

Prevalence of Fatigue Among Nurses in Twin Cities

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Abstract

Background: Healthcare Background: Fatigue, characterized by profound and enduring feeling of tiredness, weakness, or exhaustion, may encompass both mental and physical aspects. The nursing profession's multifaceted nature and complexity can lead to fatigue. Shift work, which constitutes about 5% of the global labor force, is crucial in many healthcare settings, ensuring continuity of care, akin to professions like the police and military. Nursing is psychologically and physically demanding, with performance often declining towards the end of shifts. For nurses working rotating shifts, long hours, and night shifts disrupting their circadian rhythms, fatigue becomes unavoidable, hindering optimal nursing activities.

Objective: The objective of this study was to determine the prevalence of fatigue among nurses in the twin cities of Rawalpindi and Islamabad, Pakistan.

Methods: This cross-sectional study was conducted over one year in the twin cities of Pakistan. The sample size was calculated to be 377 using Epitool software, and a convenience sampling technique was employed. Inclusion criteria included nurses of both gender with at least one year of working experience. Exclusion criteria comprised of nurses diagnosed with heart diseases, diabetes, hypothyroidism, psychiatric illnesses (such as anxiety neurosis, schizophrenia, and endogenous depression), pregnant females, and those unwilling to participate. Data collection was carried out using a self-structured questionnaire to gather demographic information, working experience, and working units. The Fatigue Severity Scale (FSS) was used to assess fatigue levels. The results were presented in graphs and tables for visual interpretation and comparison. SPSS version 25 (SPSS Inc., Chicago, IL, USA) was used for data analysis.

Results: Out of 351 participants, 120 individuals (34.2%) were categorized as experiencing fatigue, while 231 participants (65.8%) were classified as non-fatigued. The mean weight of the participants was 63.06 kilograms (SD ± 11.67) and the mean height was 161.44 centimetres (SD ± 11.57). Among the participants, 168 (47.9%) were aged 20-30 years, 136 (38.7%) were aged 31-40 years, 37 (10.5%) were aged 41-50 years, and 10 (2.8%) were aged above 51 years. Gender distribution included 66 males (18.8%) and 285 females (81.2%). Marital status showed 223 participants (63.5%) were married and 128 (36.5%) were unmarried. Regarding qualifications, 280 (79.8%) were Registered Nurses (RN), 18 (5.1%) held a Bachelor of Science in Nursing (BSN), 52 (14.8%) were Post RN, and 1 (0.3%) held a Master of Science in Nursing (MSN).

Conclusion: The findings indicate that fatigue is prevalent among nurses in the twin cities, with a higher prevalence observed among females compared to males. These results underscore the need for interventions to address fatigue, including optimizing shift schedules and providing mental health support to enhance nurse well-being and patient care quality. Pakistan.

1 Introduction

Fatigue, characterized by profound and enduring feeling of tiredness, weakness, or exhaustion, can encompass both mental and physical aspects (1). This condition frequently arises during numerous functional tasks performed daily, and it can be categorized as either objective or subjective, depending on its nature. Objective fatigue primarily pertains to physical manifestations, leading to a reduction in mechanical work capacity. In contrast, subjective fatigue may arise directly from demanding mental tasks or indirectly from physical activities, resulting in diminished alertness, mental focus, motivation, and other psychological factors (2). Fatigue is an unfavourable psychophysiological state resulting from exertion and is closely linked to the concept of recovery. Without sufficient recovery, acute fatigue

can evolve into chronic fatigue. Drawing from the theory of conservation of resources, fatigue reflects an unpleasant psychological state stemming from either a depletion of energy resources or an insufficient replacement of these resources. Acute fatigue typically arises as an adaptive response to job-related activities, being reversible, task-specific, and alleviated with rest. However, this adaptive process relies on adequate recovery during inter-shift or non-work intervals. Insufficient inter-shift recovery from acute fatigue can trigger a cycle of accumulating unrecovered fatigue, leading to chronic maladaptive fatigue, which transcends specific tasks and cannot be resolved solely through rest (3).

The nursing profession's multifaceted nature and complexity can lead to significant levels of fatigue. Nurses often work in psychologically and physically demanding environments, with performance often declining towards the end of shifts. For nurses working rotating shifts, long hours, and night shifts that disrupt their circadian rhythms, fatigue becomes unavoidable, hindering optimal nursing activities. Nurse fatigue is described as a work-related condition ranging from acute to chronic, resulting in overwhelming tiredness, decreased energy, and exhaustion, which impairs both physical and cognitive functioning. Fatigue adversely affects health, contributing to nurse injuries, cardiovascular and musculoskeletal issues, reduced nurse satisfaction, and compromised patient safety, a critical factor in treatment quality (4). Work-related musculoskeletal symptoms encompass painful conditions affecting joints, tendons, muscles, and nerves, impacting various body regions such as the back, upper, and lower limbs. These conditions pose significant concerns for organizations' human resources due to associated costs, illnesses, treatments, productivity losses, legal implications, and injury risks. Work-related musculoskeletal disorders (WMSDs) are increasingly prevalent worldwide, with upper limb diseases and low back pain being prominent contributors to work-related injuries. Identifying key individual and occupational risk factors associated with these symptoms is crucial for prevention, necessitating the elimination of contributing variables from workplaces. Repetitive strain injuries, synonymous with WMSDs, are prevalent work-related health issues and sources of fatigue, often manifesting after prolonged exposure to workplace risk factors (5).

Hospital nurses, frequently working in uncomfortable ergonomic settings for extended periods, face heightened risks of musculoskeletal disorders (MSDs), fatigue, and decreased productivity. Managers must recognize the hazards of fatigue for nursing staff and the organization, as it can impact both mental and physical well-being. Work-related fatigue, a primary contributor to negative patient and nurse outcomes, is a critical aspect of nursing health and safety. WMSDs and fatigue are significant challenges faced by nurses and healthcare professionals, often overlooked in hospital settings. Nurses working in hospitals encounter various risk factors for MSDs, including long hours, mental exertion, awkward positions, repetitive tasks, and patient handling. These conditions predispose hospital nurses to a high incidence of WMSDs. Addressing WMSDs and fatigue among hospital nurses, identifying potential causes, and implementing effective management strategies are essential for preventing WMSD symptoms, reducing workforce disability, enhancing job satisfaction, efficiency, effectiveness, and ultimately improving patient care (6).

Excessive workloads are often associated with significant levels of cumulative fatigue, which not only compromises the health and well-being of doctors but also poses risks to their ability to perform effectively, thereby endangering patient safety. Empirical evidence suggests that accumulated fatigue can accelerate thrombotic responses and potentially lead to cardiac arrest. Given the unique characteristics of the medical and health service profession, such as prolonged and irregular working hours, inadequate breaks, and sleep deprivation, it is particularly susceptible to work-related cumulative fatigue. Burnout among doctors has been correlated with accumulated work-related fatigue, prompting governmental recognition in countries like Japan and Korea, where cerebrovascular and cardiovascular illnesses (CVDs) associated with overwork are eligible for work compensation. In China, overwork has been identified as a silent threat to doctors. A growing body of research underscores that psychological job demands, beyond mere quantitative physical workloads, significantly influence fatigue levels at work. The same workloads may elicit varying degrees of work-related fatigue among different employees, depending on how the organization values and supports the work and individuals' perceived capacity to manage the workload. Health professionals may experience heightened stress due to consumer demands. Recent comprehensive literature reviews have identified decision latitude, job stress, self-rated health, management trust, and work-family conflict as key psychosocial factors linked to chronic fatigue. Individuals with high levels of internal motivation, such as deriving joy and satisfaction from their work, are less likely to report experiencing work-related fatigue. Adequate organizational and social support mechanisms often play a crucial role in preventing or delaying fatigue and promoting effective recovery (7).

Nurses are encountering elevated levels of burnout and psychological distress (8). The everyday practices of nurses have significant implications for their health, potentially increasing the risk of both physical and psychological health issues. Moreover, the health and well-being of nurses are closely linked to the quality of care provided to patients and the overall health of the population. Nurses serve as the backbone of the healthcare system, often juggling demanding schedules across various departments, exposing themselves to chemical, biological, physical, and psychosocial stressors such as depression and stress. Consequently, these factors can contribute to poor nurse health. Optimal patient care hinges on the health and well-being of nurses, highlighting the importance of prioritizing their general health and quality of life (9). Nurses often face the risk of compassion fatigue due to the demanding nature of caring for patients who are

experiencing significant emotional distress and physical suffering (10). Nurse educators and healthcare administrators within organizations should focus on fostering an effective work environment and implementing coping strategies to enhance satisfaction levels, rather than solely concentrating on preventing compassion fatigue (11). Frequent exposure to dramatic events and unexpected deaths can trigger feelings of hardship, physical and mental exhaustion, and a desire for detachment from one's surroundings among critical care nurses. These experiences can contribute to burnout, characterized by stress related to the demands and emotionally intense interactions between nurses and patients. This, in turn, may lead to various personal, social, professional, and psychological issues for healthcare professionals (12).

The Fatigue Severity Scale (FSS) is widely recognized as one of the most commonly employed inventories for assessing fatigue among individuals with chronic illnesses (13). The FSS comprises nine items, with patients selecting a score ranging from 1 (strongly disagree) to 7 (strongly agree) to express their level of agreement with each item. The overall score is calculated as the mean of the scores for all nine items, where a higher score indicates a greater degree of fatigue (14).

2 Material and methods

The study employed a cross-sectional design to investigate the prevalence of fatigue among nurses in the twin cities of Rawalpindi and Islamabad, Pakistan. The duration of the study was one year, commencing after the approval of the synopsis by the Ethical Review Committee of Margalla Institute of Health Sciences (ERC Ref No: EI/204/23). The sample size was determined to be 377 using EpiTool software, with convenience sampling, a non-probability technique, utilized for participant selection. Inclusion criteria included nurses of any gender with at least one year of working experience, while exclusion criteria encompassed nurses diagnosed with heart diseases, diabetes, hypothyroidism, psychiatric illnesses (such as anxiety neurosis, schizophrenia, and endogenous depression), pregnant females, and participants who were unwilling to participate.

Data collection involved administering a self-structured questionnaire designed to gather demographic information, working experience, and working units. The Fatigue Severity Scale (FSS) was employed to assess fatigue among participants. The FSS consists of nine items, each rated on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), with higher scores indicating greater fatigue severity. A total score below 36 suggests minimal fatigue, while a score of 36 or higher indicates the need for further evaluation by a physician. The questionnaire was administered through interviews conducted in various hospitals and healthcare settings within the twin cities. Out of the initial 378 participants approached, 28 were excluded based on the aforementioned criteria, resulting in a final sample size of 351 nurses who met the inclusion criteria.

The participants' demographic data, including age, gender, marital status, and qualifications, were collected. Additionally, information regarding their working experience and shift patterns was gathered. The average weight of the participants was 63.06 kilograms ($SD \pm 11.67$), and the average height was 161.44 centimeters ($SD \pm 11.57$). The age distribution included 168 participants (47.9%) aged 20-30 years, 136 participants (38.7%) aged 31-40 years, 37 participants (10.5%) aged 41-50 years, and 10 participants (2.8%) aged above 51 years. Gender distribution indicated that 66 participants (18.8%) were male and 285 (81.2%) were female. In terms of marital status, 223 participants (63.5%) were married, while 128 (36.5%) were unmarried.

The study ensured adherence to ethical standards as outlined in the Declaration of Helsinki. Ethical approval was obtained from the Ethics Review Committee of Margalla Institute of Health Sciences Rawalpindi. All participants provided informed consent by signing consent forms, indicating their voluntary participation and understanding of the study's objectives and procedures. Confidentiality of the gathered information was maintained, with strict protocols in place to safeguard participants' privacy. The collected data was utilized solely for research purposes.

For data analysis, SPSS version 25 (SPSS Inc., Chicago, IL, USA) was employed. Descriptive statistics, including mean and standard deviation, were calculated to summarize the demographic characteristics and fatigue scores. The results were presented in the form of graphs and tables to facilitate visual interpretation and comparison of the data across different variables. The prevalence of fatigue among the participants was determined, with 120 individuals (34.2%) categorized as experiencing fatigue and 231 participants (65.8%) classified as non-fatigued.

3 Results

The cross-sectional study included 351 participants out of the initially approached 378 nurses. The exclusion of 28 participants was due to the presence of heart diseases, diabetes, hypothyroidism, psychiatric illnesses, pregnancy, or unwillingness to participate. The demographic and professional characteristics of the participants are summarized in the following tables.

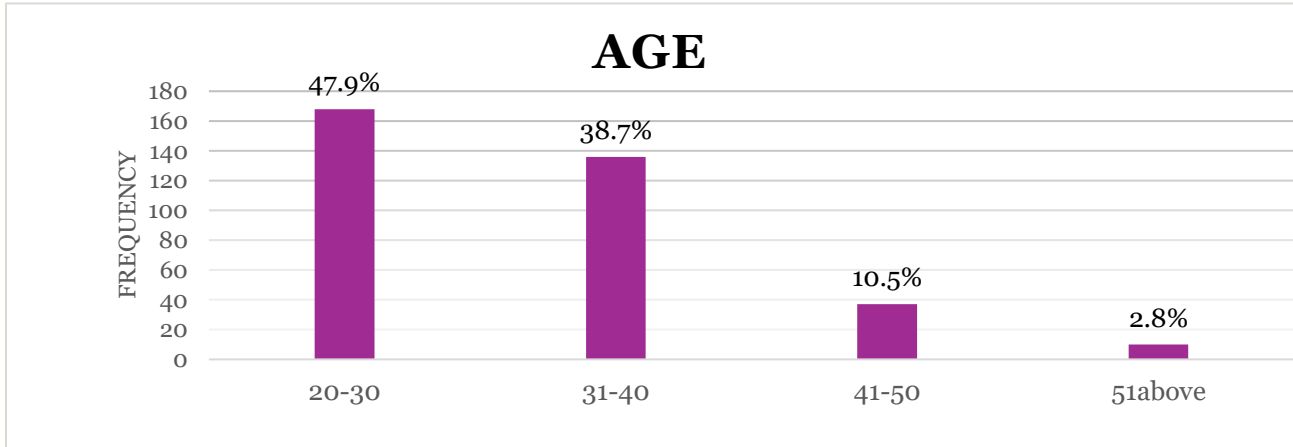


Figure 1: Age distribution

Table 1: Demographic Characteristics of Participants

Characteristic	Frequency (n)	Percentage (%)
Gender		
Male	66	18.8
Female	285	81.2
Age Group		
20-30 years	168	47.9
31-40 years	136	38.7
41-50 years	37	10.5
Above 51 years	10	2.8
Marital Status		
Married	223	63.5
Unmarried	128	36.5
Qualifications		
Registered Nurse (RN)	280	79.8
Bachelor of Science in Nursing (BSN)	18	5.1
Post RN	52	14.8
Master of Science in Nursing (MSN)	1	0.3

The majority of participants were female (81.2%) and married (63.5%). Most participants (47.9%) were in the 20-30 years age group, and a substantial portion (71.8%) had 1 to 10 years of working experience.

Table 2: Professional Characteristics of Participants

Characteristic	Frequency (n)	Percentage (%)
Years of Experience		
1-10 years	252	71.8
11-20 years	76	21.7
21-30 years	17	4.8
Above 31 years	6	1.7
Shift Work		
Rotation with Night Work	90	25.6
Day Shift Only	261	74.4
Working Units		
General Medicine Unit	73	20.8
Surgery Unit	46	13.1
Operation Theater	37	10.5
ICU/CCU	29	8.3
Outpatient Clinic	17	4.8
Paediatric Unit	54	15.4
Obstetrics and Gynaecology Unit	59	16.8
Psychiatric Unit	2	0.6
Other Units (Geriatric, Oncology, etc.)	34	9.7

The distribution of participants across various working units revealed that the largest groups worked in the General Medicine Unit (20.8%) and the Obstetrics and Gynaecology Unit (16.8%).

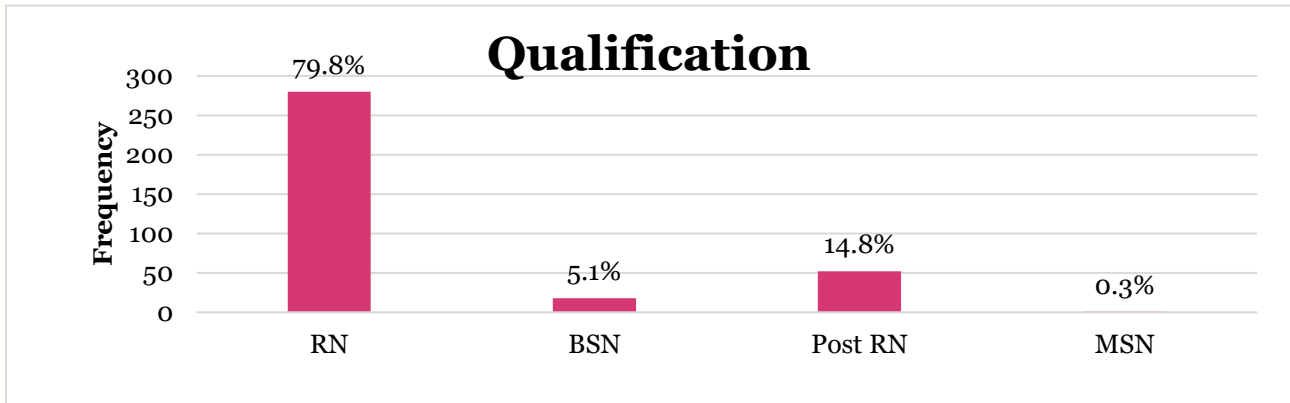


Figure 2: Qualification of participants

Table 3: Prevalence of Fatigue Among Participants

Fatigue Status	Frequency (n)	Percentage (%)
Fatigued	120	34.2
Non-Fatigued	231	65.8

Out of the 351 participants, 120 individuals (34.2%) were categorized as experiencing fatigue, while 231 participants (65.8%) were classified as non-fatigued. This breakdown provides insight into the prevalence of fatigue within the study population.

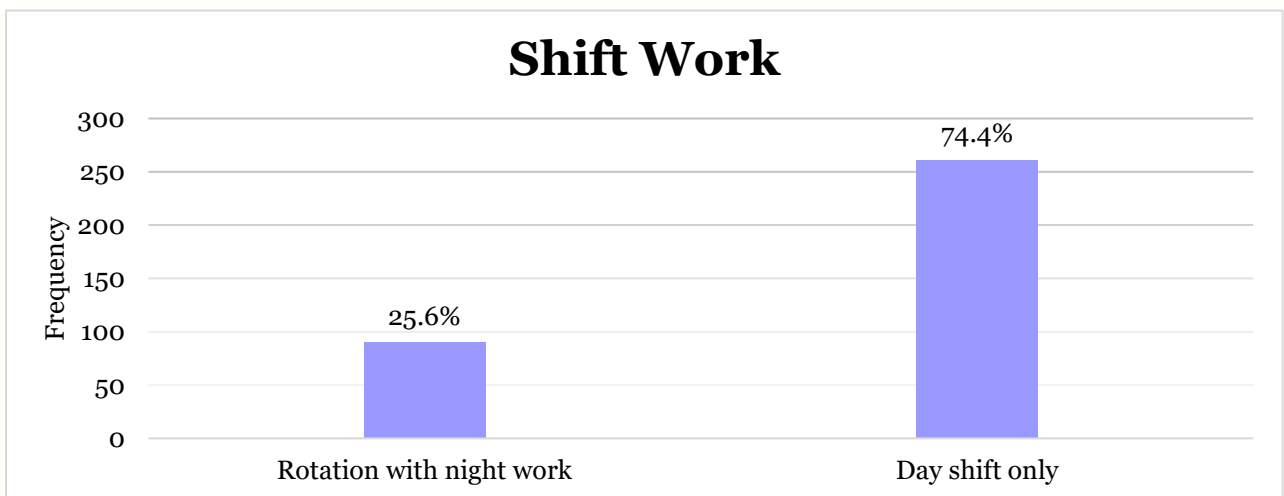
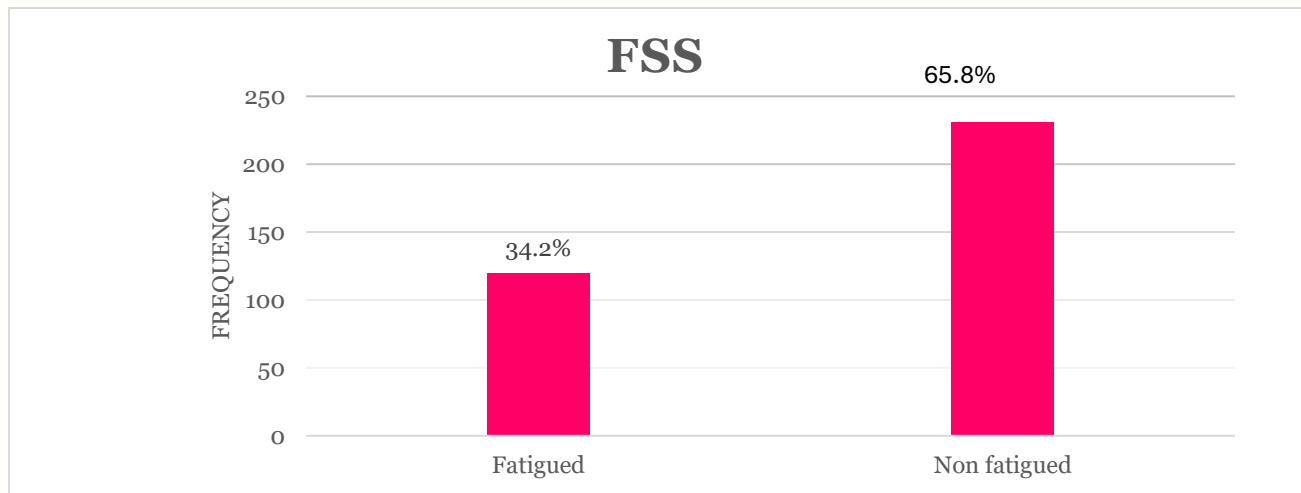


Figure 3: Shift work

The demographic characteristics indicated that the mean weight of participants was 63.06 kilograms (SD ± 11.67) and the mean height was 161.44 centimeters (SD ± 11.57). The age distribution showed that a significant portion of the sample was young, with nearly half of the participants in their twenties. The gender distribution was heavily skewed towards females, reflecting the typical demographic composition of the nursing workforce in the region.

The professional characteristics revealed that most nurses had relatively early to mid-career experience levels, with the majority having 1 to 10 years of experience. Shift work analysis showed that a considerable number of nurses were involved in rotating shifts, including night work, which is known to impact health and well-being negatively. The distribution across working units highlighted the diversity of clinical environments in which the nurses operated, with notable numbers working in high-stress units such as General Medicine, Paediatrics, and Obstetrics and Gynaecology.

Figure 4: Prevalence of fatigue



The prevalence of fatigue among the participants was notable, with more than a third of the nurses experiencing significant levels of fatigue. This finding underscores the critical issue of fatigue in the nursing profession and the need for interventions to mitigate its impact on health and job performance.

4 Discussion

The study revealed that fatigue was prevalent among nurses in the twin cities, with a significant proportion of participants experiencing notable levels of fatigue. Most participants were young, female, and had relatively early to mid-career levels of experience. This demographic profile aligns with previous studies indicating that nursing is predominantly a female-dominated profession, particularly in the early stages of career development (15). The prevalence of fatigue among the participants, with 34.2% experiencing fatigue, is consistent with findings from other studies that have reported similar levels of fatigue among nurses (20).

The high prevalence of fatigue can be attributed to several factors inherent to the nursing profession. Shift work, including night shifts and rotating schedules, disrupts circadian rhythms and has been shown to significantly impact health and well-being, leading to increased fatigue (19). In this study, a substantial number of nurses were engaged in shift work, which likely contributed to the high levels of fatigue observed. Additionally, the demanding nature of nursing, characterized by long hours, physical exertion, and mental stress, further exacerbates fatigue (4).

The demographic data indicated that younger nurses, particularly those in the 20-30 years age group, reported higher levels of fatigue. This finding is in contrast to some studies where older nurses reported more fatigue due to cumulative physical and mental strain over the years (14). However, it can be hypothesized that younger nurses, often at the beginning of their careers, might be more susceptible to fatigue due to the stress of adapting to the demands of the profession and the rigors of shift work.

Marital status also appeared to influence fatigue levels, with married nurses constituting a larger proportion of the study population. Previous research has shown that marital status can impact stress and fatigue levels, with married individuals potentially facing additional stressors from balancing professional and personal responsibilities (16). The high percentage of female participants aligns with global trends in the nursing workforce and reflects similar gender distributions reported in other studies (15).

The study's methodology, including the use of the Fatigue Severity Scale (FSS), provided a robust measure of fatigue, allowing for a comprehensive assessment of its prevalence among the participants. The FSS is a widely recognized tool in assessing fatigue and has been validated in numerous studies (13). However, the study's reliance on self-reported data could introduce bias, as participants might underreport or overreport their fatigue levels due to various reasons such as social desirability or recall bias.

One of the strengths of this study was its relatively large sample size, which enhances the generalizability of the findings to the broader nursing population in the twin cities. The use of a convenience sampling technique, while practical, might limit the representativeness of the sample. Future studies could benefit from using random sampling methods to enhance representativeness.

The study also highlighted the critical need for interventions to address nurse fatigue. Implementing strategies such as optimizing shift schedules, providing adequate rest breaks, and promoting mental health support can mitigate the impact of fatigue. Additionally, organizational support in the form of professional development opportunities and workload management could enhance job satisfaction and reduce fatigue levels (7).

While the study provided valuable insights into the prevalence of fatigue among nurses, it also had some limitations. The cross-sectional design of the study limits the ability to draw causal inferences about the relationship between nursing work and fatigue. Longitudinal studies are needed to examine the dynamics of fatigue over time and identify potential causative factors. Furthermore, the study did not account for other variables such as lifestyle factors, sleep quality, and individual coping mechanisms, which could influence fatigue levels.

5 Conclusion

In conclusion, the study underscored the high prevalence of fatigue among nurses in the twin cities, with significant implications for both nurse well-being and patient care quality. Addressing nurse fatigue through targeted interventions and organizational support is crucial for enhancing the health and efficiency of the nursing workforce. Future research should focus on longitudinal studies and include a broader range of variables to provide a more comprehensive understanding of the factors contributing to nurse fatigue.

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Disclaimers

Author	Somiya Asif, Fatima Waseem, Esha Ibrar, Maryam Batool, Hajra Saleem, and Anees Arshad
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