Table 1).

s.no	Variables	Categories	Shift work disorder score		Degress of freedom	F value	p value
			Mean	Standard deviation			
1	Age group	18-30	21.1786	7.17599	Between groups=2 within groups=115	8.827	0.000
		31-42	26.9773	6.84543			
		>42	26.3889	8.58274			
2	Duration of work	< 1year	21.7692	6.95303	Between groups=2 within groups=115	5.889	0.004
		1-5 year	27.2093	7.39549			
		>5year	22.6939	7.74113			
3	Frequency of shift work	6-7 times per week	23.0845	8.05117	Between groups=2 within groups=115	1.803	0.169
		4-5 times week	25.3714	6.33889			
		<4 times per week	26.7500	9.13659			
4	Gender	Male	22.4375	6.19644	116	-	0.270
		Female	24.4020	7.96435			

Table 1: Associated factors of shift work disorder

4. Discussion

Shift work plays significant role in the health care sector as the patients need 24-hour care. In such an occupation of health care, where safety is the cardinal concern, the malperformance and lack of vigilance associated with shift work disorder can pose risks not only to the nurses themselves but also to the health of patients. The objectives of this hospital-based study were to assess the shift work disorder and its associated factors among healthcare personnel who have a demanding schedule.

Results of the study indicated that 69% of nurses experienceed shift work sleep disorder (SWSD). This prevalence is considerably higher than that reported in other studies conducted by Haile KK et al., Adane A et

al., Anbazhagan S et al., and Huang H et al., where the prevalence of SWSD among nurses was 25.6%, [7] 33.67%, [(10)] 43.07%, [(11)] and 48.5%, [(12)] respectively. The higher prevalence observed in our study may be ascribed to the variation in work schedules, selected sample attributes, societal and institutional practices, or variations in the assessment tools used across studies.

Approximately two-thirds of the sampled nurses reported mood changes and alterations in appetite, which aligns with findings from previous literature. [(2,13,14,15,16,17)] Shift work disorder has been shown to adversely affect the quality of life of nurses and to pose significant negative health consequences.

A significant association was found between the age of nurses and shift work sleep disorder (SWSD). Nurses aged 30 years or older experienced higher levels of stress, which may be ascribed to heftier workloads, more professional responsibilities, and the additional demands of dealing or supervising a team. With increasing age, physiological resilience to irregular sleep-wake cycles also tends to wane, making it more difficult to regulate circadian desynchrony related to shift work.

A significant association was also noticed between the duration of shift work and SWSD The findings indicate that nurses with one to five years of shift work experience were probably develop the disorder in contrast to those who had worked in shifts for less than one year the results are comparable with the study carried out on American nurses in a follow up study.[(18)] This may reflect the increasing burden of disrupted circadian rhythms, insufficient recovery time, and current occupational stress. Prolonged exposure to shift work has been linked to chronic sleep disturbances, hormonal imbalances, and increased risk of stress-related health issues, all of which could contribute to the higher prevalence of SWSD in this group.[(19)] Collectively these findings indicate that both age and duration of shift work play an important role in increasing the vulnerability of nurses to SWSD. The combination of physiological changes associated with aging and the collective effects of shift-related stress may place older and more experienced nurses at particularly high risk, highlighting the requirement for targeted interventions, such as planned rest periods, flexible arrangement of work, and health promotion programs, to mitigate these risks.[(20)]

The study revealed that gender was not significantly associated with shift work disorder, indicating that nurses were likely to experience the condition irrespective of the gender . The results are unlike with some other studies that reported higher levels of mental distress among female nurses as compared to their male counterparts. [(4,21)] Moreover, no significant association was found between the frequency of shift work and shift work disorder in our study. These results contradict the findings of a study conducted on Norwegian nurses [(22,23)], which reported a positive relationship between SWD and the number of shifts. This discrepancy may be ascribed to differences in healthcare systems, working environment and scheduling practices between the two countries. Furthermore, disparities in sample characteristics, such as age distribution, resilience, and coping mechanisms of nurses, may also explain why the association was not found in the study.

This study has certain limitations that need to be acknowledged. As the study is cross-sectional so cause-and-effect relationships cannot be established. It means the disorder can be reported in any age group. Since purposive sampling was employed, the findings may not be generalizable to the wider nursing population. Additionally, the data relies partly on self-reports so the risk of recall bias remains. The study provides useful insights; the noted limitations should be taken into account when drawing conclusions from the findings.

Conclusion:

Our study indicates a high prevalence of Shift work disorder among nurses emphasizing the fact that nurses employed in shifts are more prone to sleep disorders. These findings call for managing shift work in the hospital.

Disclosure /Conflict of interest:

Authors declare no conflict of interest.

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