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Research Article

ASSESS THE IMPACT OF NIGHT SHIFT ON NURSES HEALTH & WELL-BEING AT ALLAMA IQBAL MEMORIAL TEACHING HOSPITAL, SIALKOT

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Background: Night shift nurses mentioned difficulties such as disturbed sleep cycles, elevated stress levels, and diminished social engagements. These results highlight how urgently healthcare organizations must put these challenges into practice through policies and actions.

Objective(s): This study aims to assess the impact of night shift on nurses' health and well-being in a public/private sector hospital, Sialkot.

Methodology: A descriptive, cross-sectional study design was selected for the study. Participants were recruited through convenience sampling technique. Structured questionnaire used to collect data from study respondents contained two sections e.g. socio-demographic characteristics and assessment of impact of night shift on registered nurses. Data were analyzed using SPSS 29.

Results: Total 45 registered nurses having age 20 years to 60 years enrolled in the study. Regarding impact of night shift among registered nurses, in the sample of 45 study respondents 13.33% said they encountered hypertension; 11.11% replied diabetes; 15.56% depression; 8.89% anxiety; 6.67% having complaint of weight loss/gain; 26.67% change in appetite whereas remaining 8.89% having reproductive disorder and muscle weakness. 82.22% respondents said that they feel tired after midnight shift working with patients at night whereas 17.78% replied they don't. Overall, as per scoring criteria of questionnaire mean score of the questionnaire is <4.

Conclusion(s): The study findings showed that majority of respondents having fixed night shift pattern and they dislike the night shift as well as they were working in surgical unit of the hospital causing surplus negative health outcomes e.g. hypertension, diabetes, depression, anxiety, weight loss/gain, change in appetite, reproductive disorder and muscle weakness among them. As per coping mechanism used by respondents to minimize the adverse effects of night shift on health and well-being included healthy diet, enough sleep, time management, exercise, limit use of caffeine. Overall findings showed night shift having negative impact on nurses' health and well-being emphasizing proactive actions to improve the Quality of Life (QoL) of registered nurses via incorporating positive changes in workplace environment.

Keywords: Night shift; nurses; impact; mental health; physical health

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INTRODUCTION:

Background:

Shift work is defined by the National Sleep Foundation as work that takes place on a schedule other than the typical 9:00 to 17:00 daily. Night or evening, early morning, and rotating shifts may fall under this category. Around the world, nurses work around the clock to provide patients with care (Dall'Ora & Dahlgren, 2020). Nursing is the largest healthcare profession in the United States, employing 89% of the country's over 4.7 million registered nurses (RNs). Nursing research that have been carried out worldwide for decades are used to assess the literature on night shifts and poor health outcomes (Smiley et al., 2023). Thirty percent of nurses in the United States are thought to work at night (Elmowitz et al., 2023).

Similarly, there is mounting evidence that night shift nurses are much more likely to suffer from chronic conditions such as type-2 diabetes, cardiovascular disease (CVD), colorectal, breast, testicular, and prostate cancers; mind-body stress, depression, anxiety, and a propensity for post-traumatic stress disorder; a decline in attention, vigilance, and other aspects of cognition and memory; a lower quality of life and a higher risk of morbidity and mortality. Being overweight or obese was one of the factors that led to diabetes and cardiovascular disease (Zhang et al., 2020).

Shift work disorder (SWD), a circadian rhythm sleep disorder brought on by working nontraditional hours, night shift-related sleep deprivation (SD), and circadian dysrhythmia and disruption of circadian-associated neurochemicals and hormones are largely to blame for these detrimental health outcomes, which have an adverse cultural impact on health behaviors, nurse well-being, and personal and family relationships (Imes et al., 2023). Additionally, nursing personnel who ate at night had worse glucose tolerance than those who only ate during the day (Chellappa et al., 2021).

In a systematic review and meta-analysis, the incidence of depression among nurses was also found to be significantly correlated with working night shifts, the associated circadian and sleep disruption (Okechukwu et al., 2023). In one SWD study, hospital-based staff nurses who worked night shifts reported having depression/anxiety and taking days off. Among nursing staff, years of working nights and depression explained 18.9% of the variation in sick leave, suggesting that depression rates influenced sick leave (Leso et al., 2021).

Potential detrimental effects on attention, memory, and reaction inhibition were noted in systematic reviews of night work and cognitive impairment. According to one review, cognitive performance declined with consecutive night shifts and exceptionally long work shifts, more so

with long shifts than with short ones. Additionally, the time between shift changes showed more impairment with shorter shifts (measured in days, known as fast rotations) than with longer shifts (measured in days, known as slow rotations) (Leso et al., 2021). In a similar review and meta-analysis, significant variations were reported in processing speed, working memory, psychomotor alertness, cognitive control, and visual attention between shift and non-shift work cognitive performance (Vlasak et al., 2022).

The Mini-Mental State Examination and the Montreal Cognitive Assessment were used in a recent study to evaluate the performance of retired nurses who worked nights at least once a week for at least a year (rotating night shift) versus those who did not regularly work nights. Nurses who worked rotating night shifts for at least 11 years had a higher incidence of dementia and were twice as likely to be diagnosed with mild cognitive impairment (Gan et al., 2022). In addition to excessive healthcare usage, error rates and greater turnover rates among nurses working night shifts are linked to organizational costs (e.g., medication errors) (Colosi, 2023).

These expenses are linked to decreased cognitive function brought on by night shift tiredness and nursing burnout, which raises the risk of adverse events, subpar quality indicators, low patient satisfaction, and increased utilization of travel nurses (Imes et al., 2023). In addition to the financial consequences and lower quality indicators, nurses are more prone to make mistakes when working the night shift, which is of special concern to medical facilities. According to data from the National Council of State Boards of Nursing (NCSBN), 52% of mistakes were made while working the night shift (NCSBN, 2022). However, according to a more recent survey, 85.7% of nurses self-reported problems with patient safety and performance during the night (Alsharari et al., 2021). A recent systematic study looked at how well non-pharmacological and pharmaceutical sleep aids worked to treat sleep problems in staff nurses working rotating night shifts (Jeon et al., 2023). Likewise, The Magnet program's 2023 Application requirements recognize the value of nurses' well-being. The goal is to integrate healthcare workers' well-being into every aspect of a healthcare organization (Sigur & Walters-Threat, 2023). Furthermore, innovative endeavors like VN care, AI applications, and alternative care delivery models are potential avenues for the future that can enhance nursing care and lessen cognitive overload (Ng et al., 2022).

According to a Canadian longitudinal study, when compared to daytime workers, individuals exposed to rotating shift work (both current and

longest jobs) demonstrated impairment on executive function measures, while exposure to night shift work (both current and longest jobs) was linked to impaired memory function and overall cognitive impairment (Khan et al., 2023).

The results of another study also demonstrated that professionals who work the night shift had low health status, which is more proof that the health of night shift workers is at risk (Awosoga et al., 2020). The development of risk factors for metabolic syndrome and an increase in pro-inflammatory markers are linked to working night shifts (Bahinipati, Sarangi, Pathak, & Mohapatra, 2022).

In view of above, to avoid health issues and to maintain the well-being of nurses it is critical to understand the nature of the problem and provide nurses and other workers with ways to reduce risks and manage night-shift work. Studies provide the range of individual coping strategies and organizational support used by shift working nurses, some of these included the promotion of the benefits of social support, hobbies, time management, and mindfulness, exercise, diet, and sleep practices while increasing awareness of the possible dangers of social isolation. Although night shift work is implemented in hospitals of Pakistan, hence no study is available on the impact of night shift on the health and well-being of nurses. Therefore, the current study is being conducted at Allama Iqbal Memorial Teaching Hospital, Sialkot to contribute data on this issue.

Research objectives:

- ❖ To identify negative impacts of night shift on nurses health and well-being.
- ❖ To explore strategies do nurses employ to mitigate adverse impact of night shift.

Research questions:

- ❖ What types of negative impacts do nurses experience when working night shifts?
- ❖ What types of strategies do nurses employ to mitigate adverse impact of night shifts?

Conceptual & operational definitions:

- ⊙ **Impact of night shift:** impact of night shift on nurses health will be calculated as mean score (≤ 4) considered negative impact whereas mean score (≥ 4) will be taken as positive impact.
- ⊙ **Night shift work:** it is any shift that falls between the hours of 11 pm and 3 am. Common jobs that included night shifts include

doctors, nurses, paramedics, and other healthcare practitioners.

- ⊙ **Health:** it is a state of physical, mental, and social well-being, not just the absence of disease or infirmity.

MATERIALS & METHODS:

Study design

A descriptive, cross-sectional, quantitative study design used in this study because a population, circumstance, or phenomenon's traits, actions, and trends can be precisely and methodically described using a descriptive study design. Descriptive research design is a powerful tool used by scientists and researchers to gather information about a particular group or phenomenon.

Study setting

This study conducted at Allama Iqbal Memorial Teaching Hospital, Sialkot.

Study duration

Research held for the period of 8 weeks from 1st Aug, 2025 to 30th Sep, 2025.

Sample size

The sample size determined by considering the population size, level of confidence, and margin of error through a power analysis. To give meaningful responses, at least 45 nursing staff selected for this study.

Study Sample: The study sample was 45, calculated by using Solvin's formula

$$n = \frac{N}{1 + Ne^2}$$

Sampling technique

Non-probability, convenience sampling technique used in this study.

Sample selection criteria

a. Inclusion criteria

- ✦ Permanent nursing staff working in all departments of understudy hospital considered for the study.
- ✦ Nursing staff who actively participates in the night shift work recruited for the research work.

b. Exclusion criteria

- Nursing staff performing administrative work, volunteers and working in part-time positions excluded from the study.
- All nursing staff who withdrawn from answering the questionnaire are also excluded from the research work.

Study tools

Section I: Socio-demographic/general characteristics: It is contained of socio-demographic characteristics of study participants i.e., age, sex, educational status, marital status, work experience, religion, night shift pattern, duration of night shift etc.

Section II: Assessment of impact of night shift on nurses health and well-being: A structured questionnaire consisted of 13 questions used to assess the impact of night shift on health and well-being of nurses and for this purpose Likert's scale is being used.

Methods of data collection

Data collection collect via structured questionnaires contained of 13 questions. Likert scale adopted to attain responses from the study respondents and each response carrying a score e.g. strongly disagree (5), Disagree (4), Undecided (3), Agree (2), strongly agree (1). To categorize overall impact of night shift on nurses health, mean score (≤ 4) considered negative impact of night shift on respondents health and well-being whereas mean score (≥ 4) taken as positive impact of night shift on participant's health and well-being.

Ethical consideration

Ethical Clearance was obtained from the ethical review committee of College Of Nursing, Khawaja Muhammad Safdar Medical College, Sialkot. The participants of the study informed about the purpose of the study, the importance of their participation, and their right to withdraw written informed consent at any time. Verbal informed consent obtained and informed written voluntary consent also signed before the initiation of the data collection. To ensure confidentiality there was no

information identifying the participants in particular.

Data analysis

Statistical Package for Social Science (SPSS) V.29 used to analyze. For descriptive analysis data were presented in the form of frequencies and percentages as well as presented in the form of bar/pie charts.

RESULTS:

A descriptive cross-sectional study undertaken at a public/private sector of hospital, Sialkot regarding impact of night shift on nurses health and well-being in which total 45 eligible participants having age range between 20 years to 60 years included. There were 9 (20%) respondents belonged to age group (20-30) years; 21 (46.67%) had an age group (31-40) years; 7 (15.56%) having age group (41-50) years and remaining 8 (17.78%) were between (51-60) years old. As per educational status of study respondents, 6.67% holding diploma in nursing; 84.44% Post RN (BSN) and rest of 8.89% postgraduate recruited for the study as depicted in table 1 & figure 1-2.

Hence, as per night shift pattern of registered nurses, 46.67% were working in rotating shifts while 53.33% in fixed shifts. Now regarding unit type of nurses, 35.56% were working in surgical units; 13.33% in medical units; 8.89% working in emergency; 15.56% in OPD; 20% working in ICU whereas 6.67% in others department of the hospital. Similarly, when participants were asked about frequency of night shifts, 13.33% respondents were working on daily basis; 15.56% on weekly; 24.44% on bi-weekly basis and remaining 46.67% on monthly basis as displayed in table 1 & figure 3-4.

Table 1: Socio-demographic/night shift duty related information of study respondents (n=45)

Variables	Frequency (f)	Percentage (%)
Age (Years)		
20-30	9	20.00
31-40	21	46.67
41-50	7	15.56
51-60	8	17.78
Total	45	100.00
Sex		
Male	0	0.00

Female	45	100.00
Total	45	100.00
Educational status		
Diploma in nursing	3	6.67
Post RN (BSN)	38	84.44
Postgraduate	4	8.89
Total	45	100.00
Marital status		
Married	20	44.44
Unmarried	25	55.56
Total	45	100.00
Work experience (Years)		
1-5	21	46.67
≥6	24	53.33
Total	45	100.00
Religion		
Muslim	39	86.67
Non-Muslim	6	13.33
Total	45	100.00
Night shift pattern		
Rotating	21	46.67
Fixed	24	53.33
Total	45	100.00
Likes night shif work		
Yes	9	20.00
No	36	80.00
Total	45	100.00
Duration of shift pattern		
1-5 years	9	20.00

>5 years	36	80.00
Total	45	100.00
How often do you do night shift?		
Daily	6	13.33
Weekly	7	15.56
Bi-Weekly	11	24.44
Monthly	21	46.67
Total	45	100.00
Unit type		
Surgical	16	35.56
Medical	6	13.33
Emergency	4	8.89
OPD	7	15.56
ICU	9	20.00
Others	3	6.67
Total	45	100.00

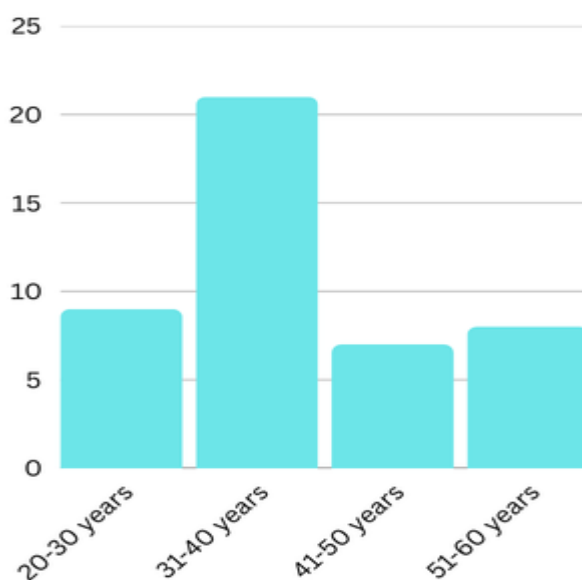


Figure 1: Age (Years) of study respondents

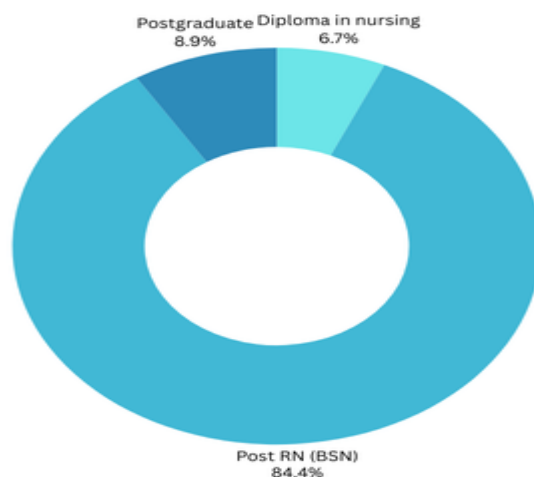


Figure 2: Educational status of study respondents

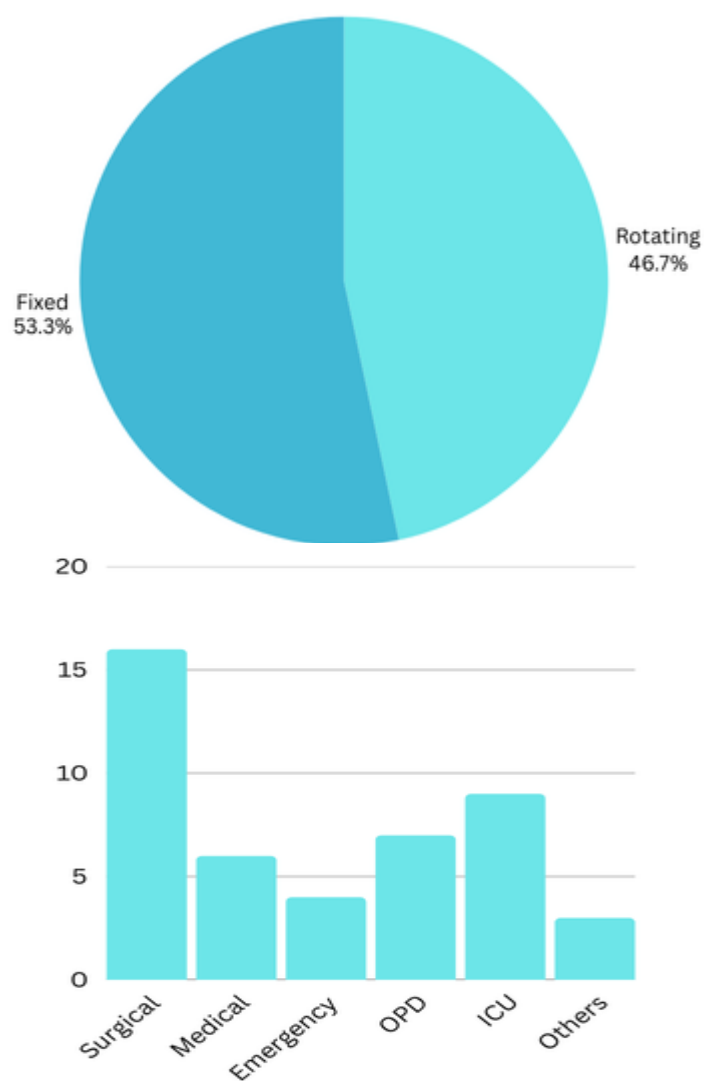


Figure 4: Working unit of night shift of study participants

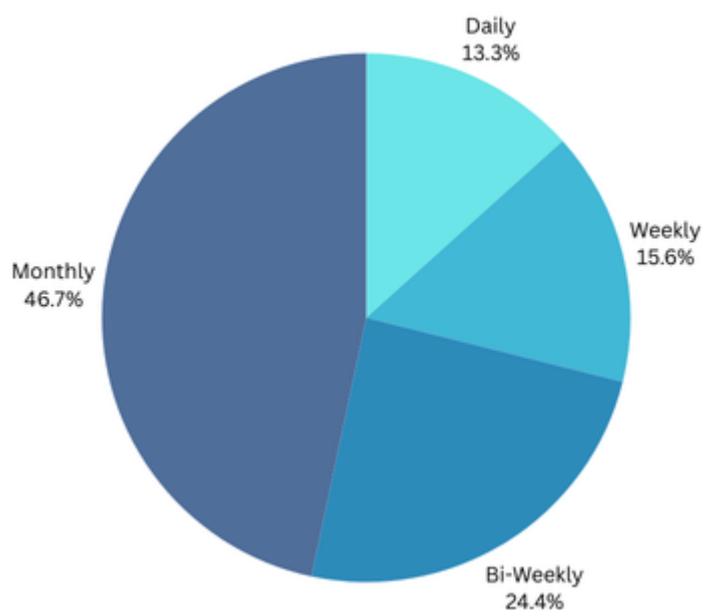


Figure 5: How often do you do night shift?

Regarding impact of night shift among registered nurses, in the sample of 45 study respondents 13.33% said they encountered hypertension; 11.11% replied diabetes; 15.56% depression; 8.89% anxiety; 6.67% having complaint of weight loss/gain; 26.67% change in appetite whereas remaining 8.89% having reproductive disorder and muscle weakness. 82.22% respondents said that they feel tired after midnight shift working with patients at night whereas 17.78% replied they don't as shown in table 2.

When respondents were asked that they feel active/alert during night shift 93.33% disagreed with the statement while only 6.67% said they feel. As well as when respondents were asked that what types of coping strategies they used to reduce adverse impacts of night shift; 6.67% said healthy diet; 46.67% replied enough sleep; 20% said time management; 11.11% said exercise; 8.89% said limit use of caffeine and only 6.67% said others coping mechanism as presented in table 2. Overall, as per scoring criteria of questionnaire mean score of the questionnaire is <4 as indicated in table 3.

Table 2: Assessment of impact of night shift among registered nurses (n=45)

Sr. no.	Statements	Responses	Frequency (f)	Percentage (%)
1	I experience more health issues when working during night shift?	Strongly disagree	4	8.89
		Disagree	5	11.11
		Undecided	6	13.33
		Agree	21	46.67
		Strongly agree	9	20.00
Total			45	100.00
2	From the list below, choose the impact of night shift on you?	a. Hypertension	6	13.33
		b. Diabetes	5	11.11
		c. Depression	7	15.56
		d. Anxiety	4	8.89

		e. Weight gain/loss	3	6.67
		f. Change in appetite	12	26.67
		g. Reproductive disorder	4	8.89
		h. Muscle weakness	4	8.89
Total			45	100.00
3	Night shift causes me to spend less time with family?	Strongly disagree	4	8.89
		Disagree	5	11.11
		Undecided	2	4.44
		Agree	22	48.89
		Strongly agree	12	26.67
Total			45	100.00
4	Night shift has negative impact in the relationship with children?	Strongly disagree	3	6.67
		Disagree	3	6.67
		Undecided	1	2.22
		Agree	5	11.11
		Strongly agree	33	73.33
Total			45	100.00
5	Night shift causes conflict with my family?	Strongly disagree	6	13.33
		Disagree	5	11.11
		Undecided	1	2.22
		Agree	11	24.44
		Strongly agree	22	48.89
Total			45	100.00
6	I experience sleeping problems when working during night shift?	Strongly disagree	6	13.33
		Disagree	4	8.89
		Undecided	2	4.44
		Agree	23	51.11
		Strongly agree	10	22.22
Total			45	100.00
7	I remain active and alert during night shift?	Strongly disagree	31	68.89
		Disagree	11	24.44
		Undecided	1	2.22
		Agree	1	2.22
		Strongly agree	1	2.22
Total			45	100.00
8	There is time for rest during night shift work?	Strongly disagree	27	60.00
		Disagree	9	20.00
		Undecided	1	2.22
		Agree	6	13.33

		Strongly agree	2	4.44
Total			45	100.00
9	I feel tired after midnight shift working with patients at night?	Strongly disagree	4	8.89
		Disagree	3	6.67
		Undecided	1	2.22
		Agree	23	51.11
		Strongly agree	14	31.11
Total			45	100.00
10	I experience more health issues working during night shift?	Strongly disagree	3	6.67
		Disagree	6	13.33
		Undecided	1	2.22
		Agree	17	37.78
		Strongly agree	18	40.00
Total			45	100.00
11	I have healthy lifestyle when working night shift?	Strongly disagree	19	42.22
		Disagree	23	51.11
		Undecided	1	2.22
		Agree	1	2.22
		Strongly agree	1	2.22
Total			45	100.00
12	My body’s cycle rhythm has adopted to night shift?	Strongly disagree	22	48.89
		Disagree	8	17.78
		Undecided	2	4.44
		Agree	6	13.33
		Strongly agree	7	15.56
Total			45	100.00
13	From the options below which of the following coping mechanism used by you to reduce negative impacts of night shift?	a. Healthy diet	3	6.67
		b. Enough rest/sleep	21	46.67
		c. Time management	9	20.00
		d. Exercise	5	11.11
		e. Limit use of caffeine	4	8.89
		f. Others	3	6.67
Total			45	100.00

Table 3: Descriptive analysis of impact of night shift questionnaire of registered nurses (n=45)

Sr. no	Sum Q1 to Q13	Mean Score
1	33	2.5
2	32	2.5
3	32	2.5
4	30	2.3
5	38	2.9
6	17	1.3
7	34	2.6
8	25	1.9
9	33	2.5
10	32	2.5
11	32	2.5
12	30	2.3
13	38	2.9
14	17	1.3
15	33	2.5
16	32	2.5
17	32	2.5
18	30	2.3
19	37	2.8
20	17	1.3
21	34	2.6
22	33	2.5
23	32	2.5
24	32	2.5
25	30	2.3
26	37	2.8
27	17	1.3
28	34	2.6
29	33	2.5
30	32	2.5
31	32	2.5
32	30	2.3
33	37	2.8
34	17	1.3
35	34	2.6
36	33	2.5

37	32	2.5
38	32	2.5
39	30	2.3
40	37	2.8
41	17	1.3
42	34	2.6
43	25	1.9
44	36	2.8
45	49	3.8
Sum of mean score		107.2
Mean score of questionnaire		2.4

DISCUSSION:

Patient care and the general operation of healthcare institutions are significantly impacted by the work of nurses, who constitute the foundation of the healthcare system. However, nurses' well-being may suffer greatly as a result of the demanding nature of the job, especially for those working night shifts (Alfonsi et al., 2021). Night shifts negatively impact nurses' quality of life by upsetting their regular sleep cycles and raising stress levels (QoL) (Al-Hrinat et al., 2024). Our study showed negative impact of night shift on health & well-being of nurses and this is in accordance with the study findings of Aneeset et al. who revealed significant negative effects of night shift duty on nurses' quality of life, particularly in physical and psychological highlighting the need for healthcare organizations to prioritize their well-being. Implementing flexible shift scheduling, mental health support programs, and workplace environment improvements can help mitigate the negative effects of night shifts.

Moreover, Abdulhussein & Falah also showed in their studies night shift causing many mental health challenges among nurses associated with irregular working hours and irregular shifts disrupt family dynamics and limit opportunities for social interaction and these findings are aligned with our study results as night shift deteriorates the mental and physical health of nurses. Similarly, this study result is in accordance with the findings of (Silva & Costa, 2023) who reported that night shift having negative impact on nurses health and disrupted circadian rhythms exacerbating physical and mental health issues.

Likewise, (Cheng et al., 2022) found burnout to be a major problem for night shift nurses which is consistent with the findings of this study. Many respondents reported experiencing anxiety and

depression while working night shifts suggesting that high-risk nurses with shift work disorder were significantly more likely to experience burnout and mental health issues. One unexpected observation, in comparison to other groups, shift nurses with five to ten years of experience showed more mental health issues and burnout. Healthcare administrators should give immediate attention to shift nurses with five to ten years of experience, for instance, they may offer such nurses improved working conditions or access to assistants as organizational support.

CONCLUSION:

The study findings showed that majority of respondents having fixed night shift pattern and they dislikes the night shift as well as they were working in surgical unit of the hospital causing surplus negative health outcomes e.g. hypertension, diabetes, depression, anxiety, weight loss/gain, change in appetite, reproductive disorder and muscles weakness among them. As per coping mechanism used by respondents to minimize the adverse effects of night shift on health and well-being included healthy diet, enough sleep, time management, exercise, limit use of caffeine. Overall findings showed night shift having negative impact on nurses health and well-being emphasizing proactive actions to improve the Quality of Life (QoL) of registered nurses via incorporating positive changes in workplace environment.

RECOMMENDATIONS

- It is recommended that healthcare organizations should be aware of the negative impact of night shift work on the health and work performance of nurses, in order to provide a place for taking a nap, consider the need for workplaces to deliberate shift workers'

preferences, facilitate schedule requests, and have effective support networks.

- It is better to distribute the night shift work carefully and nurses should be aware that night shift work might affect their physical and mental well-being. Nurses should examine their physical and mental health status periodically and must use different coping strategies during night shift work.
- Researchers should further explore the impact of night shift work on healthcare workers and would have to give direction to decision and policymakers.
- Encourage and advocate for legislation on night shift schedules that reduce/prevent diseases resulting from chronobiologic interruption
- Reinforce the need for healthy, safe night shift work environments through evidence, regulation, and legislation.
- Secure research funding to discover pathways to reduce/prevent the rates of diabetes, CVD, cancer, and mental health/depression strategies among night shift nurses (e.g., mistimed eating; arm-chair yoga; coverage for mandatory break time).
- Formulate venues for insurers, organizational, and government agencies to understand and acknowledge the relationship between night shift work and poorer health outcomes that lead to higher healthcare costs.
- Incorporate evidence-based and novel prevention strategies for healthy night shift behaviors (healthy nutrient [non-processed]) and beverage choices, physical activity, and napping that can promote workplace health, reduce poorer health outcomes, and related healthcare costs at all levels.
- Secure funding to partner with frontline nurses, managers, insurers, organizations, and other stakeholders for the development and testing of novel night shift schedules (e.g., Parent Shift Program) for a variety of night shift lengths (e.g., 4–6 hr) that are staggered (e.g., 11 p.m.–3 a.m.; 2 a.m.–6 a.m.); revision of standard 8-hr shifts (e.g., 10 a.m.–7 p.m.; 7 p.m.–2 a.m.; 2 a.m.–10 a.m.) to promote night nurse sleep health and patient safety

LIMITATIONS

The study presents some limitations as under need to be considered:

- **Cross-Sectional Design:** The study provides a snapshot of the nurses' health

& well-being of registered nurses at a single point in time, which limits its ability to assess long-term trends or causal relationships.

- **Sample Representation:** The sample was restricted to nurses from a single hospital, which may affect the generalizability of the findings to other settings or regions.
- **Self-Reported Data:** The reliance on self-reported measures may introduce bias, as respondents might underreport or over-report certain challenges due to social desirability or recall bias. Future research should consider longitudinal designs, larger and more diverse samples, and additional qualitative methods to explore nurses' lived experiences in greater depth.

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