

Original Article

Occupational Stress Among Nurses in Intensive Care Unit - Elmak Nemir
University Hospital – 2025

Mariam Hussein Zeyada Idriss¹, Eman Osman Ali Mohammed², Manal Elzein Musa Ismail³

¹ University of Technology, department of obstetrics and gynecological nursing, Faculty of Nursing Science --Khartoum-Sudan. ² National University of Africa, Faculty of Nursing Science, department of medical nursing -Khartoum-Sudan. ³ Buraydah College ,Faculty of Applied Medical Sciences, Department of Nursing (Obstetrics and Gynecological nursing), Buraydah -51418, Saudi Arabia.

Correspondence author: Mariam Hussein Zeyada Idriss, Assistant Professors of obstetrics and gynecological nursing - Faculty of Nursing Science – University of Technology -Khartoum-Sudan. e-mail: mariumzeada555@gmail.com.

Received: 21/8/2025

Accepted: 27/9/2025

Abstract:

Background: Work-related stress is a significant challenge in nursing, especially for intensive care unit nurses who frequently face demanding situations requiring rapid clinical decisions and strong emotional resilience. Stress occurs when external job pressures exceed a nurse's capacity to cope, resulting in physical, psychological, and behavioral consequences. **Objectives:** To study the level of occupational stress among nurses in intensive care units at Elmak Nemir University Hospital. **Method:** This descriptive cross-sectional, hospital-based study included all nurses working in the medical and surgical intensive care units at Elmak Nemir University Hospital. A total coverage of 40 nurses who working in intensive care units. Data were collected using a self-administered questionnaire and analyzed with the Statistical Package for the Social Sciences (SPSS) version 25. **Results:** Among the 40 intensive care unit's nurses assessed, 40% experienced low stress, 32.5% moderate stress, and 27.5% high stress. The primary stressors identified were dealing with death or dying situations, communication issues with supervisors, conflicts with patients' relatives or visitors, long shifts, insufficient staffing, and work overload. Marital status

and limited managerial support showed a weaker association with stress, while age, gender, work experience, qualification, and unit type were negatively associated with stress levels. Nearly half of the nurses perceived intensive care units work as stressful, and 57.5% reported sometimes considering resignation due to stress. No statistically significant association was found between sociodemographic variables and occupational stress levels. **Conclusion:** Most nurses reported low to moderate occupational stress, with a smaller proportion experiencing high stress. Nurses working 16-hour shifts were more likely to have elevated stress levels. Organizational and workplace conditions had a greater impact on stress. Recommendations include minimizing extended 16-hour shifts in favor of more balanced schedules, ensuring adequate staffing, and providing stronger psychological and managerial support.

Keywords: profession, employment, anxious, exhausted

Introduction

Stress has become a very common health problem in the current society, and its occurrence can be attributed to changes in people's lifestyle that have made them debilitated and vulnerable to numerous diseases (1). However, in the case of severe, persistent, and recurrent stress, and also when the individual lacks adequate supportive resources, it is considered as a negative phenomenon that can cause many physical diseases and mental disorders (2). Occupational stress is defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker (3). It occurs when the demands of a working environment overpower the capacities of workers to cope with. It can affect all types of workers and all professional occupations (4).

Nurses perhaps are the best friend of patients. Though they get paid for the job, the care and concern they exhibit for the patient is unparalleled and most of the time goes beyond any financial remuneration. There are instances where nurses experience high stress level that leads to negative work environments that rob nurses of their spirit and passion about their job. Consequently,

unsatisfied workers might lead to burnout, where burn-out associated with stress has been documented in healthcare professionals including nurses and is considered as one of the potential hazards occurring among individuals who do "people work" (5). Occupational stress encountered by critical care nursing could affect the nurse performance and reduce capabilities to provide the appropriate care to patients in the ICU, hence the magnitude of stress needs to be assessed (6). Several studies have evaluated occupational stress among ICU staff found that 33% and 31% and 29% of ICU nurses suffered burnout in France, Portugal and United Kingdom, respectively (7). Similar job stress was reported in Singapore whereby 86% of ICU nurses experienced workplace stress, most of the nurses in ICU experience workplace stress, the scholars reported in India, 68.29% of ICU nurses express a certain level of workplace stress (1).

In Sub-Saharan Africa, a study done in Nigeria, found that 44.1% nurses reported the high level of workplace stress while the high level of burnout was identified in 42.9% of respondents and this was reported to endanger the nursing care provided to the

patients (4). In Sudan, Haieder showed that occupational stress among nurses was associated with several factors such as lacking manpower, having high workload, performing painful procedures for patients, lacking medications and equipment for nursing care, seeing patients' death in addition to dealing with unpredictable staffing and scheduling (8). Furthermore, other factors included feeling inability about end-stage patients, seeing a patient's suffering, hearing or talking to about their developing death, having conflicts with physicians, fearing of making a mistake in treating a patient, and feeling inadequately prepared to help with the emotional needs of a patient. In Sudan, a study done found that the death and dying situation as the most stressful, followed by workload and problems with supervisor, stress perceived when dealing with patients and their families and stress due to uncertainty concerning treatment. (9) Among various nursing groups, the intensive care units (ICUs) are faced with a high risk of stress, fatigue, and illness due to the high-quality care, long hours of stays in the hospital, lack of protection facilities, noise pollutions caused by device alarms, end-stage patients' care, and participation in the patients' grief (10).

This study aims to explore the sources, level, and consequences of occupational stress among intensive care unit nurses in Elmak Nemir University Hospital in Sudan, providing cope strategies to improve their working conditions.

Methods

A hospital-based cross-sectional study was conducted at Elmak Nemir Hospital, targeting nurses working in intensive care units during the study period. The sample were selected using probability sampling consisted of 40 nurses using total coverage according to Israel (1992), when the population size is less than 200, it is recommended to include the entire population to ensure adequate representation and statistical power. Data were gathered by the researcher using structured, interviewer-administered questionnaire to evaluate the level of occupational stress among nurses in intensive care units. A four-point Likert scale—rarely, sometimes, never, and always (11)—was used for assessment. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 25, with statistical significance tested using the chi-square test and results considered significant at a p-value of 0.05 or less. Findings were presented in cross-tabulations and figures. Ethical approval was

obtained from the faculty of nursing science at the University of Technology, permission was granted by hospital authorities, and informed consent was obtained from each participant before the interview.

Results

Table 1: Demographic Characteristics of the Study Sample (n=40)

Variable	Category	Frequency	Percentage (%)
Age	Less than 24	9	22.5
	25–34	30	75.0
	35–44	1	2.5
Gender	Female	38	95.0
	Male	2	5.0
Marital status	Single	26	65.0
	Married	12	30.0
	Divorced	2	5.0
Qualification	Diploma	2	5.0
	Bachelor	34	85.0
	Master	4	10.0
Work Experience	Less than 1 year	7	17.5
	1–3 years	15	37.5
	More than 3 years	18	45.0
Unit	Medical ICU	14	35.0
	NICU	13	32.5
	CCU	5	12.5
	Neuro ICU	4	10.0
	Surgical ICU	4	10.0
Shift length	16 hours	21	52.5
	8 hours	19	47.5
Total (All Participants)		40	100.0

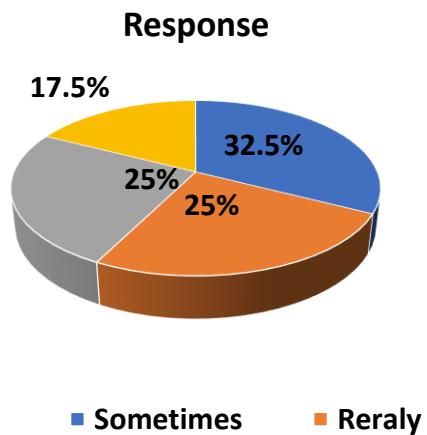


Figure 1: Nurses response about communication problem with supervisor (n=40)

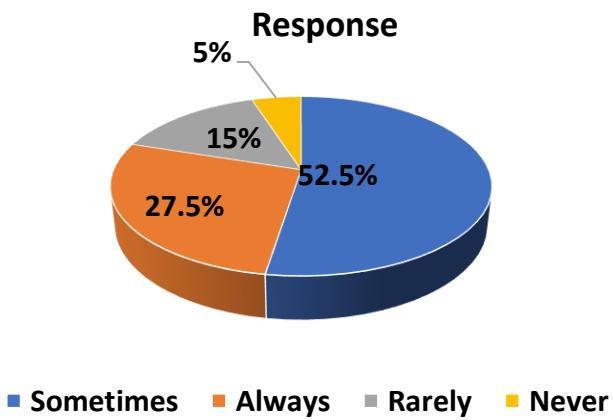
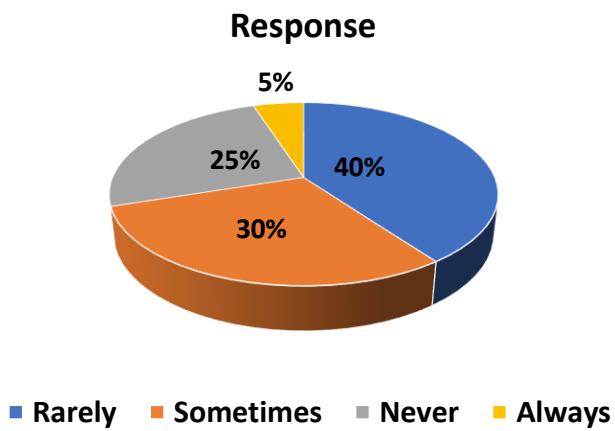


Figure 2: Nurses response about Problem with patient's relatives or visitors(n=40)

**Figure 3:** Nurses response about Poor relationship with other nurses (n=40)**Table 2:** Nurses' response about occupational stress n= 40

No.	Items	Rarely	Sometimes	Never	Always
1	Confidents with doctors in units	F	14	13	12
		%	35.0%	32.5%	30.0%
2	Feeling that the hospital system solves work conflicts effectively.	F	16	13	1
		%	40.0%	32.5%	2.5%
3	Feeling your shift length is too long	F	5	22	4
		%	12.5%	55.0%	10.0%
4	Feeling physically exhausted after work.	F	2	18	2
		%	5.5%	45.0%	5.5%
5	Feeling they get enough rest during the shift.	F	7	21	2
		%	17.5%	52.5%	5.0%
6	Feeling they find ICU nursing stressful	F	3	19	1
		%	7.5%	47.5%	2.5%
7	Feeling they find ICU nursing satisfying	F	11	18	6
		%	27.5%	45.0%	12.5%
8	Feeling stress affecting your health	F	1	21	3
		%	2.5%	52.5%	7.5%
9	Feeling they find death or dying, causing emotional distress	F	7	19	13
		%	17.5%	47.5%	32.5%

Table 3: Overall Occupational Stress Levels among Nurses in ICU (n=40)

Stress Level	Frequency	Percentage (%)
Low Stress	16	40.0
Moderate Stress	13	32.5
High Stress	11	27.5
Total	40	100.0

Table 4: association between demographic characteristics and Occupational Stress level (n=40)

Demographic Variable & Category	High Stress	Moderate Stress	Low Stress	Total (n)	p-value
Age					0.3952
25–34	9 (30.0%)	9 (30.0%)	12 (40.0%)	30	
35–44	1 (100.0%)	0 (0.0%)	0 (0.0%)	1	
Less than 25	1 (11.1%)	4 (44.4%)	4 (44.4%)	9	
Gender					0.5700
Female	10 (26.3%)	13 (34.2%)	15 (39.5%)	38	
Male	1 (50.0%)	0 (0.0%)	1 (50.0%)	2	
Marital Status					0.3885
Divorced	1 (50.0%)	1 (50.0%)	0 (0.0%)	2	
Married	5 (41.7%)	2 (16.7%)	5 (41.7%)	12	
Single	5 (19.2%)	10 (38.5%)	11 (42.3%)	26	
Educational Level					0.7899
Bachelor	9 (26.5%)	11 (32.4%)	14 (41.2%)	34	
Diploma	1 (50.0%)	0 (0.0%)	1 (50.0%)	2	
MSc/PhD	1 (25.0%)	2 (50.0%)	1 (25.0%)	4	
Work Experience					0.6945

1–3 years	3 (20.0%)	6 (40.0%)	6 (40.0%)	15	
Less than 1 year	2 (28.6%)	1 (14.3%)	4 (57.1%)	7	
More than 3 years	6 (33.3%)	6 (33.3%)	6 (33.3%)	18	
Unit					0.4286
CCU	3 (60.0%)	1 (20.0%)	1 (20.0%)	5	
NICU	1 (7.7%)	6 (46.2%)	6 (46.2%)	13	
Neuro ICU	2 (50.0%)	1 (25.0%)	1 (25.0%)	4	
Medical ICU	3 (21.4%)	4 (28.6%)	7 (50.0%)	14	
Surgical ICU	2 (50.0%)	1 (25.0%)	1 (25.0%)	4	
Shift Length					0.0861
16 hours	7 (33.3%)	9 (42.9%)	5 (23.8%)	21	
8 hours	4 (21.1%)	4 (21.1%)	11 (57.9%)	19	

* p-values

Discussion

This study examined occupational stress among ICU nurses at Elmak Nemir University Hospital in 2025, assessing individual stress factors, overall stress levels, and their association with demographic characteristics. The findings are discussed below in light of their implications and previous literature. **Overall Occupational Stress Levels :** Findings showed that 40.0% of nurses experienced low stress, 32.5% moderate stress, and 27.5% high stress. While the majority reported low to moderate stress, over a quarter fell into the high-stress category, indicating a subgroup at increased risk of burnout and reduced job satisfaction.

These results are consistent with study done by Kwiatosz. (9), who also noted high stress among ICU nurses, and partially align with Wanamina (7), where moderate stress predominated. However, the proportion of highly stressed nurses in this study is lower than that reported by Pooja (10), where over 40% experienced severe stress—possibly due to differences in staffing levels and organizational support.

Demographic Factors and Stress Levels: No statistically significant relationship was found between stress levels and demographic characteristics such as age, gender, marital

status, education, work experience, or ICU type (all $p > 0.05$). Shift length was the only factor showing a near-significant trend ($p = 0.0861$), indicating that longer shifts may contribute to increased stress. This finding aligns with Faremi FA, who observed that stress is more strongly influenced by workload and organizational culture than by personal attributes (12). However, it differs from Callaghan *et al.* (13), where younger and less experienced nurses reported significantly higher stress, likely due to variations in workload allocation and training support. **Shift Length and Occupational Stress:** Although not statistically significant, data suggested that nurses on 16-hour shifts had higher rates of high (33.3%) and moderate stress (42.9%), compared to those on 8-hour shifts, where 57.9% reported low stress. This pattern supports done by Singh C, who identified extended shifts as a major factor in stress and fatigue among critical care nurses (14). The absence of statistical significance in this study may be due to the limited sample size, indicating that a larger study could confirm this association more clearly. **Implications for Nursing Practice:** The results highlight the importance of targeted interventions for nurses experiencing high stress, particularly those working long shifts or in high-intensity units

such as CCU and Neuro ICU. Potential strategies include implementing structured stress management programs, optimizing shift rotations, and enhancing psychological and managerial support, as recommended by Singh C,(14)

Conclusion:

Most nurses experienced low to moderate levels of occupational stress, with a smaller portion experiencing high stress. Nurses working 16-hour shifts tended to report higher stress levels, although this trend was not statistically significant. Similarly, a greater number of nurses in units as the CCU and Neuro ICU reported high stress, but the differences were not significant. Stress was influenced more by organizational and workplace factors than by individual demographic characteristics. No significant statistical links were found between stress levels and factors such as age, gender, marital status, education, work experience, or unit assignment.

Acknowledgement

The authors express their gratitude to each and every participant for kindly lending their time and expertise to this study. Their assistance has been crucial to this study's success.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

References: -

- 1- Tanure B, Carvalho Neto A, Santos CMM, Patrus R. Estresse, doença do tempo: um estudo sobre o uso do tempo pelos executivos brasileiros. Estud Pesqui Psicol [Internet]. 2014 [cited 2017 Dec 07];14(1):65-88.
2. Cheng CY, Liou SR, Tsai HM, Chang CH. Job stress and job satisfaction among new graduate nurses during the first year of employment in Taiwan Int J Nurs Pract. 2015; 21:410–8
3. Gulavani, A., & Shinde, M. (2014). Occupational Stress and Job Satisfaction among Nurses. International Journal of Science and Research (IJSR), 3(4), 733-740. www.ijsr.net.
- 4-Hamama L, Marey-Sarwan I, Hamama-Raz Y, Nakad B, Asadi A. Psychological distress and perceived job stressors among hospital nurses and physicians during the COVID-19 outbreak. Journal of Advanced Nursing. 2021 Sep 17;-

5. Chatterjee M, Roy P. A comparative study on role satisfaction among nurses in public and private sector hospitals in and around Kolkata. *Indian J Health Wellbeing* 2018;9:837-40.

6. Kumar A, Pore P, Gupta S, Wani A. Level of stress and its determinants among Intensive Care Unit staff. *Indian J Occup Environ Med Internet*. 2016; 20:129] Available from <http://www.ijoem.com/text.asp?2016/20/3/129/20313>

7-Wanamina Bostan Ali, Kim L, Siwarit Pongsakornrungsilp, Chinchanachokchai S. Factors influencing job stress: Evidence from tellers in Cambodia. *Problems and perspectives in management/Problems & perspectives in management*. 2023 Oct 20;21(4):140–9

8. Haieder Abu Ahmed Mohamed, Randa Abdalla Mohamed kheir, Occupational Stress Among Nurses Working in Intensive Care Units in Public Hospitals of Khartoum State, Sudan 2016. *American Journal of Health Research*. Vol. 4, No. 6, 2016, pp. 166-171. doi: 10.11648/j.ajhr.20160406.13.

9. Kwiatosz-Muc M, Fijałkowska-Nestorowicz A, Fijałkowska M, Aftyka A, Kowalczyk M. Stress prevalence and

stressors among anesthesiology and intensive care unit workers: A multicentre survey study. *Aus Crit Care*. 2018 31(6): 391-95

10- Pooja AA, De Clercq D, Belausteguigoitia I. Job Stressors and Organizational Citizenship Behavior: The Roles of Organizational Commitment and Social Interaction. *Human Resource Development Quarterly*. 2016 May 2;27(3):373–405.

11- Vagias WM. Likert-type scale response anchors. Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson University. 2006.(likert) available from [http://www.Likert-Type Scale Items \(clemson.edu\)](http://www.Likert-Type Scale Items (clemson.edu))

12 -Faremi FA, Olatubi MI, Adeniyi KG, Salau OR. Assessment of occupational related stress among nurses in two selected hospitals in a city southwestern Nigeria. *Int J Africa Nurs Sci*. 2019; 10: 68-73.

13- Callaghan P, Tak-Ying S and Wyatt P. Factors related to stress and coping among Chinese nurses in Hong Kong, *J Adv Nurs* 2000. 31 (6): 1518-27

14-Singh C, Cross W, Munro I, Jackson D. Occupational stress facing Nurse Academics- A mixed-methods systematic review. *J Clin Nurs*. 2020; 29(5-6): 720-35.