Stress Levels Among Nurses in The Critical Care Units, at a Level 6 Hospital in Kenya

Janet Nyambura Kamau*[1], Lucy Wankuru Meng'anyi[1], Grace Gachuiri[1] & Nickcy Mbuthia[1]

Institutional Affiliations
[1] Kenyatta University

[1*] Corresponding author Email address: janetkamau@gmail.com

Abstract

Introduction: The critical care environment is inherently stressful due to the high-acuity patients, specialized equipment, and the need for healthcare providers to possess the necessary competencies to save lives or mitigate complications. Nurses, as integral members of the healthcare team, often face significant pressure to deliver quality care to patients experiencing potentially life-threatening conditions. It is therefore paramount to establish the causes of stress and stress levels of nurses in the critical care units. The aim of this study was to establish causes of stress and stress levels among nurses in critical care units at Kenyatta National Hospital.

Methods: A quantitative cross-sectional analytical design was adopted, and, convenient sampling was used to recruit 149 nurses from May to June 2022.

Findings: The majority of nurses were females 103 (69.6%) and had undergone critical care training 130 (87.8%). Inadequate staffing during shifts (n=69, 46.6%, Mean=3.01±1.1) was the most common cause of stress and majority of nurses had moderate stress level.

Conclusion: The stress levels of nurses in the critical care units were moderate and main cause of stress was work-related. Therefore, the hospital should establish peer assistance programs in CCU like employees' stress management training curriculum, which will encourage an inclusive and diverse environment for active discussion on any concerns found in the clinical set-up.

Keywords: Stress Levels, Work-Related, Personal Factors, Critical Care Nurses

INTRODUCTION

Stress is a global problem, and the estimated percentage of nurses suffering from stress globally is 9.20% to 68.0% and the approximated cost of work-related stress is $5.4 billion each year, as Hailu et al. (2020) revealed. Many authors have reported varying magnitude of stress among nurses working in CCU and majority of the studies revealed the nurses in CCU had high to moderate stress level than any other nurses in

the hospital. (Ntuli et al., (2018), Fathi & Simamora, (2019) and Kumar et al., (2016).

A study in 27 European countries shows that 22% of nurses suffered from stress. The annual budget for work-related stress increased to 20 billion Euros in 15 European countries (Akhtar et al., 2019). A cross-sectional survey done in Belgium revealed that many ICU nurses were disproportionately affected by such higher levels of stress due to exceptionally high exposure to patient mortality especially during COVID 19. (Saravanan et al., 2023).

In East Africa, a study done in Tanzania reveals that a variety of factors that influence stress among ICU nurses were such as; working environment, workload, interpersonal relationship as well as personal characteristics (Majuta, 2016). In Rwanda, the main cause of workplace stress in the intensive care unit was "do not resuscitate order", also, 80.3% of ICU nurses usually experienced moderate to high level of stress.(Munyanziza et al., 2021)

In Kenya, a statistically significant relationship was noted between job-related factors and occupational stress among nurses at Kenyatta National Hospital, with stress attributed to organizational structure, leadership, job procedures, and the work environment (Mutua et al., 2023). Moreover, data from the health information department at KNH, collected in 2018, indicated that patients with severe head injuries occupied 60% of the CCU's bed capacity, with 40% receiving futile care. This situation has intensified stress levels among nurses in the critical care unit compared to other nurses. (T Owiti, 2018). Therefore, the Researcher did a study on stress levels, among nurses in CCUs at level 6 hospital in Kenya. This undertaking was vital, especially during era of COVID-19.

METHODS

The researcher adopted a cross-sectional analytical, quantitative study design. After receiving approval from ethical boards and permission from hospital management data collection was done over one month, from April to May 2022 whereby 149 nurses in all CCU units except NICU were recruited using convenient sampling as study respondents. The size was determined using the Fisher 1998 formula for determination of sample size. All registered nurses who had worked in CCU for more than six months in the study hospital, either CCU-trained or non-CCU-trained and consented to participate were included while those who were excluded were as follows; Nurses who had worked in

CCU for more than six months in the study hospital but are on leave or declined to participate and nurses working in NICU.

The tools used {The perceived stress scale (PSS) which was developed by Cohen & Williamson, (1988) }are valid and reliable since they are free to use, and many researchers have used them. The pretested data was analyzed using the Cronbach alpha index. The tool was deemed reliable for data collection as a correlation coefficient of more than 0.7 was obtained for the data collected.

The data collected were entered into Microsoft Excel. Data were cleaned, coded, and exported into Statistical Package for Social Sciences (SPSS) version 25.0 software, where descriptive analysis was done for causes and stress levels using frequency and proportion.

RESULTS

Common sources of stressors among nurses working in CCU (n=148)

Work-related stressors (n=148)

Work-related stressors were the main sources of stressors among nurses working in CCU, with an overall mean of 2.34±0.36. Nurses reported that they always felt stressed when there was inadequate staffing during shifts (n=69, 46.6%, Mean=3.01±1.1), frequent deaths at the unit (n=53, 35.8%, Mean=2.78±1.17) and lack or insufficient resources (n=44, 29.7%, Mean=2.69±1.11). The findings are summarized in *Table 1* .

Table 1: Work-Related Sources of Stress(n=148)

Work-related Sources of stress	Never	Rarely	Sometimes	Often	Always	Mean (SD)	Overall Mean
1. I usually feel stressed with minimal space to work comfortably, freely, and safely.	10(6.8)	29(19.6)	63(42.6)	24(16.2)	22(14.8)	2.13±1.1	
2. I usually feel stressed by excessive noise from alarms, monitor machines, and other equipment.	24(16.2)	43(29)	37(25)	30(20.3)	14(9.5)	1.78±1.22	
3. I usually feel stressed due to the lack of sufficient staff during the work shift.	2(1.3)	15(10.1)	31(21)	31(21)	69(46.6)	3.01±1.1	
4. I usually feel stressed due to poor communication, coordination, and delay between departments.	6(4)	23(15.5)	52(35.1)	35(23.7)	32(21.6)	2.43±1.11	
5. I usually feel stressed due to lack of sufficient training/knowledge by new staff or other colleagues in doing their job efficiently.	17(11.5)	36(24.3)	52(35.1)	27(18.3)	16(10.8)	1.93±1.15	**2.34±0.36**
6. I usually feel stressed due to role conflict or ethical dilemmas in the hospital.	8(5.4)	30(20.3)	51(34.5)	41(27.7)	18(12.1)	2.21±1.07	
7. I usually feel stressed due to the lack of social support from management.	7(4.7)	27(18.2)	43(29.1)	38(25.7)	33(22.3)	2.43±1.16	
8. I usually feel stressed due to the lack of resources/insufficient resources.	3(2)	12(14.9)	37(35)	42(28.4)	44(29.7)	2.69±1.11	
9. I usually feel stressed when providing futile care in CCU.	10(6.8)	29(19.6)	42(28.3)	37(25)	30(20.3)	2.32±1.19	
10. I usually feel stressed while providing care to a patient with multiple trauma or illness.	22(14.8)	31(21)	44(29.7)	22(14.8)	29(19.6)	2.03±1.32	
11. I usually feel stressed due to the frequent death in the unit.	6(4)	17(11.5)	34(23)	38(25.7)	53(35.8)	2.78±1.17	

Table 2 : Personal Sources of Stress

Personal sources of stress	Never	Rarely	Sometimes	Often	Always	Mean (SD)	Overall mean
I usually feel stressed when faced with a new device/new intervention with little knowledge	13(8.8)	38(25.7)	52(35.1)	30(20.3)	15(10.1)	1.97±1.1	
I usually feel stressed due to the lack of insufficient knowledge when dealing with an emergency.	20(13.5)	47(31.8)	43(29)	28(18.9)	10(6.8)	1.74±1.12	
I usually feel stressed due to interpersonal conflict between staff members and me.	22(14.8)	46(31.1)	50(33.8)	20(13.5)	10(6.8)	1.66±1.09	
I usually feel stressed due to insufficient time for social contact while at work due to the abiding nature of tasks.	16(10.8)	41(27.7)	45(30.4)	30(20.3)	16(10.8)	1.93±1.16	1.18±0.16
I usually feel stressed due to a conflict of loyalties between one's needs/family demands and organizational demands.	12(8.1)	35(23.7)	48(32.4)	30(20.3)	23(15.5	2.11±1.17	

Personal Sources of Stress

Personal stressors were the least sources of stress with an overall mean of 1.18±0.16. Nurses reported that they sometimes felt stressed (n=52, 35.1%, Mean=1.97±1.1) when using new devices or new performing intervention which they possessed little knowledge on and (n=50, 33.8%, Mean=1.66±1.09) sometimes felt stressed due to interpersonal conflicts with staff members. Table 2 summarizes the findings

Stress levels of the Respondents (n=148)

The perceived stress scale (PSS) which was developed by Cohen & Williamson, (1988) and has been validated and used by psychologists was used to determine the respondents 'level of stress. The scale is composed of a 10-item questionnaire with a five-point scale (0-4). Likert scales analysis requires all responses to either be in ascending or descending order. Therefore, items 4, 5, 7 and 8 were first reversed (0 -> 4, 1-> 3, 2-> 2, 1-> 3, 4-> 0) and the PSS score was obtained by summing across all the items. The higher the score, the higher the perceived stress levels. The scores are further categorized into levels (0-13 Low stress), (14-26 moderate stress) and (27-40 high stress) (Cohen & Williamson, 1988).

Table 3 :Stress levels

Stressors Levels	Never	Almost never	Sometimes	Fairly often	Very often	Overall mean (SD)
1. In the last month, how often have you been upset because of something that happened unexpectedly?	7(4.7)	9(6.1)	71(48)	45(30.4)	16(10.8)	
2. In the last month, how often have you felt that you could not control the crucial things in your life?	22(14.8)	22(14.8)	59(40)	36(24.3)	9(6.1)	
3. In the last month, how often have you felt nervous and stressed?	3(2.0)	10(6.7)	68(46)	45(30.4)	22(14.9)	
4. In the last month, how often have you felt confident about your ability to handle your problems?	2(1.4)	7(4.7)	73(49.3)	57(38.5)	6(4.1)	
5. In the last month, how often have you felt that things were going your way?	5(3.4)	7(4.7)	73(49.3)	57(38.5)	6(4.1)	**19.1±4.3**
6. In the last month, how often have you found that you could not cope with all the things you had to do?	14(9.5)	19(12.8)	69(46.6)	34(23)	12(8.1)	
7. In the last month, how often have you been able to control irritations in your life?	3(2.0)	8(5.4)	49(33.1)	64(43.2)	24(16.2)	
8. In the last month, how often have you felt that you were on top of things?	6(4.1)	18(12.2)	64(43.2)	48(32.4)	12(8.1)	
9. In the last month, how often have you been angered due to things outside your control?	6(4.1)	15(10.2)	81(54.7)	27(18.2)	19(12.8)	
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	13(8.8)	21(14.2)	74(50)	27(18.2)	13(8.8)	

The PSS scores were obtained by summing across all the items for each respondent. The highest aggregate scores were 20 and 21 among 23% of the nurses.

The overall mean score was 19.1±4.3 with a minimum score of 6 and a maximum score of 32 as shown in figure 1.
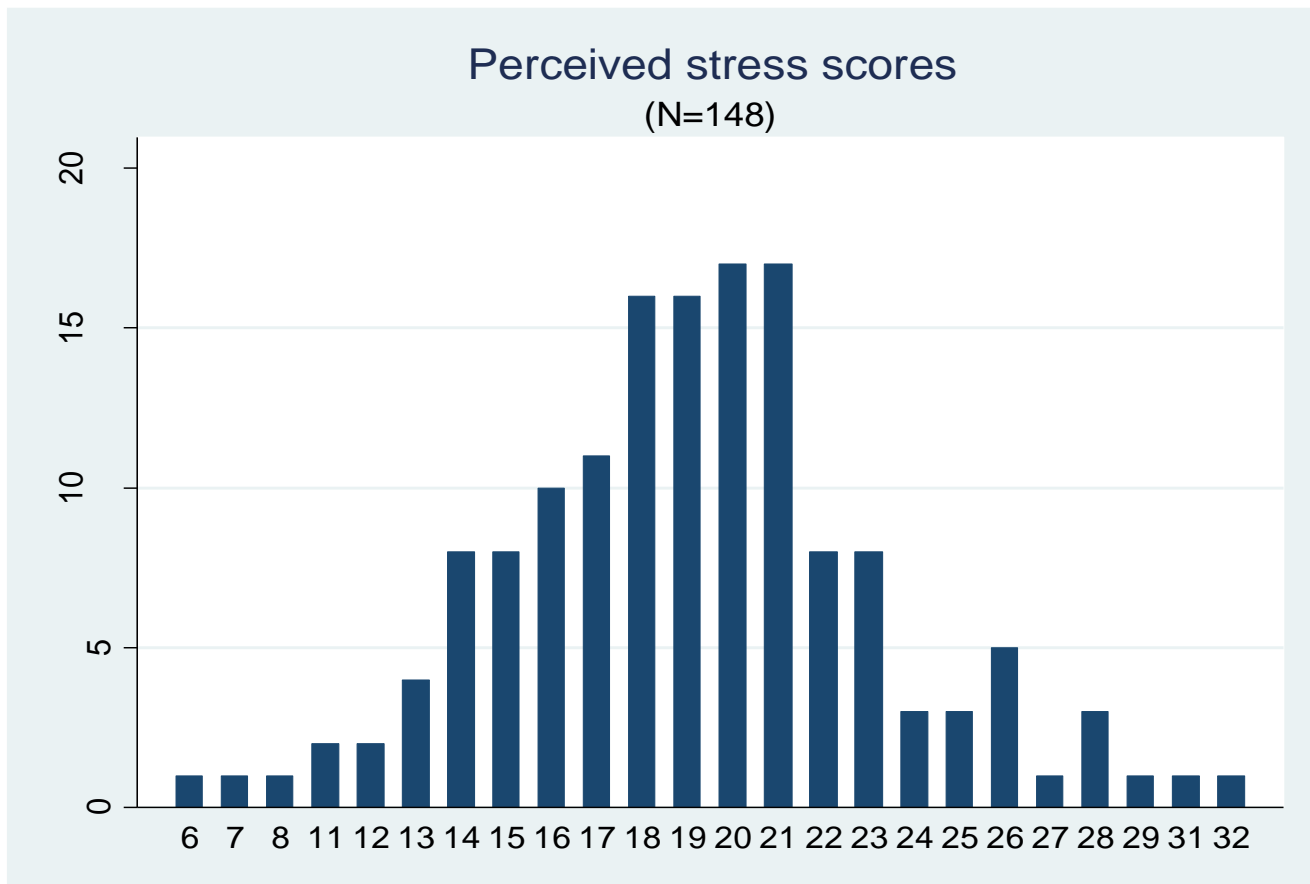
Figure 1: Perceived stress score (n=148

The aggregate scores were further categorized into levels (0-13 Low stress), (14-26 moderate stress) and (27-40 high stress) (Cohen & Williamson, 1988).

The proportion of nurses whose levels of stress were established as low-stress levels was 11 (7.4%), while 130 (87.8%) had moderate stress levels and 7 (4.8%) had high-stress levels. The figure 2 summarizes the findings.
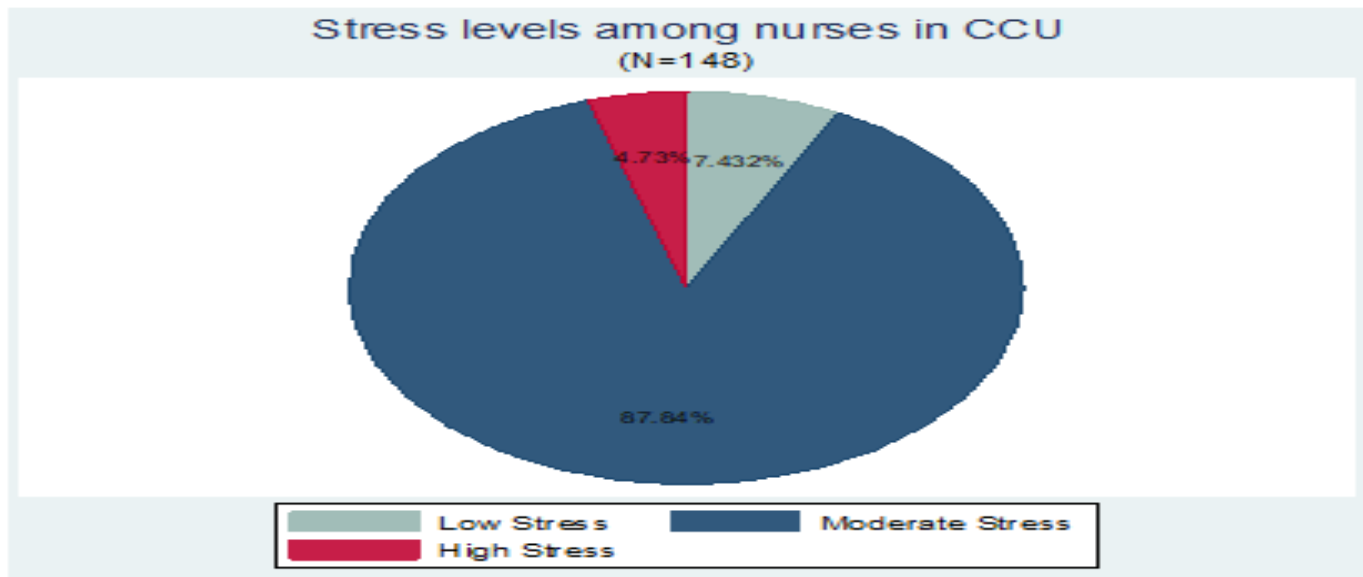
Figure 2: Stress levels among nurses in CCU(n=148)

DISCUSSION

Most nurses in the Critical Care Unit (CCU) reported experiencing stress primarily due to work-related factors, as opposed to personal-related stress, which they encounter less frequently. This observation aligns with the findings of Lim et al. (2022), indicating that work-related factors have the most significant impact on stress levels, while personal factors contribute the least. (Lim et al., 2022).

The five most reported sources of stress among nurses included insufficient staffing, frequent patient deaths within the unit, inadequate training and knowledge, limited social support from management, and ineffective communication between departments. Some of these findings are corroborated by Augustine and Akinwolere (2016), who identified lack of

support, experiences with death and dying, and low nurse-to-patient ratios as stressors for nurses working in the CCU. In contrast, a study conducted by Asadi et al. (2022) highlighted that false alarms and unusual sounds from various electronic devices and monitors are major sources of stress for ICU nurses.(Asadi et al., 2022) Regarding personal factors, challenges associated with new technologies or interventions, coupled with interpersonal conflicts among staff members, were identified as sometimes a major source of stress, although they were not deemed significant. Similarly, studies by Xie et al. (2023) and Masa'Deh et al. (2016) indicated that updates in ICU technology and equipment contribute to stress among nurses (Xie et al., (2023) and (Masa'Deh et al., 2016). The researcher found that a considerable number of nurses working in the CCU of a level 6 hospital

reported moderate levels of stress, as assessed by Cohen's Perceived Stress Scale. These results are consistent with findings from Alharbi and Alshehry (2019), which identified moderate stress levels among ICU nurses in Saudi Arabia. Conversely, a study conducted in Wad Medani City, Sudan, found that most ICU nurses reported low levels of stress (Alnaiem et al., 2022).

CONCLUSION

In conclusion work-related factors were identified as major causes of stress, among these, insufficient staff, frequent death in the unity, insufficient training, poor social support from management and poor communication between departments were identified as the most causes of stress. Also, majority (87.8%) of CCU nurses had moderate stress levels and 7.4% had low-stress levels

RECOMMENDATIONS

The hospital administration should establish peer assistance programs within the different specialties, which encourage an inclusive and diverse environment for actively discussing any concerns found in the clinical area and ways of solving them.

The health department should improve mentoring programs to provide nurses with more information that will help them achieve their personal and professional objectives. Each specialist department must establish ongoing intervention strategies that

may encourage the practical application of Problem-Focused Coping mechanisms. These programs may also be included in the employee's stress management training curriculum, allowing nurses to expand their skill sets.

Disclosure of conflict of interest

No conflict of interest

Authors' contributions

JNK contributed to the conception, design of the article, acquisition, analysis interpretation of data and drafting of the manuscript. LMW, NM and GG critically revised and scrutinized the proposal, data collected and the analysis and interpretation of the data. All authors were informed and gave the go ahead to publish the work. JNK agrees to be held accountable for all aspects of the work hence any questions related to the accuracy or integrity of the work should be directed to her. The authors declare that this manuscript has not been presented to any other journal for publication. All authors read and approved the final manuscript

REFERENCES

Alharbi, H., & Alshehry, A. (2019). Perceived stress and coping strategies among ICU nurses in government tertiary hospitals in Saudi Arabia: A cross-sectional study. *Annals*

Alnaiem, M., Mansour, A., Nemir, M., Fadlalmola, H., & Awad,

H. M. (2022). Effect of Stress level and Burnout on Quality of Care and Patients Satisfaction Among Critical Care Nurses. *International Egyptian Journal of Nursing Sciences and Research*, *0*(0), 0–0. https://doi.org/10.21608/ejnsr.2021.102393.1112

Asadi, N., Salmani, F., Asgari, N., & Salmani, M. (2022). Alarm fatigue and moral distress in ICU nurses in COVID-19 pandemic. *BMC Nursing*, *21*(1), 1–7. https://doi.org/10.1186/s12912-022-00909-y

Augustine, O., & Akinwolere, O. (2016). *ScholarWorks Psychological Stress in Critical Care Nurses*. https://scholarworks.waldenu.edu/dissertations

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In *The Social Psychology of Health* (Vol. 13, pp. 31–67). http://doi.apa.org/psycinfo/1988-98838-002

Lim, J., Kim, G., & Kim, E. (2022). *Factors Associated with Job Stress among Hospital Nurses : A Meta-Correlation Analysis*.

Majuta, S. (2016). Factors Associated with Stress and Stressors among Nurses working in Critical Care Units at Muhimbili National Hospital in Dares Salaam, Tanzania, East Africa. *Texila International Journal of Nursing*, *2*(1), 1–17. https://doi.org/10.21522/tijnr.2015.02.01.art021

Masa'Deh, R., Alhalaiqa, F., AbuRuz, M. E., Al-Dweik, G., & Al-Akash, H. Y. (2016). Perceived Stress in Nurses: A Comparative Study. *Global Journal of Health Science*, *9*(6), 195. https://doi.org/10.5539/gjhs.v9n6p195

Munyanziza, T., Bhengu, B., Umutoni Cishahayo, E., & Uwase, A. (2021). Workplace Stressors and Coping Strategies of Intensive Care Unit Nurses at University Teaching Hospitals, in Rwanda. *Rwanda Journal of Medicine and Health Sciences*, *4*(1), 53–71. https://doi.org/10.4314/rjmhs.v4i1.5

Mutua, D., Singh, P. P., & Njoroge, G. (2023). Occupational Stress Among Nurses Working in the Operating Theatres At Kenyatta National Hospital 1*. © *International Research Journal Publishers*, *5*(1), 1–20. www.irjp.org

Saravanan, P., Nisar, T., Zhang, Q., Masud, F., & Sasangohar, F. (2023). Occupational stress and burnout among intensive care unit nurses during the pandemic: A prospective longitudinal study of nurses in COVID and non-COVID units. *Frontiers in Psychiatry*, *14*(March), 1–9. https://doi.org/10.3389/fpsyt.2023.1129268

Teresa, O. (2018). *NURSES EXPERIENCES AND PERCEPTIONS OF PROVIDING FUTILE CARE TO PATIENTS IN THE CRITICAL CARE UNIT AT KENYATTA NATIONAL HOSPITAL*.

Xie, T., He, W., Jiu, Z., Li, Q., Huang, C., Liu, J., Sun, Z., & Zhang, H. (2023). Overwork Among ICU Nurses: Identification of Risk Factors. *The Journal of Nursing Administration*, *53*(5), 271–276. https://doi.org/10.1097/NNA.0000000000001282