Original Article

Job Stress among Night-Shift Nurses in Critical Care Units

Yamen Chaban Ahmad and Shatha Saadi Mohammed

ABSTRACT

Objective: To assess job stress among night-shift critical care nurses under the working hour's system in effect.
Study Design: Quantitative cross-sectional study
Place and Duration of Study: This study was conducted at the College of Nursing, Adult Nursing, University of Babylon from 12th September 2024 to 29th October 2024.
Methods: 178 night-shift critical care nurses working in three randomly selected governmental hospitals were enrolled. Nurses were selected by the availability sampling method. Data were collected by demographic characteristics and The Expanded Nurses Stress Scale (ENSS).
Results: Females those working overtime in the private sector were significantly more likely to experience high stress.
Conclusion: Most of the females have high level of job stress and there are significant relationships between job stress and gender, level of income, level of education, years of experience, and type of unit.

Key Words: Job stress, Night Shift, Critical Care Units

Citation of article: Ahmad YC, Mohammed SS. Job Stress among Night-Shift Nurses in Critical Care Units. Med Forum 2025;36(6):67-71. doi:10.60110/medforum.360614.

INTRODUCTION

Stress is a well-known topic, and people's lives are filled with demands that cause it to rise steadily. It also is somewhat individualized, depending on character, social support, coping abilities, and other aspects. According to the Effort-Recovery theory, workplace effort expenditure is inevitable, and this results in load response, or physiological changes brought in by stress. Effort must be balanced by enough recovery. Nevertheless, in some situations, such as extended exposure to high workload without sufficient recovery, short-term load reactions can build up and eventually result in the emergence of health issues, such as fatigue, or manifest illness.[1] Based on data from the International Council of Nurses, it is estimated that job stress costs the US economy $200-300 million a year, and over 90% of medical issues among employees are linked to job stress.[2] In the workplace, in addition to specific risks that cause occupational diseases, job-related stress could be one of the most common causes of occupational disorders, including cancer.[3] Because of their line of work, nurses are subjected to various stressors and obstacles that can lead to job stress and burnout.

College of Nursing, Adult Nursing, University of Babylon.

Correspondence: Yamen Chaban Ahmad, Ph.D. Scholar, College of Nursing, Adult Nursing, University of Babylon.
Contact No: +9647714247183
Email: yamen.ahmed.nurh124@student.uobabylon.edu.iq

Received: January, 2025
Reviewed: February, 2025
Accepted: March, 2025

These include long hours, conflict with medical teams, conflict among co-workers and issues with job shifts.[4] Because nursing is such a dangerous job, nurses are more likely to suffer potentially fatal illnesses and injuries, particularly in critical care units. They provide intensive care, deal with emergencies, and see dying patients.[5] These causes nurses to experience high job stress, which has negative impacts like forgetfulness, and fatigue all of which result in low performance.[6] This study seeks to assess job stress among critical care nurses working night shifts which might contribute to illuminating an essential aspect of their well-being and professional performance.

METHODS

This descriptive quantitative cross-sectional study was conducted to assess job stress among night-shift nurses in critical care units. The study was conducted in three governmental facilities located in the Holy City of Karbala vide letter No.35 dated 23-6-2024. First, there is AL-Imam Alhussain Medical City, second, Imam Al-Hassan Al-Mujtaba Teaching Hospitals, and the Karbala Center for Cardiac Disease and Surgery. To select the hospitals for the study, a simple random method was employed. The names of all six hospitals were written on separate pieces of paper, which were then placed in a small box and mixed thoroughly. Three random draws were conducted from this box. The hospitals chosen are some of the largest and busiest facilities serving a significant number of patients.

The target population consisted of 277 night-shift critical care nurses. This number was determined during a pre-data collection visit, where the researcher interviewed nursing directors at the three selected

hospitals to determine the number of night-shift critical care nurses. Using the Finite Population Collection formula and at a 95% confidence level and a margin of error of 0.05, the minimum sample size required was 161. The final sample size was estimated at 178, taking into account a 10% dropout rate. Nurses of both genders from the selected hospital, who expressed have willingness to participate and had at least one year of experience in critical care units, were included in this study. Nurses in administrative positions were excluded as they were not directly involved in patient care.

The demographics including age, gender, marital status, level of education, level of income, years of experience in critical care units, department, workplace, and working as a nurse in the private sector were noted. The specific questionnaire English version of the Expanded Nursing Stress Scale (ENSS) was used. It was developed by French[7] in 2000, to identify sources and frequency of stress experienced by nurses. Permission to use this scale was obtained from the original author by email. The ENSS was reliable and valid in the original study since the alpha coefficients of the subscales were 0.70 or higher and the ENSS, which initially comprised 57 items. The researcher adapted this scale by removing 6 items incompatible with the traditions of the local country. The Remaining 51 items contain eight sub-scales: death and dying stressors (7 items), conflict with physician (4 items), emotional preparation (3 items), problems with peers (6 items), supervision stressors (7 items), workload stressors (9 items), uncertainty concerning treatment stressors (9 items), and patient/ family stressors (6 items). The adapted ENSS scale is reliable (α=0.983) and a valid tool. A five-point semantic scale was used (never stressful, occasionally stressful, frequently stressful, extremely stressful, does not apply) to assess job stress. Items have been rated and scored as (1) never stressful, (2) occasionally stressful, (3) frequently stressful, (4) extremely stressful, and (0) does not apply. The mean of scale = 2, W= 0.99, no job stress = 0-0.99, low job stress = 1-1.99, moderate job stress = 2-2.99, and high job stress = 3-4. The data was entered analyzed through SPSS-26.

RESULTS

There were 52.2% females, most held diploma (41.0%), with insufficient income (45.5%), most of them had 1–5 years of experience (62.4%), were in the General ICU (38.8%). Additionally, (55.6%) of participants had a job in private sector (Table 1).

Figure 1 illustrates the distribution of job stress levels among the participants. A significant proportion of participants (51.1%) reported high stress levels, and no participants reported no stress.

Among the subscales, workload stressors had the highest mean (3.40±0.78), followed by patients and family stressors (3.12±0.81). In contrast, conflict with physician stressors had the lowest mean score (1.87±0.75). The overall job stress mean score was 2.83±0.83), indicating variability in stress levels across the participants (Table 2).

Table No.1: Participant demographics and characteristics (n=178)

Variable	No.	%
Gender		
Male	85	47.80
Female	93	52.20
Marital Status		
Single	47	26.40
Married	126	70.80
Other	5	2.80
Education		
Nursing Secondary School	26	14.60
Diploma	73	41.00
Bachelor Degree	67	37.60
Higher Education	12	6.70
Income		
Sufficient	42	23.60
Somewhat Sufficient	55	30.90
Insufficient	81	45.50
Experience		
1–5 years	111	62.40
6–10 years	45	25.30
More than 10 years	22	12.40
Unit		
General ICU	69	38.80
CCU	51	28.70
Emergency Unit	40	22.50
Open Heart ICU	18	10.10
Private Sector		
Yes	99	55.60
No	79	44.40

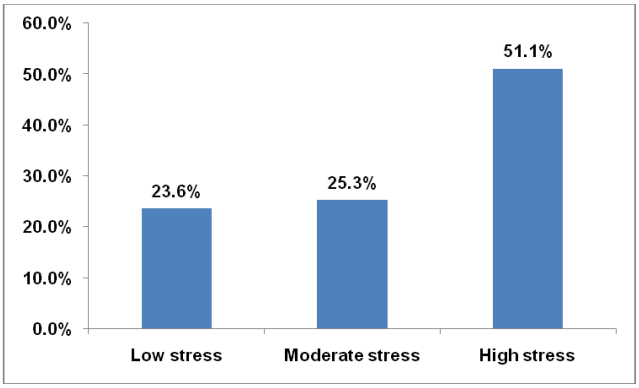

Figure No. 1: Stress level distribution among participants

A significant association between job stress categories and various participant characteristics. Female nurses were significantly more likely to experience high job stress (73.1%). Similarly, nurses with insufficient income (77.8%), nurses with diplomas (60.3%), 1-5

years of experience (76.6%), emergency nurses (62.5%), and those work overtime in private sector (71.7%) all reported high levels of job stress. In contrast, nurses working in the OH unit reported low stress (55.6%) [Table 3].

Table No. 2: Descriptive statistics for job stress and subscales

Variable	Minimum	Maximum	Mean	Standard Deviation
Death and Dying Stressors	1.29	4.00	2.86	.76
Conflict with Physician Stressors	.25	3.00	1.87	.75
Emotional Preparation Stressors	.67	4.00	2.79	1.11
Problems with Peer Stressors	.67	4.00	2.75	1.10
Supervision Stressors	.14	4.00	2.77	1.21
Workload Stressors	.89	4.00	3.40	.78
Uncertainty Concerning Treatment Stressors	.67	3.67	2.58	.89
Patient or Family Stressors	.83	4.00	3.12	.81
Overall Job Stress	1	3.86	2.83	.83

Table No.3: Association between job stress and nurses' characteristics (n=178)

Variable	Category	Low Stress	Moderate Stress	High Stress	p-value
Gender	Male	31 (36.5%)	31 (36.5%)	23 (27.1%)	< 0.001
	Female	11 (11.8%)	14 (15.1%)	68 (73.1%)	
Marital Status	Single	1 (2.1%)	19 (40.4%)	27 (57.4%)	< 0.001
	Married	41 (32.5%)	23 (18.3%)	62 (49.2%)	
	Other	-	3 (60.0%)	2 (40.0%)	
Education	Nursing Secondary School	5 (19.2%)	12 (46.2%)	9 (34.6%)	< 0.001
	Diploma	14 (19.2%)	15 (20.5%)	44 (60.3%)	
	Bachelor Degree	12 (17.9%)	17 (25.4%)	38 (56.7%)	
	Higher Education	11 (91.7%)	1 (8.3%)	-	
Income	Sufficient	31 (73.8%)	11 (26.2%)	-	< 0.001
	Somewhat Sufficient	11 (20.0%)	16 (29.1%)	28 (50.9%)	
	Insufficient	-	18 (22.2%)	63 (77.8%)	
ICU experience	1–5 years	-	26 (23.4%)	85 (76.6%)	< 0.001
	6–10 years	39 (86.7%)	2 (4.4%)	4 (8.9%)	
	More than 10 years	3 (13.6%)	17 (77.3%)	2 (9.1%)	
Unit	General ICU	17 (24.6%)	17 (24.6%)	35 (50.7%)	< 0.001
	CCU	9 (17.6%)	14 (27.5%)	28 (54.9%)	
	Emergency Unit	6 (15.0%)	9 (22.5%)	25 (62.5%)	
	Open Heart ICU	10 (55.6%)	5 (27.8%)	3 (16.7%)	
Private Sector	Yes	11 (11.1%)	17 (17.2%)	71 (71.7%)	< 0.001
	No	31 (39.2%)	28 (35.4%)	20 (25.3%)	

DISCUSSION

A large percentage of nurses in our study experienced levels of job stress ranged from moderate to high, which is supported by several studies.[8,9] Critical care nurses frequently report high job stress levels, with studies indicating prevalence rates of 68.29% in India[10], 82.8% in Iran.[8] A study conducted in Saudi noted that ICU nurses experienced moderate stress, with higher levels reported in cardiac care units compared to open-heart units.[11] Additionally, Kibria[12] reported that 90% of critical care nurses in a Bangladeshi hospital experienced such stress. Night shift work disrupts the body's natural circadian rhythms which lead to sleep disturbances, as shift workers are forced to sleep when their body's internal clock signals wakefulness.[13,14] Such sleep disturbances are strongly linked to psychological issues, including stress.[15,16] Workload stressors, death and dying stressors were considered causes of stress among night shift nurses. This is supported by the findings of several studies, which showed that workload and long shifts are primary factors of stress among nurses.[13,17] Bolado et al[13] also found that nurses who witnessed death and dying at critical care units were 2.34 times more likely to report high stress compared to those who hadn't been exposed to such situations. On the other hand, conflict with physician stressors was found to be the least factor affecting stress in this study. This could be attributed to the strong inter-professional teamwork observed in

Iraq's healthcare settings.[18] This finding aligns with recent studies suggesting that while conflicts with physicians occur, they are often overshadowed by more pressing challenges, such as high patient acuity or emotional demands.[17]

The results of this study reveal significant associations between job stress and various demographics such as gender, income, education level, units, and private sector. Female nurses were significantly more likely to experience high stress. This aligns with several studies, which suggest that female often face additional stressors, such as balancing household responsibilities and work-family conflicts, which can amplify stress levels.[19] Income level significantly influenced stress. Nurses with insufficient income were more likely to report high job stress compared to those with sufficient income. Financial stress is a well-documented stressor, and its impact on mental health is particularly pronounced in high-pressure professions like nursing. This finding is consistent with previous research, which highlighted the role of financial instability in exacerbating stress levels among healthcare workers.[20] Education level also played a significant role, with nurses holding diplomas and bachelor's degrees reporting higher stress levels compared to those with higher education. The result aligns with Khodadadi et al[21] who reported that nurses with a higher educational level (Master of Science in Nursing) had a lower level of stress compared to those with a Bachelor of Science in Nursing (BScN). This could be attributed to high performance among nurses with high education degrees, as well as their enhanced problem-solving and coping skills that may help them manage stress more effectively.[19] The current study showed that nurses with less experience reported the highest levels stress compared to those with more experience. This finding aligns with previous researches.[22,23] Less experienced nurses often face higher stress due to high working hours, adaptation to the environment, meeting professional anticipations, and team cooperation.[23] The type of unit significantly influenced stress levels. Nurses in general ICUs and CCUs reported moderate to high stress, while those in emergency units experienced even higher stress levels. In contrast, nurses working in OH units predominantly reported low stress. This variation may reflect differences in patient acuity and the specific challenges associated with each unit type. Also, Nurses with additional job in the private sector reported higher stress than those without one. This could be due to factors such as longer working hours, higher workloads, and potentially less supportive work environments in private workplace.[24]

CONCLUSION

Most of participants have high level of job stress. In addition, there are significant relationships between job stress and gender, level of income, level of education, years of experience, and type of unit. Healthcare administrators should consider implementing comprehensive mental health programs that include stress management training, psychological support services, and strategies to reduce workplace stressors. Additionally, further research is needed to identify other factors that may better mitigate the effects of job stress.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Yamen Chaban Ahmad, Shatha Saadi Mohammed
Drafting or Revising Critically:	Yamen Chaban Ahmad, Shatha Saadi Mohammed
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None

Ethical Approval: No.35 Dated 23.06.2024

REFERENCES

1. Petersen H. Stress and sleep: prevalence, vulnerability and day-to-day variation. [Thesis] Sweden: Karolinska Institutet, 2020.
2. Hassard J, Teoh KRH, Visockaite G, Dewe P, Cox T. The cost of work-related stress to society: A systematic review. J Occupa Health Psychol 2018; 23(1):1-17.
3. Cannizzaro E, Ramaci T, Cirrincione L, Plescia F. Work-Related Stress, Physio-Pathological Mechanisms, and the Influence of Environmental Genetic Factors. Int J Environ Res Public Health 2019;16(20):4031.
4. Samaei SE, Khosravi Y, Heravizadeh O, Ahangar HG, Pourshariati F, Amrolia M. The effect of emotional intelligence and job stress on burnout: a structural equation model among hospital nurses. Int J Occ Hygiene 2017;9(2):52-9.
5. Salih AN, Allo RR. Evaluation of nursing intervention measures in infection control at dialysis units in Mosul City Hospitals. Med J Babylon 2024;21(2):245-50.
6. Al-Nuaimi H, ALBashtawy M, Qaddumi J, Baqir M, Suliman M, Abdalrahim A, et al. Impact of occupational stress on nurses' job performance according to nurses perception. Medico Legal Update 2021;21(3):252-5.
7. French SE, Lenton R, Walters V, Eyles J. An empirical evaluation of an expanded Nursing Stress Scale. J Nurs Meas 2000 Fall-Winter;8(2):161-78.
8. Chegini Z, Asghari Jafarabadi M, Kakemam E. Occupational stress, quality of working life and

turnover intention amongst nurses. Nursing Crit Care 2019;24(5): 283-9.
9. Vangelova K, Dimitrova I, Cekova I, Stoyanova R. Shift work and occupational stress in hospital nurses in Sofia. Acta Medica Bulgarica 2020; 48(1), 81-7.
10. Kumar A, Pore P, Gupta S, Wani A. Level of stress and its determinants among intensive care unit staff. Indian J Occ Environ Med 2016;20(3):129.
11. Alharbi H, Alshehry A. Perceived stress and coping strategies among ICU nurses in government tertiary hospitals in Saudi Arabia: a cross-sectional study. Ann Saudi Med 2019;39(1):48-55.
12. Kibria MG. Prevalence of stress and coping mechanism among staff nurses of intensive care unit in a selected hospital. Int J Neurosurg 2018; 2(1): 8-12.
13. Bolado GN, Ataro BA, Gadabo CK, Ayana AS, Kebamo TE, Minuta WM. Stress level and associated factors among nurses working in the critical care unit and emergency rooms at comprehensive specialized hospitals in Southern Ethiopia, 2023: explanatory sequential mixed-method study. BMC Nursing 2024;23(1): 341.
14. Choi SJ, Song P, Suh S, Joo EY, Lee SI. Insomnia symptoms and mood disturbances in shift workers with different chronotypes and working schedules. J Clin Neurol 2020;16(1):108.
15. AbuRuz ME, Hayeah HMA. Insomnia induced by night shift work is associated with anxiety, depression, and fatigue, among critical care nurses. Advanced Studies Biol 2017;9:137-56.
16. Rosa D, Terzoni S, Dellafiore F, Destrebecq A. Systematic review of shift work and nurses' health. Occupa Med 2019;69(4):237-43.
17. Diannita CG, Permatasari H, Mulyono S. Occupational stress and professional quality of life among community health nurses during the COVID-19 pandemic. J Holistic Nursing 2024; 42(2-suppl): S110-17.
18. Al-Twigey M, AL-Fayyadh S. Inter-professional team collaboration among health care team members in critical care units: targeting cooperating, coordinating, and partnership in Najaf Governorate, Iraq. Malaysian J Nursing 2024; 16(Suppl 1): 68-78.
19. Faraji A, Karimi M, Azizi SM, Janatolmakan M, Khatony A. Evaluation of clinical competence and its related factors among ICU nurses in Kermanshah-Iran: A cross-sectional study. Int J Nursing Sci 2019; 6(4): 421-5.
20. Mohamed BES, Ghaith RFAH, Ahmed HAA. Relationship between work–family conflict, sleep quality, and depressive symptoms among mental health nurses. Middle East Curr Psychiatr 2022; 29(1):19.
21. Khodadadi E, Hosseinzadeh M, Azimzadeh R, Fooladi M. The relation of depression, anxiety and stress with personal characteristics of nurses in hospitals of Tabriz, Iran. Int J Med Res Health Sci 2016;5(5):140-48.
22. Fang Y, Yang J, Zhang M, Song J, Lin R. A longitudinal study of stress in new nurses in their first year of employment. Int J Clin Prac 2022; 2022:1-6.
23. Narbona-Gálvez Á, García-Iglesias JJ, Ayuso-Murillo D, Fontán-Vinagre G, Gómez-Salgado J, Allande-Cussó R, et al. Stress in novice nurses in new work environments: a systematic review. Front Public Health 2024;12:1463751.
24. Windarwati HD, Lestari R, Poeranto S, Ati NAL, Kusumawati MW, Ilmy SK, et al. Anxiety, Depression, and associated factors among general population in Indonesia during COVID-19 pandemic: a cross-sectional survey. J Caring Sci 2023;12(3):144-54.