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Health impact of shift work and night duty on part-time studying nurses

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ABSTRACT

Introduction

In the demanding field of nursing, professionals often find themselves navigating the challenges of shift work and night duty, primarily due to a persistent shortage of nursing staff. This situation compels nurses to take on overtime and unconventional hours to meet the healthcare needs of their communities. Some nurses also pursue further education part-time, frequently opting for night shifts to accommodate their daytime classes. However, the toll of working irregular hours can lead to significant health consequences, including burnout and an increased risk of chronic health conditions.

Purpose

The study aimed to investigate the health impacts among nursing students working shifts and night duty while enrolled part-time at a higher learning institution in Gauteng, South Africa.

Methods

A descriptive quantitative methodology was employed, utilizing convenience sampling to gather data from 175 part-time nursing students at a designated higher education institution. Data collection was conducted over a three-month period using a structured questionnaire comprising both open-ended and closed-ended questions. The questionnaire was designed to assess variables related to the study objectives. Descriptive statistical approaches were employed, and data were analysed using SPSS version 26.

Results

The majority of nursing students were females (81%, n=142), while males constituted 19% (n=33). Among the 175 respondents, the findings revealed that 43% (n=64) experienced insomnia, 40% (n=59) reported fatigue, 7% (n=11) indicated difficulties with night driving, 6% (n=9) reported stress, and 3% (n=5) noted that their social lives were affected. Additionally, 15% (n=27) of the respondents were not exposed to shift work and night duty.

Conclusion

The study highlights the significant challenges faced by part-time nursing students who juggle shift work and academic responsibilities, particularly in relation to fatigue and insomnia. It underscores the need for enhanced support from higher learning institutions and employers to mitigate these health risks.

INTRODUCTION

Healthcare professionals are expected to work around the clock to ensure the continuity of patient care in healthcare facilities. The culture of shift work and night duty, including off-duty planning and scheduling, has become a norm, particularly in manufacturing, security, and healthcare industries (Wickwire et al., 2017). In the context of a growing economy and increasing job opportunities, employees from various other industries are also required to provide 24-hour services to maintain customer satisfaction (Silva & Costa, 2023).

Nurses, in particular, are often obligated to work shifts and night duty at some point during their careers. In some cases, this is due to a shortage of nursing staff, while in other situations, nurses may choose night shifts to accommodate their daytime educational commitments. For instance, some nurses opt for night duty to pursue further qualifications, as they must attend classes during the day (Manyeneng et al., 2021). Consequently, working irregular hours often leads to fatigue, stress, and disturbed sleep patterns (Ganesan et al., 2019).

Although many organisations require employees to work long shifts and night duties, such practices can have detrimental health effects. Employees who are required to work shifts and night duties to deliver satisfactory services to their communities may suffer from fatigue, stress, and a disrupted sleep schedule (Ikeda & Kubo, 2024). Wickwire et al. (2017) pointed out that in industrialised settings, approximately one in five employees works shifts. As shift work becomes more prevalent, research has increasingly focused on its health impacts, particularly in healthcare environments.

In healthcare settings, nurses typically follow shift schedules such as 07:00–19:00 for day shifts and 19:00–07:00 for night shifts. Additionally, some nurses work seven consecutive night shifts, followed by seven nights off. Such schedules are physically demanding and can impair nurses' ability to perform optimally, as prolonged working hours during both day and night can reduce alertness (Ganesan et al., 2019).

Research by Ikeda and Kubo (2024) suggests that working shifts is a significant contributor to irregular sleep patterns, which, when coupled with night duty, can lead to adverse health outcomes stemming from inadequate rest. Silva and Costa (2023) also noted that shift work and night duty contribute to fatigue and the development of unhealthy lifestyle behaviours. Wickwire et al. (2017) further argued that night shifts and irregular working hours are associated with various negative health effects, including mental health issues and a reduced quality of life.

Additional factors influencing employee fatigue include sleep quality and quantity, environmental conditions, individual health status, circadian rhythms (Xavier et al., 2024), and work-related tasks (Caldwell et al., 2019). These negative health effects not only affect the well-being of employees but also have financial implications for employers, as reduced performance and increased errors and accidents can escalate operational costs.

Many nurses pursue postgraduate qualifications part-time while working full-time to enhance their professional development and earning potential (Manyeneng et al., 2021). Despite the career advantages, balancing part-time studies with night duty and shift work can negatively impact health and productivity, primarily due to disrupted sleep patterns. van Elk et al. (2022) reported that employees working shifts are at risk of developing insomnia, a circadian rhythm sleep disorder characterized by excessive sleepiness or, in some cases, co-occurring sleep disorders.

Unlike previous studies that focus solely on nurses working shifts and night duty (Xavier et al., 2024), this study uniquely examines the experiences of nurses balancing shift work, night duty, and part-time studies. The study aimed to investigate the health impacts among nursing students working shifts and night duty while enrolled part-time at a higher learning institution in Gauteng, South Africa.

METHODS

Research Design

A descriptive, quantitative method was applied in this study. The design was used to gather data to determine the health impact of working shifts and night duty among nursing students enrolled part-time at a selected higher learning institution in Gauteng, South Africa.

Setting

The study was conducted at a conveniently selected higher learning institution in Gauteng, South Africa. The institution, with a nursing department, had students enrolled in the Bachelor of Technology in Nursing degree program on a full-time basis, while the postgraduate Bachelor of Technology in Occupational Health Nursing program and the postgraduate Bachelor of Technology in

Oncology Nursing program were offered on a part-time basis.

Study Population

The target population for this study consisted of 375 nursing students working part-time toward the Bachelor of Technology in Occupational Health Nursing.

Sample and Sampling Technique

From the population of 375, an acceptable sample size of approximately 190-200 was determined, as it was sufficient to provide reliable and maximally variable results for quantitative research (Creswell & Creswell, 2017). The population proportion used was 50%, and a margin of error of 5% was allowed, which is close to the correct population value (Sekaran & Bougie, 2016). From the target population, 191 working part-time students were conveniently sampled, which is considered adequate for social science applications with moderate model complexity (Gay, Mills, & Airasian, 2012). Due to their accessibility, participants were recruited from both the first and final years of their studies.

The inclusion criteria for the study were:

1. Be enrolled as a part-time nursing student at the selected higher institution of learning.
2. Be studying for a Bachelor of Technology in Occupational Health Nursing, either in the first or final year.
3. Have been employed with their current employer for at least one year.

Pre-testing of the Data Collection Instrument

The pre-testing of the tool was conducted on ten working nursing students who met the inclusion criteria and were included in the main study. The validity and reliability of the tool were assessed during the pre-testing. Additionally, pre-testing helped determine whether the respondents understood the questionnaire. Fieldworkers were given the opportunity to practice asking the questions to estimate the time required to complete the questionnaire. The estimated time for completion was 25-30 minutes.

Data Collection Procedures and Instruments

A self-developed, English-language, structured questionnaire comprising both open-ended and closed-ended items was administered to the first 191 respondents who were conveniently sampled during their block periods in class. Data collection was conducted over four months. The questionnaires were to be completed and submitted to the researcher on a predetermined date, coinciding with their subsequent block attendance, which spanned one month.

The ethical committee of the university was consulted, and ethical clearance was obtained before data collection began. The nursing department granted permission to conduct the study. Prior to data collection, each respondent was asked to sign an informed consent form. Respondents were assured of anonymity and confidentiality, and it was emphasized that their participation was voluntary and that they could withdraw at any time without consequences.

Out of the 191 sampled, 175 (91.6%) questionnaires were utilized for this study, as 11 (5.8%) respondents failed to return the surveys, and five (2.6%) questionnaires were discarded due to incomplete responses.

Data Analysis

Data were manually entered into an Excel spreadsheet and analyzed using the Social Sciences 26 Statistics Package. Qualitative data were presented as percentages, while quantitative variables were represented as means ± standard deviation.

Ethical Considerations

The head of the Nursing Department at the institution where the study was conducted granted permission for the study. Ethical clearance approval (FCRE: 2017/08/001 [SCI] [2]) was provided by Tshwane University of Technology.

RESULTS

The results presented include biographical information and experiences of working nurses who study part-time while working shifts and night duties, highlighting the impact on their health.

Biographical Details

The biographical details (see **Table 1**) include the marital status and gender of the respondents. A total of 175 respondents participated in the study. Female respondents constituted 81% (n = 142), while 19% (n = 33) were male. Among the respondents, 4 (2%) were widowed, 8 (5%)

were divorced, 81 (46%) were single, and 82 (47%) were married.

Table 1:
Demographics of the Study Results

Demographics Type	Demographic	Number of Respondents (175)	%	Types of Questions
Gender	Male	33	19	Close-ended questions
	Female	142	81	
Marital Status	Single	81	46	
	Married	82	47	
	Divorced	8	5	
	Widowed	4	2	

Figure 1:
Gender

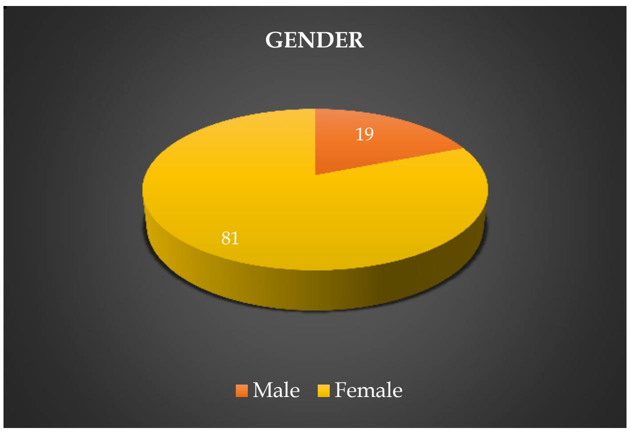
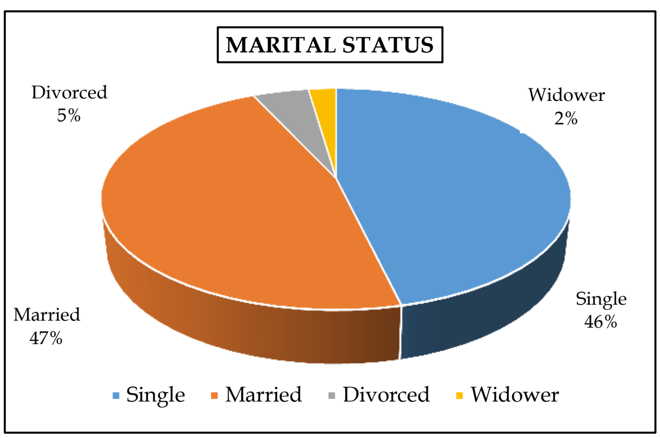


Figure 2:
Marital Status



Health and Safety Risks Related to Shift Work

Among the 175 respondents, 148 (85%) indicated that they had worked shifts and night duties, expressing that it made it easier for them to attend classes during their study blocks. Vetbuje (2023) suggested that nurses working long hours and night shifts are prone to burnout and fatigue. The findings revealed that approximately 59 (40%) respondents experienced fatigue due to working night shifts and attending classes during the day, while 64 (43%) reported suffering from insomnia.

Furthermore, 9 (6%) respondents indicated experiencing stress, which affected their relationships with coworkers. In addition, 11 (7%) respondents stated that they drove at night when commuting to night duty, thereby compromising their safety, while 5 (3%) respondents noted that shift work and night duty negatively impacted their social lives. Härmä et al. (2017) linked shift and night work to fatigue, as evidenced by the current study findings. Similarly, Brown et al. (2020) reported that 26% of shift workers exhibited depressive symptoms, while 17% showed signs of anxiety. In comparison, the current study found that 6% of respondents experienced stress.

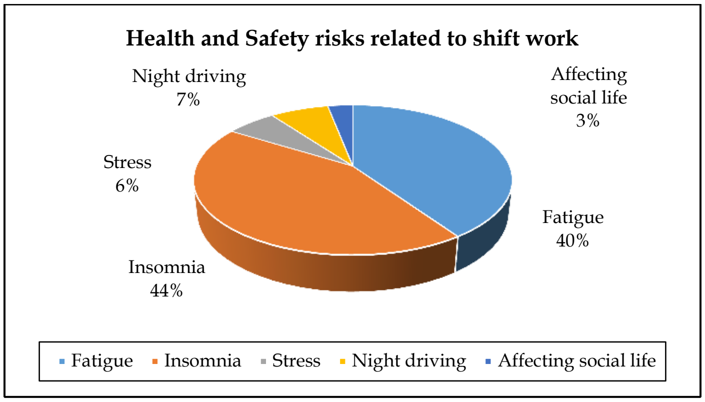
Ramar et al. (2021) emphasized that chronic sleep deprivation is linked to an increased risk of mortality and contributes to societal burdens associated with medical conditions such as obesity, diabetes, cardiovascular disease, and cancer. Additionally, Brown et al. (2020) noted that shift work diminishes quality of life and negatively affects sleep. Caruso (2014) advocated for prioritizing sleep and implementing organized work schedules to minimize health and safety risks. Efficient rostering in healthcare settings can help reduce fatigue and improve sleep quality among staff (Booker et al., 2024).

Table 2:
Health and Safety Risks Related to Shift Work (n = 148)

Health and Safety Risks Related to Shift Work	Number of Respondents (148)	%
Fatigue	59	40
Insomnia	64	43
Stress	9	6
Night driving	11	7
Affected social life	5	3

Source: Author's construction

Figure 3:
Health and safety risks related to shift work



Sleeping Disorders Due to Studying While Working

Table 3 reflects how respondents managed sleeping disorders caused by working full-time while studying part-time. Among the 106 respondents, some gave one response, while others provided multiple responses regarding how they managed sleeping disorders resulting from shift work and night duty. Approximately 3% (n = 3) reported sleeping whenever they had the opportunity. According to Forthun et al. (2022), nurses often use sleeping medications to induce sleep, aligning with the current study's finding that 39 (37%) respondents used sleeping tablets to manage drowsiness.

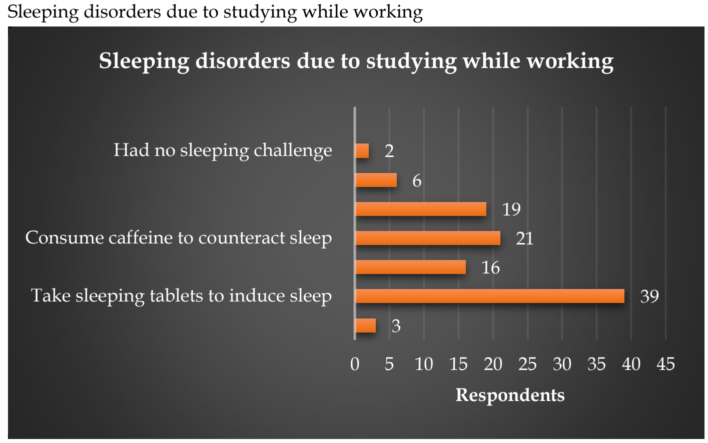
Moreover, 16 (15%) respondents reported taking antihistamine tablets to induce drowsiness, corroborating the findings of Kentab et al. (2021). Additionally, 21 (20%) respondents stated that they consumed caffeine to counteract sleepiness, while 19 (18%) indicated using alcohol to induce sleep, consistent with the findings of Thompson et al. (2024). Furthermore, 6 (6%) respondents did not take any action to address their sleeping disorders, while 2 (2%) reported no sleeping issues.

Grandner et al. (2018) noted that individuals who sleep for ≤4 hours are at a higher risk of developing hypertension compared to those who sleep for around 7 hours. Sleep is crucial for learning, maintaining mental health, and sustaining physical well-being (Jalali et al., 2020).

Table 3:
Sleeping Disorders Due to Studying While Working (n = 106)

Sleeping Disorders Due to Studying While Working	Number of Respondents (106)	%
Sleep whenever possible	3	3
Use sleeping tablets to induce sleep	39	37
Take antihistamines to induce drowsiness	16	15
Consume caffeine to stay awake	21	20
Use alcohol to induce drowsiness	19	18
No action taken	6	6
No sleeping problems	2	2

Figure 4:
Sleeping disorders due to studying while working



DISCUSSION

The aim of this study was to examine the disrupted sleeping patterns, fatigue, and related health impacts among nurses who work shifts and night duty while studying part-time. According to Barone (2017), working university students often delay or forgo sleep to balance their demanding lifestyle, which includes school, work, and family commitments, until their bodies can no longer cope or illness sets in. This situation is also applicable to nurses who study part-time while working extended shifts and night duties, often necessitated by staff shortages in hospitals.

Before the COVID-19 pandemic, the global nursing shortage was estimated to reach 5.9 million (Jester, 2023). In Gauteng province, South Africa, the population in 2022 was recorded as 16,098,571, with healthcare services provided by 41,761 registered nurses, 12,975 enrolled nurses, and 15,955 nursing auxiliaries (South African Nursing Council [SANC], 2022). This totals 70,691 nurses, resulting in a nurse-to-population ratio of approximately 1:228, meaning that one nurse cared for 228 individuals.

Due to the shortage of nurses, they are often required to work long shifts, night duties, and overtime.

Shift work is defined as any work schedule that occurs outside the standard hours of 07:00 to 18:00 (Pacheco & Singh, 2023). The findings of this study align with Jankowiak et al. (2024), who stated that working shifts and night duties lead to fatigue and disrupted sleep patterns, such as insomnia. In Korea, approximately 55% of the working population experience insomnia as a result of night and shift work (Sim et al., 2022). In contrast, only 20% of the employed population in Europe work shifts and night duties (Leso et al., 2020). Jankowiak et al. (2024) further noted that in some European industries, particularly healthcare, about 15-20% of workers perform night duties to meet community needs. In the United States, around 10% of the employed population report drowsiness and sleep disturbances linked to shift and night duty work (Sim et al., 2022).

Shift work disrupts the circadian rhythm, causing sleep disturbances that arise from working extended or irregular hours (Sim et al., 2022). Jankowiak et al. (2024) identified that working combined shifts and night duties significantly increases the risk of developing cardiovascular disease (CVD). Employers are advised to prioritize employees' health by planning shifts and night duties to ensure adequate rest between shifts. According to van de Ven et al. (2021), shift schedules should be designed and adjusted to allow sufficient recovery time and to facilitate forward rotation, reducing the acute effects of fatigue caused by shift work. Caruso (2014) also emphasized that prioritizing sleep and implementing structured working plans in nurses' personal lives can help minimize health and safety risks.

Good Sleep

Sufficient sleep is vital as it promotes overall well-being, cardiovascular health, and heightened concentration. Sleep is essential for learning, practising, and maintaining good mental and physical health (Jalali et al., 2020). It is crucial that nurses who study part-time obtain adequate rest to perform well academically. Ikeda and Kubo (2024) emphasized that consistent, high-quality sleep is vital to sustaining good health at work. Sleep also plays a fundamental role in replenishing the energy expended during active periods (Sim et al., 2022).

Furthermore, Mantua et al. (2019) suggested that recovery sleep and extended sleep patterns positively impact fatigue and burnout. Ramar et al. (2021) stressed that sleep is an essential human need, and inadequate sleep or untreated sleep disorders can compromise health, safety, and overall well-being. Therefore, individuals are encouraged to maintain good sleep hygiene to enhance their health. The World Health Organization (WHO, 2004) also recommended that adequate sleep is necessary for the health and well-being of both young and older individuals.

Insufficient Sleep

When individuals sleep for fewer hours than required, their health becomes compromised, leading to various conditions. Insufficient sleep, such as going to bed late and waking up early, adversely affects academic performance, learning capacity, and neurobehavioral functions (Jalali et al., 2020). Sleep is naturally designed to occur at night, allowing the body to rest adequately. Sleep deprivation has been identified as a global health problem (World Health Organization [WHO], 2004). According to WHO (2004), numerous illnesses, some of which can be fatal, are linked to sleep deprivation caused by working night shifts. Books et al. (2017) reported that shift and night duty workers face increased risks of developing diabetes, obesity, colorectal cancer, and breast cancer. Additionally, Jankowiak et al. (2024) noted that working night shifts often results in lifestyle changes, including increased alcohol consumption, dietary modifications, and smoking. Healthcare professionals experiencing fatigue at work are particularly prone to safety risks (Brown et al., 2020). To cope with the fatigue caused by disrupted sleep patterns, some working nursing students adopt unhealthy lifestyles. For instance, healthcare professionals may consume alcohol (Thompson et al., 2024) or take sleeping tablets to induce sleep (Manyeneng, 2019), while others may smoke cigarettes to stay alert.

Shift workers often experience insomnia due to sleep deprivation (Sim et al., 2022). Consequently, they are at a higher risk of making errors at work, which can result in severe accidents. Martin et al. (2024) stated that individuals who sleep during the day or have insufficient sleep are more likely to make work-related errors and be involved in car accidents. Ikeda and Kubo (2024) also noted that irregular sleep patterns can lead to various health issues, including mental health disorders and cardiovascular diseases (CVD).

Chronic sleep deprivation is associated with an elevated risk of death and poses a societal burden linked to several medical conditions, such as obesity, diabetes, cardiovascular disease, and cancer (Ramar et al., 2021). Research by Abdulghani et al. (2012) and Chaabane et al. (2024) indicated that sleep disorders negatively affect the academic performance of female students. Additionally, Jalali et al. (2020) reported that poor sleep leads to decreased academic performance and emotional instability in both males and females. Ho et al. (2022) emphasized that insufficient sleep impairs students' learning abilities and adversely affects academic outcomes.

Shift Work and Night Duty Among Nurses

Shift work often requires nurses to be physically active and alert to provide patient care. According to Books et al. (2017), hospitals employ more workers for night and shift duties than any other industry, resulting in fatigue among some nurses. Fatigue, as described by Živčicová (2018), arises from intense work schedules and poorly designed shift arrangements. Jankowiak et al. (2024) argued that inadequate rest periods between shifts can cause stress and social isolation.

Puttonen et al. (2010) defined shift work as a schedule involving rotating hours (e.g., night, afternoon, and morning shifts) or consistent but non-standard hours (e.g., permanent night or afternoon shifts). Ho et al. (2022) described shift work as unconventional work schedules that include nights, weekends, and overnight hours. Caruso (2014) defined shift work as any work performed outside the hours of 07:00 to 18:00, often accompanied by long hours, increasing the risk of short sleep duration and sleep disorders.

The nursing profession often necessitates working shifts and night duties, especially in hospitals and clinics that operate 24 hours. Some nurses who wish to further their education opt for part-time studies while working. To create time for classes, they may prefer night duties, which can span from 12 to 24 months. Although part-time education is essential for professional advancement, opting to work shifts and night duties exclusively can negatively impact health. Quick return, defined as a rest period of less than 11 hours between shifts, is common among night duty workers (Sim et al., 2022).

Studies suggest that working shifts and night duties can be unsafe. In 2007, and again in 2019, approximately 27 scientists from 16 countries convened at the International Agency for Research on Cancer (IARC) in Lyon, France, concluding that night shift work could be carcinogenic to humans (International Agency for Research on Cancer Monographs [IARC], 2019). Nurses assigned to night shifts are at a higher risk of developing diabetes, obesity, colorectal cancer, and breast cancer, and they may also experience strained relationships with spouses and children (Books et al., 2017). Manyeneng (2019) reported that shift work can lead to divorce, disturbed sleep, malaise, and fatigue.

Furthermore, shift work often results in irregular sleep patterns, as schedules vary and require night work when individuals should be sleeping (Ikeda & Kubo, 2024). Ugwu et al. (2024) noted that night shifts can lead to employee stress. To mitigate the negative health effects of shift work, employees are advised to take rest periods of at least 11 hours between shifts (Sim et al., 2022). Poorly designed shift schedules and prolonged work hours, without balancing rest and recovery, can result in health issues, injuries, fatigue, and accidents (Živčicová, 2018).

The quality and quantity of sleep among exclusive night shift workers are significantly lower compared to those working day shifts or rotating shifts. Adequate rest between shifts is crucial for minimizing the health risks associated with shift work (Sim et al., 2022).

Shift Work and Migraine

Lack of adequate rest and sleep can result in individuals experiencing migraines. Migraine is a chronic neurological condition characterized by persistent, moderate to severe headaches lasting from 4 to 72 hours (Leso et al., 2020). The International Headache Society states that individuals diagnosed with migraines should present at least two symptoms, which may include a pulsating sensation, moderate to severe pain intensity, unilateral localization, and aggravation by movement. In addition, Schellack et al. (2017) emphasized that migraines are often accompanied by sensitivity to light and sound, nausea, and vomiting. Pescador Ruschel and De Jesus (2023) indicated that migraines are a leading cause of disability and work loss. The condition can be triggered by various factors, including sleep disturbances, irregular work schedules, inadequate rest intervals, hormonal changes in women, and either insufficient or excessive sleep (Leso et al., 2020). The main contributing factors and triggers of migraines include late sleeping (32%), excessive or insufficient sleep (50%), stress (80%), and hormonal changes (65%) (Pescador Ruschel & De Jesus, 2023).

Brown et al. (2020) reported that shift work is commonly associated with stress and adverse health outcomes. Recent evidence also links poor mental health with night and shift work. Leso et al. (2020) indicated that the prevalence of migraines is significantly higher among employees who work night shifts and other irregular schedules.

Disturbed Sleep and Mental Health Disorders

Ikeda and Kubo (2024) stated that sleep deprivation may be associated with various health issues, including an increased risk of acute suicidal ideation. Brown et al. (2020) noted that approximately 26% of shift workers exhibit symptoms of depression, while 17% show signs of anxiety. Jankowiak et al. (2024) reported that limited rest time between shifts and night duties can result in stress and social isolation.

Additionally, Brown et al. (2020) suggested that shift work is often linked to a depressed mood, anxiety, substance use, and a reduced quality of life, all of which significantly impact sleep quality.

Dangers of Shift Work: Increased Risk of Chronic Diseases

Ho et al. (2022) suggested that shift work is associated with an increased risk of accidents and fatal cardiovascular diseases (CVD), partly due to factors such as metabolic imbalances, reduced sleep quality, smoking, and weight gain. Farha and Alefishat (2018) calculated that employees working shifts have a 40% higher chance of developing cardiovascular disease compared to day workers. Cheng et al. (2021) also reported that high blood pressure is prevalent among employees who work prolonged night shifts.

Globally, cerebrovascular disease (CeVD) is a leading cause of disability and death (World Health Organization [WHO], 2020). According to Bigert et al. (2022), night shift work is linked to an increased incidence of CeVD among nursing assistants and nurses. Evidence indicates that night shift work may have a negative impact on cardiovascular health (Jankowiak et al., 2024), leading to compromised health and increasing susceptibility to various illnesses (Bigert et al., 2022).

CeVD encompasses a range of conditions, including vascular dementia, transient ischaemic attack (TIA), stroke, and other disorders affecting cerebral blood flow (Granata et al., 2023). Härmä et al. (2024) suggested that modifying shift schedules to include rapid forward-rotation instead of backward-rotation can have a positive impact on blood pressure.

Danger/Effects of Working Shifts: Diabetes

Arifianto et al. (2024) reported that nurses who work shifts have a higher chance of developing type 2 diabetes due to the increased risk of exposure to irregular working hours. Tucker et al. (2019) stated that employees who are constantly exposed to circadian disruption are prone to cardiovascular risk factors, including atherosclerosis, hypertension, and type 2 diabetes. Xie et al. (2024) found a positive correlation between the number of years spent working rotating night shifts and the development of diabetes, both of which are mediated by weight gain. Additionally, working overtime among young and middle-aged female nurses has been shown to increase the risk of developing type 2 diabetes (Xie et al., 2024).

Baek et al. (2024) indicated that shift and night duty work has been identified as a risk factor for the onset of diabetes mellitus, while other work schedules present a lower risk. Moreover, Jankowiak et al. (2024) reported that individuals aged 40–49 who work shifts without night duty are more likely to use type 2 diabetes treatment. This evidence suggests that shift and night duty work significantly impacts the health of employees. Tucker et al. (2019) also noted that employees who work shifts without night duty have a higher incidence of using type 2 diabetes medication, while those working shifts that include night duty show increased usage of dyslipidemia medication.

Furthermore, Ahn et al. (2024) reported that employees aged below 50 who work night shifts exhibit a higher usage rate of hypertension medication. Therefore, the development of hypertension, diabetes, and dyslipidemia can be associated with shift and night duty work. Cheng et al. (2021) stated that employees working shifts may experience metabolic syndrome (MS), reduced cognitive function, dyslipidemia, central obesity, hypertension, glucose intolerance, diabetes mellitus, stroke, and an elevated risk of cardiovascular diseases.

Marquezea et al. (2012) suggested that nurses working night duty and shifts are prone to circadian misalignment, leading to increased body weight compared to their counterparts working daytime shifts. Steintorsdottir et al. (2025) indicated that glucose tolerance varies throughout the day, partially due to fluctuating cortisol levels. Reduced glucose tolerance has been observed among day workers.

Employees working at night often consume meals late, and Verde et al. (2024) reported that eating meals at night results in weight gain and increased obesity rates. Bahinipati et al. (2024) found a higher prevalence of heart disease and elevated triglyceride levels among night-shift workers compared to day workers. Similarly, Jacome-Sosa et al. (2021) noted that nocturnal meal consumption, common among shift workers, leads to increased blood triacylglycerol levels and a decrease in cholesterol-rich lipoproteins compared to daytime meals. However, Moisii et al. (2024) found no conclusive link between type 2 diabetes and job strain.

Danger of Working Shifts: Hormonal Changes

Although nurses are often required to work shifts and night duties, their bodies may be deprived of releasing certain hormones that are primarily secreted at night. The human body undergoes several physiological activities during the night, including hormone release (Thurezon, 2023). The primary hormone released at night shortly after falling asleep is cortisol, which plays a key role in regulating the body's response to stress (Thau et al., 2023). Circadian rhythms are the behavioural, mental, and physical changes that humans experience over a 24-hour period (Guo & Bryan, 2024). These rhythms help regulate essential bodily functions, including stress responses, hormone production, sleep-wake cycles, and cognitive functions (Khan et al., 2020). The production of cortisol is controlled by the hypothalamic-pituitary-adrenal axis and is primarily regulated by the adrenal glands (Vega-Beyhart et al., 2023).

Studies have shown that individuals who do not sleep adequately at night often display mood disturbances. Khan et al. (2020) noted that cortisol levels increase a few hours after falling asleep and peak during the early morning hours, assisting the body in transitioning from the biological night to the biological day. Iqbal et al. (2024) indicated that prolonged cortisol secretion is associated with stress and the onset of depressive episodes. Additionally, caffeine consumption can exacerbate cortisol secretion, particularly among individuals experiencing mental stress or in a resting state (Gür et al., 2024).

Night shift workers, who typically remain awake during hours when cortisol should be naturally released, may suffer from disrupted cortisol production (Khan et al., 2020). Irregular sleeping patterns can impair cortisol production, leading to disorders such as Addison's disease (cortical insufficiency) or Cushing syndrome (cortisol excess) (Thau et al., 2023).

Night shift workers may also experience fatigue due to reduced secretion of epinephrine and norepinephrine, hormones released during sleep that help regulate heart rate, blood pressure, and heartbeat variability (Khan et al., 2020). Additionally, melatonin, a hormone that influences cardiovascular functions, is often irregular in employees who work extended shifts or night duties (Li et al., 2025). Tucker et al. (2019) reported that shift workers generally experience higher levels of stress compared to their daytime counterparts, primarily due to ongoing circadian disruption. Therefore, the irregular release of hormones during night shifts can significantly impact physical and mental health.

Danger of Working Shifts: Metabolic Syndrome

Approximately 5% to 20% of employees working shifts present with metabolic syndrome (Cheng et al., 2021). Contrary to Cheng et al. (2021), our cohort reported no cases of metabolic syndrome. Farha and Alefishat (2018) indicated that the disruption of circadian rhythms is associated with alterations in dietary habits and complex psychosocial stress, and that night shift work is correlated with an elevated risk of metabolic syndrome (MS). Nurses working night shifts are at a high risk of developing metabolic syndrome, including insulin sensitivity issues and visceral obesity, primarily due to sleep deprivation (D'Ettorre et al., 2019). Cheng et al. (2021) also noted that the prevalence of metabolic syndrome and increased waist circumference is higher among employees working night shifts compared to those working during the day.

Limitations of the Study

The study was contextual in nature; therefore, the findings cannot be generalized to all nurses who work and study part-time.

CONCLUSION

In conclusion, the study highlights the significant challenges faced by nurses working shifts and night duties, with the majority reporting fatigue and insomnia, which can adversely affect their health and social lives. The findings are consistent with existing literature linking shift work to increased risks of burnout, stress, and various health issues, including chronic sleep deprivation. It is essential for employers to prioritize the well-being of their staff by implementing effective rostering techniques and structured work plans to improve sleep quality and reduce health risks. Addressing these issues can enhance the quality of life for nurses and contribute to a safer workplace.

Recommendations of the Study

Enhanced awareness of the hazards of fatigue and the implications of shift work and night duty should be provided to nurses engaged in full-time employment while pursuing part-time studies. Employers should develop shift schedules that balance labour demands with adequate rest periods. Long-term cohort studies to assess interventions, such as flexible scheduling, should be explored.

Data Availability: No new data were created or analysed in this study; therefore, data sharing is not applicable to this publication.

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