

A Descriptive Study to Assess the Quality of Sleep and Perceived Stress among Nursing Officers Working in Critical Care Units in the Government Medical College & Hospital, Chandigarh

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Abstract

Adequate sleep and stress management are vital for nurses to maintain decision-making, alertness, and patient care safety. Workload, shift duties, and limited support contribute to stress and poor sleep, which may increase risk of errors, burnout, and reduced job satisfaction. This descriptive study assessed sleep quality and perceived stress among 85 Nursing Officers working in critical care units of a Govt Medical College & Hospital, Chandigarh, using standardised questionnaires (PSQI and PSS-10). Results revealed that 65.1 percent of participants had poor sleep quality, 57 percent experienced moderate stress, and 3.5 percent reported high stress. A moderate positive correlation ($r = 0.314$, $p = 0.003$) was observed between poor sleep and higher stress levels. Findings highlight the importance of interventions focusing on sleep hygiene and stress management to support nurses' well-being and ensure safe patient care.

Key words: Quality of sleep, Perceived stress, Evidence-based information booklet

Sleep is a vital physiological process with great role for nurses, especially those serving critical care units. However, irregular shifts, high stress, workload, and environmental factors frequently disrupt their sleep. Global studies show that 54.6 to 79.8 percent of nurses experience sleep disturbances, with up to 70 percent affected in some fields. Inadequate sleep impairs decision-making, alertness, and patient safety, increasing the risk of medical errors (Segon et al, 2022).

Critical care nursing further intensifies these challenges, often leading to burnout and stress from heavy workloads, unpredictable schedules, interpersonal issues, and personal health concerns. In India, 87.4 percent of nurses report significant stress, which, combined with poor sleep, contributes to depression, anxiety, and reduced job satisfaction. There is evidence of a bidirectional relationship between stress and sleep quality, where each worsens the other. The widespread poor sleep quality and elevated stress levels among nurses are pressing issues that healthcare systems must address. Effective interventions, such as promoting sleep hygiene, implementing stress management strategies, and adopting flexible scheduling can help alleviate these challenges (Mohite et al, 2014).

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Need for the study: Poor sleep and high stress among critical care nurses negatively affect health, performance, and patient safety. Irregular shifts, workload, and emotional strain lead to fatigue and impaired concentration, while unclear roles and interpersonal conflicts increase stress. These factors create a cycle where stress and poor sleep worsen each other. Addressing these challenges through sleep hygiene practices, stress management, flexible scheduling, and adequate staffing is essential to safeguard both nurses' well-being and patient outcomes.

Objectives

This study sought to:

- Assess the (a) quality of sleep and (b) perceived stress among Nursing Officers working in critical care units of Govt Medical College & Hospital (GMCH), Chandigarh;
- Find the association of (a) quality of sleep with perceived stress and (b) socio-demographic variables with quality of sleep and perceived stress;
- Develop an information booklet regarding the promotion of sleep hygiene and effective coping strategies against stress.

Review of Literature

Many studies highlight poor sleep quality among healthcare professionals. A study of 605 nurses

reported poor sleep linked with fatigue and decision regret (Tsegay et al, 2023), while a 2022 multicentre study of 421 clinicians found 81.5 percent had poor sleep aggravated by night shifts (Saberi et al, 2020). Similar findings were reported Natarajan et al (2022) in ICU nurses (61.7% poor sleep) among 100 nurses, where marital status and work experience influenced sleep quality (Petrosino et al, 2024). A 2023 cross-sectional analysis confirmed persistent poor sleep and emotional exhaustion among critical care nurses (Masa'Deh et al, 2017).

A comparative study in Jordan hospitals reported the greatest stress in psychiatric, oncology, ICU, and emergency units, while during COVID-19, Indian medical students and doctors, especially postgraduates and residents, showed elevated stress related to education, family health, and unsafe work environments (Agrawal et al, 2021; Rocha & Martino, 2010).

The association between poor sleep and stress is well established. A 2010 study of 203 nurses reported medium stress and poor sleep (PSQI 6.8) (Ravi et al, 2021). During COVID-19, over 60 percent of healthcare workers reported sleep disturbances and over 50 percent moderate-to-high stress, with a significant positive correlation ($r = 0.512$, $p < 0.001$) (Amin et al, 2023). Similar findings were noted in medical students, where 69 percent had moderate stress with a strong PSS-PSQI association ($p = 0.001$) (Zhou Y et al, 2023). A large study of 2,780 nurses confirmed that moderate-to-severe sleep problems with high stress increased risk of depressive symptoms (Sandamali et al, 2024).

Research hypothesis: There is a statistically significant association between the quality of sleep and perceived stress among Nursing Officers working in critical care units. It further assumes that selected socio-demographic variables such as age, education, work experience, and area of posting are significantly associated with both sleep quality and perceived stress at a $p < 0.05$ level of significance.

Methodology

This descriptive study was conducted from May 2024 to June 2024 to assess sleep quality and perceived stress among 85 Nursing Officers working in critical care units in GMC&H, Chandigarh.

Sample size: 85 Nursing Officers from critical care units were included in the study. The sample size was calculated based on the anticipated 67 percent of nursing officers who reported poor quality of sleep. In an earlier study assuming a 95 percent confidence interval and 10 percent permissible

error, the sample size was calculated using the Cochran formula (Zhou et al, 2023).

Tools used: The research utilised standardised tools (Table 1), including the Pittsburgh Sleep Quality Index (PSQI) and the Perceived Stress Scale-10 (PSS-10), along with socio-demographic characteristics (Table 2). The PSQI demonstrated high reliability (Cronbach's $\alpha = 0.83$) (Lee et al, 2012), and the PSS-10 showed consistent reliability (Cronbach's $\alpha > 0.7$) (Kumar S et al, 2021).

Ethical consideration & data collection: This descriptive study was conducted from May-June 2024 among 85 Nursing Officers from critical care units of GMCH Chandigarh, selected through simple random sampling. Standardised tools (PSQI and PSS-10) and a socio-demographic profile were used. Ethical approval was obtained from the Research and Ethical Committee. Informed consent was taken. Data were analysed using SPSS version 20, and descriptive statistics to summarise the data and inferential analysis, i.e. Pearson correlation, to explore relationships between variables.

Results

This study assessed sleep quality and perceived stress of the participants using the PSQI and PSS-10. Socio-demographic characteristics of participants is in Table 2. It was found that 65.1 percent of participants had poor sleep quality, while 34.9 percent reported good sleep (Table 3). Among 85 participants, 38.4 percent experienced low stress, 57.0 percent moderate stress, and 3.5 percent high stress, suggesting that most participants managed stress effectively (Fig 1).

Socio-demographic factors showed weak and statistically insignificant associations with sleep quality, except for a moderate negative correlation between the area of work and quality of sleep ($p < 0.001$), and weak positive correlations with education level ($p = 0.034$). Moreover, there was a negative correlation between total work experience ($p = 0.045$) and critical care work experience ($p = 0.008$) (Table 3).

Similarly, perceived stress showed no significant associations with socio-demographic factors such as age, gender, BMI, marital status, work experience or family support ($p > 0.05$). Mean scores for PSQI and PSS-10 were 5.65 (SD =2.59) and 14.99 (SD = 5.99), respectively. A moderate positive correlation was found between perceived stress and sleep quality ($r = 0.314$, $p = 0.003$), indicating that higher stress levels are linked to poorer sleep quality. The findings highlight

Table 1: Description of research tool

Section	Tool	Purpose	Description
Section-A	Socio-demographic profile (Appendix-V)	To assess the socio-demographic characteristics of the participants.	Includes age, gender, BMI, Marital status, Place of residency, Level of education, Type of family, Comorbidities, Social/Family support, Total work experience and Critical care unit work experience of the participants.
Section-B	Pittsburgh Sleep Quality Index (Appendix-V)	To assess the quality of sleep.	PSQI is a standardised questionnaire consisting of seven components: Subjective sleep quality, Sleep latency, Sleep duration, Habitual sleep efficiency, Sleep disturbance, Use of sleep medication, and Daytime dysfunction. This is a rated scale in which the score of all seven components is summed to yield a global PSQI score, which has a range of 0-21, with a score <5 indicating good sleep quality and >5 indicating poor sleep quality.
Section- C	Perceived Stress Scale -10 (Appendix-V)	To assess the perceived stress.	PSS-10 is a standardised questionnaire consisting of 10 items with six negatively (Items- 3,6,9,10) and four positively worded items (Items- 4,5,7,8). Each has a range of 0-4 and, when added together, gives a score between 0-40 indicating: 0-13 = low stress, 14-26 = moderate stress, 27-40 = high perceived stress.

Table 2: Socio-demographic characteristics of participants (N = 85)

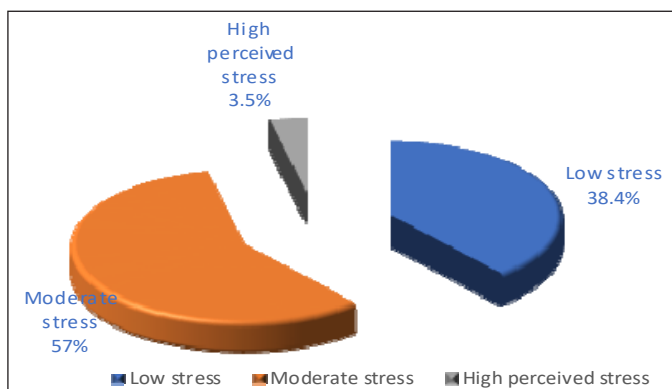
Socio-demographic variables		Frequency (%)
Area	ICU-A	9 (10.6)
	ICU-C	14 (16.5)
	HDU	16 (18.8)
	CCU	12 (14.1)
	RICU	8 (9.4)
	MICU	8 (9.4)
	NICU	18 (21.2)
Age (21.25 ± 9.91)	20-25 years	7 (8.2)
	26-30 years	31 (36.5)
	30-35 years	30 (35.3)
	>35 years	17 (20.0)
Gender	Male	31 (36.5)
	Female	54 (63.5)
BMI (28.33 ± 20.17)	<18.5	2 (2.4)
	18.5-24.9	51 (60.0)
	25-29.9	32 (37.6)
	30-34.9	-
	>35	-
Marital status	Married	58 (68.2)
	Unmarried	27 (31.8)
	Divorced/separated	-
	Widowed	-
Place of residency	Rural	11 (12.9)
	Urban	74 (87.1)
Educational status	GNM	14 (16.5)
	B.Sc. Nursing/Post-basic	70 (82.4)
	M.Sc. Nursing	1 (1.2)
Type of family	Nuclear	47 (55.3)
	Joint	38 (44.7)
	Extended	-
Total work experience (21.25 ± 7.36)	<5 years	27 (31.8)
	5-10 years	30 (35.3)
	10-15 years	15 (17.6)
	>15 years	13 (15.3)
Critical care unit work experience (21.25 ± 21.86)	<5 years	57 (67.1)
	5-10 years	21 (24.7)
	10-15 years	5 (5.9)
	>15 years	2 (2.4)
Comorbidities	Yes	10 (11.8)
	No	75 (88.2)
Exercise	Yes	58 (68.2)
	No	27 (31.8)
Family/Social support	Present	76 (89.4)
	Absent	9 (10.6)

the need for interventions to manage stress and improve the quality of sleep (Tables 4-6). The findings confirmed the research hypothesis. A significant positive correlation ($r = 0.314$, $p = 0.003$) was observed between quality of sleep and perceived stress, indicating that the hypothesis was accepted.

Table 3: Assessment of the level of quality of sleep (N=85)

Parameter		Frequency (%)
Total PSQI score (5.65 ± 2.58)	Good sleep quality	30 (34.9)
	Poor sleep quality	55 (65.1)

Fig 1: Assessment of the level of perceived stress.



Discussion

Nurses working in critical care units face a high risk of poor sleep due to the demanding and stressful nature of their work, which negatively impacts both their health and the quality of patient care. This study revealed that 65.1 percent of Nursing Officers working in critical care units at GMCH-32 had poor sleep quality and 57.0 percent experienced moderate stress, with only 3.5 percent reporting high stress. These results align with earlier reports of poor sleep (~68%) and moderate stress among critical care nurses and healthcare staff during the COVID-19 pandemic (Amin et al, 2023).

The moderate positive correlation found between perceived stress and sleep quality ($r = 0.314$, $p = 0.003$) supports the bidirectional relationship identified in earlier studies, with 78.4 percent reporting poor sleep and 67.1 percent experiencing moderate stress (Amin et al, 2023; Buysse et al, 1989). The present study also found limited associations between socio-demographic factors and perceived stress, but some significant associations with sleep quality, particularly in areas of work, education, and work experience. Nurses in high-intensity areas such as ICUs or emergency wards may be more vulnerable to

Table 4: Association of socio-demographic variables with quality of sleep (N=85)

Socio-demographic variables	Correlation Total PSQI score	
	Pearson correlation	
	r-value	p-value
Area	-0.430	0.000*
Age	-0.164	0.133
Gender	0.087	0.430
BMI	0.011	0.920
Marital status	0.069	0.531
Place of residency	-0.042	0.704
Educational status	0.230	0.034*
Type of family	0.066	0.550
Total work experience	-0.218	0.045*
Critical care unit work experience	-0.284	0.008*
Comorbidities	-0.080	0.467
Exercise	0.002	0.989
Family/Social support	-0.038	0.730

*Significant

Table 5: Association of socio-demographic variables with perceived stress (N=85)

Socio-demographic variables	Correlation Total pss-10 score	
	Pearson correlation	
	r-value	p-value
Area	0.035	0.752
Age	-0.012	0.913
Gender	0.089	0.416
BMI	-0.017	0.877
Marital status	-0.026	0.817
Place of residency	0.032	0.771
Educational status	0.021	0.850
Type of family	-0.041	0.706
Total work experience	0.076	0.488
Critical care unit work experience	0.013	0.904
Comorbidities	0.066	0.550
Exercise	0.114	0.301
Family/social support	0.180	0.099

poor sleep, while higher education may improve coping strategies. These findings are broadly in line with earlier reports showing mixed results for demographic predictors of sleep and stress.

The results emphasise the need for interventions targeting both sleep hygiene and stress management. Hospital administrators can support Nursing Officers by implementing flexible scheduling, adequate staffing, and wellness programmes, including yoga, meditation, and counselling. Nurse educators should integrate stress and sleep management into curricula to

Table 6: Association of quality of sleep with perceived stress (N=85)

Parameters	Mean	Standard deviation	Correlation	
			Pearson correlation	
			R-value	p-value
Total PSQI score	5.65	2.58	0.314	(0.003) **
Total PSS-10 score	14.99	5.98		

**Significant

prepare future nurses. Such strategies may reduce burnout, improve job satisfaction, and enhance patient safety.

Limitations: The study is limited to Nursing Officers working in critical care units at GMC&H, Chandigarh. There are also potential sample size constraints (N=85).

Implications for Nursing

Nursing practice: Managing stress and sleep enhances nurses' well-being and patient care.

Nursing education: Integrate stress and sleep management into the nursing curriculum.

Nursing administration: Support staff through wellness programs, including yoga and meditation.

Nursing research: Provides a basis for future studies on stress and sleep in nursing.

Recommendations

- Conduct studies with larger, diverse nursing samples to improve generalisability.
- Implement longitudinal research to assess long-term effects of stress and sleep interventions.
- Explore the applicability of findings among nursing students.
- Evaluate the effectiveness of specific interventions, such as mindfulness meditation, using comparative or experimental designs.

Conclusion

This study evaluated sleep quality and perceived stress among 85 Nursing Officers working in critical care units in GMC&H, Chandigarh. The results revealed poor sleep quality and moderate perceived stress among participants. Socio-demographic factors influenced sleep levels as well. A significant positive correlation ($p = 0.003$) was found between the quality of sleep and perceived stress, indicating that higher stress levels were associated with poorer sleep quality. These findings highlight the impact of perceived stress on sleep quality among healthcare workers in critical care units, emphasising the need for targeted interventions to improve their well-being.

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