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COMPARING OCCUPATIONAL STRESS IN NURSES OF INTENSIVE AND NON-INTENSIVE CARE UNITS OF HOSPITALS OF ABBOTTABAD CITY OF PAKISTAN

POREĐENJE PROFESIONALNOG STRESA KOD MEDICINSKIH SESTARA U JEDINICAMA INTENZIVNE I NEINTENZIVNE NEGE U BOLNICAMA GRADA ABOTABADA, PAKISTAN

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Summary:
Introduction: In both critical and non-critical care units, occupational stress is a common clinical condition that affects nurses' quality of life and patient care. Aim: The purpose of this comparative cross-sectional study was to determine the degree of occupational stress and work-related stressors among ICU and non-ICU nurses working at Abbottabad hospitals. Methods: A sample of 150 ICU and 150 non-ICU nurses was recruited though a convenient sampling technique. Standardized questionnaire consisting of demographic information and the Expanded Nursing Stress Scale (ENSS) was administered to collect data from the study population. The level of stress and statistics for each stress factor were calculated using SPSS and MS Excel software. Results: Out of a total of 300 nurses, a severe level of occupational stress on ENSS was reported by 100%(150) ICU nurses and 68.7%(103) Non-ICU nurses. The average score on ENSS for ICU nurses was calculated as 89.92±9.23 and for non-ICU nurses as 77.84±14.82. "Having to do non-nursing tasks" was the most reported stress factor by ICU and non-ICU nurses, with averages of 3.55±0.86 and 3.39±1.38 Non-parametric test value of 0.000 < p value =.05 showed that a significant difference prevailed between the levels of stress in both ICU and non-ICU nurses' groups [(Mean rank ICU)=185.3 > (Mean Rank non-ICU)=115.67]. Conclusion: Occupational stress was highly prevalent in nurses and affected ICU nurses more than non-ICU nurses, as all ICU nurses and the majority of non-ICU nurses were experiencing a severe level of occupational stress.
Keywords: Occupational Stress, Nurses, Intensive Care Unit (ICU), Non-Intensive Care Unit (Non-ICU)

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INTRODUCTION

Occupational stress is a psychological and physiological response to the demands and stresses of one's employment. Work-related stress or job stress is defined as negative emotional and physical reactions brought on by an imbalance between an employee's resources and the demands of their job [1, 2].

"ICU" is a medical term specified for Intensive Care Unit which is specialized medical facility within a hospital where critically ill patients receive intensive medical care and monitoring [3]. The term "non-ICU" refers to medical care or hospitalization that does not take place in an intensive care unit [4].

There are 27 million nurses in the world, making them the largest group in the healthcare industry. Because of their insights and interactions with other professional groups, nurses are essential to the evaluation and integration of treatment. In clinical settings, nurses play a crucial role in holistic patient care [5].

Occupational stress can result from various factors. High workload, rigorous nature work, lengthy shifts, staffing shortages, traumatic events, feeling of having little control over the environment, non-supportive organizational culture or conflicts with coworkers and toxic workplace culture can cause stress [6].

The research conducted by Haruna J et al in 2022 found that a significant proportion of ICU nursing staff (49%) had severe stress-related symptoms [7]. A survey was conducted by Kaushik, et al in 2021. It showed that stress affected 50.8% of nurses. Conflicts with managers and a lack of job satisfaction were the main concerns of stressed nurses. Stressors at work differed depending on the area: contracting infectious diseases; ICUs; low pay; non-ICUs; smells and noises in the workplace; and confrontations with patients [8].

This research focuses on the degree of occupational stress and identifying work-related stressors among nurses working in critical and non-critical care units in Abbottabad hospitals. Comparing these two groups, we aim to test the hypothesis that ICU nurses experience higher levels of occupational stress than the non-ICU nurses. Recognizing the occupational stress and its risk factors is crucial for understanding the challenges the nursing staff faces and for developing effective strategies to improve their well-being. By addressing stress in this population, healthcare organizations can better support their staff, ultimately leading to burnout prevention and better patient care outcomes.

METHODOLOGY

Ethical Approval: Study was started after seeking approval from Research Ethical Review Board of Jinnah College of Nursing, Abbottabad. Participants were asked to sign official consent form for the sake of data collection. Participants who agreed to provide data were included in the study. The confidentiality of the data was ensured. While reporting about human responses that the process was carried out in compliance with the Declaration of Helsinki and the Guidelines for Clinical 1975 research, updated in 1983.

Study Design: This was comparative cross-sectional study which followed observational and analytical approach.

Sample Selection: Study was carried out on three tertiary care hospitals of Abbottabad from June 2023 to October 2023. Data was collected from ICU and non-ICU nurses of Ayub Teaching Hospital, Jinnah International Hospital and District Headquarters Hospital Abbottabad. Convenient sampling technique was used to recruit the sample. Inclusion criteria for participants were (i) practicing nurses, (ii) at least 6 months' work experience, (iii) nurses working in ICU and non-ICU settings, (iv) male and female nurses. Nurses labelled with stress/anxiety or depression before placement in work settings, nurses working in OPDs and private clinics were excluded.

A sample size of 300 (150 ICU and 150 non-ICU nurses) was calculated using statistical formula of double proportions developed for comparative cross-sectional studies where:

$n = \frac{(p_1q_1+p_2q_2)(z\alpha+z_\beta)^2}{(p_1-p_2)^2}$ (9).

- Proportion 1 (p_1) = 0.60 (prevalence of stress in ICU = 60%) [10].
- Proportion 2 (p_2) = 0.50 (prevalence of stress in non-ICU = 47.8%) [11].
- $q_1 = (1-p_1)$,
- $q_2 = (1-p_2)$,
- z_α = Z-score for the desired confidence level=1.96 for 95% confidence interval [12].
- z_β =Z-score for the desired power level= 0.8 for 80% power [12].
- Desired sample size per group = n= 189 nurses.

- Total = 378 nurses

Due to participant unwillingness and non-responsiveness, a sample size of 150 was acquired for each group, with a total sample size of 300 for both groups.

Subjects were administered a standardized questionnaire which comprised of demographic questions and 57-item Expanded Nursing Stress Scale (ENSS) developed by French et al having validity alpha coefficient of 0.74-0.88 [9]. Participants tended to skip many of the other items due to general non-response. Many nurses did not complete all items, likely due to workload pressures and time constraints. Analysis was done on a 30-item subset to which all participants responded to maintain statistical comparability between ICU and non-ICU nurses.

Hypotheses:

Null Hypothesis: There is no difference in level of stress in ICU and non-ICU nurses.

Alternate Hypothesis: ICU nurses experience more occupational stress than non-ICU nurses.

Data Analysis: Mean values were determined for continuous variables (age and ENSS) and frequencies were calculated to find the prevalence of level of stress and for demographic variables using SPSS version 28.0. Mann-Whitney U statistical test was used for group comparison of level of occupational stress as non-normal distribution was displayed by test of normality. Results were expressed as Microsoft Excel 2010 charts and tables.

RESULTS

Mean age of ICU Nurses was slightly higher than that of non-ICU nurses (Table 1).

		ICU Nurses	Non-ICU Nurses
N	Valid	150	150
	Missing	0	0
Mean (years)		34.6800	30.5933
Median (years)		35.0000	29.0000
Mode (years)		35.00	30.00
Std. Deviation		4.19223	6.79034

Table 1. Age Statistics

Female nurses predominated in both groups.

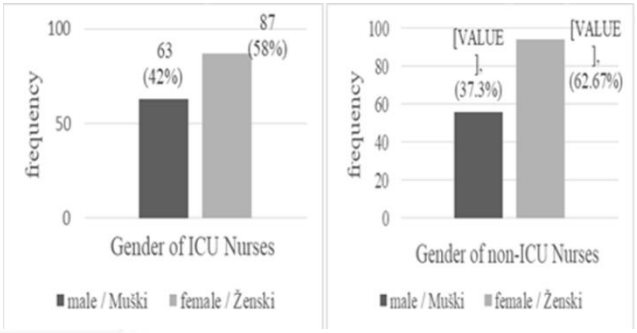


Chart 1. Gender of nurses

Most ICU nurses were posted in NICU while non-ICU nurses were concentrated in medical wards (Table 2.).

Department of ICU nurses	Frequency	Percent
CCU	40	26.7
NICU	79	52.7
ICU	21	14.0
PICU	10	6.7
Total	150	100.0
Department of non-ICU nurses	Frequency	Percent
Surgical	14	9.33
Gynecological	40	26.67
Medical	73	48.67
Emergency	17	11.33
Pediatrics	6	4
Total	150	100.0

Table 2. Department of nurses

CCU: Cardiac Care unit; NICU: Neurological intensive care unit ; ICU: Intensive care unit; PICU: Pediatric intensive care unit

Most ICU nurses were registered nursing officers, while most non-ICU nurses were working as staff nurses.

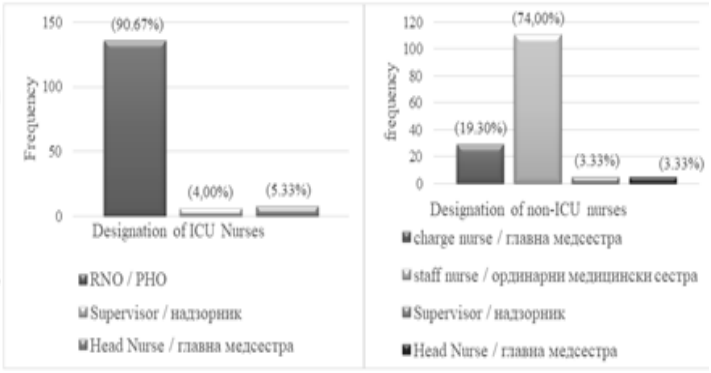


Chart 2. Designation of nurses

RNO: Registered nursing officer

Most ICU nurses had an average of 6 nightshifts per month, while nearly half of non-ICU nurses reported 7 nightshifts (Chart 3.).

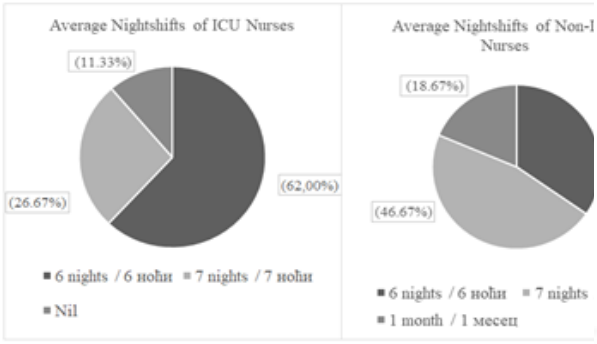


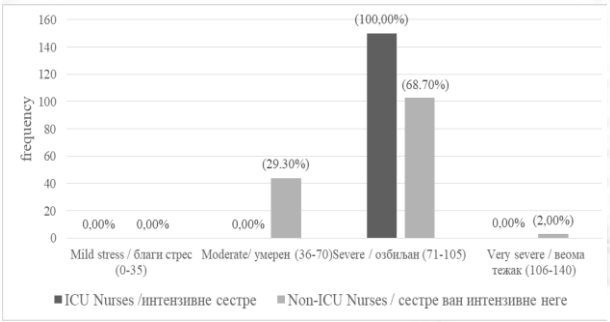
Chart 3. Average night shifts per month

ENSS score was generally higher among ICU nurses compared to non-ICU nurses (Table 3.).

ENSS Score		ICU Nurses	non-ICU Nurses
N	Valid	150	150
	Missing	0	0
Mean		89.9200	77.84
Median		89.0000	76.0000
Mode		102.00	76.00
Std. Deviation		9.23774	14.82881

Table 3. Average scores on enss
ENSS: Expanded Nursing Stress Scale

All ICU nurses reported severe stress as compared to non-ICU nurses who showed a mix of severe, moderate, and very severe stress (Chapter 4.).



Chapter 4. Comparison of level of stress

ICU nurses' top stressors were "having to do non-nursing tasks", "criticism from other personnel," and “patients making excessive demands”. However, non-ICU nurses frequently cited "having to do non-nursing tasks", "not knowing what to be told the patients' families about patients' condition or treatment" as the main sources of their occupational stress (Table 4).

ENSS scores were non-normally distributed; therefore, a Mann-Whitney U test was applied. ICU nurses had significantly higher stress ranks ($p < 0.001$), confirming greater occupational stress compared to non-ICU nurses (Table 5. and Table 6.).

DISCUSSION

In this study, the most prominent stressors among ICU nurses were having to do non-nursing tasks, criticism from other personnel, and excessive patient demands. These findings align with previous research highlighting workload pressures. Nurses' workplace performance is significantly impacted by working long hours (0.001), work pressure (0.001), and job stress (0.000) [13]. Stress-related risk factors include inadequate staff and equipment, sleep deprivation, the workplace environment, the number of years in nursing service, and poor work adaptation [14]. Nurses frequently experienced stress (mean score = 2.68) and most common sources of stress on ENSS were peer problems (2.92) and workload (2.77) [15]. Moderate stress is prevalent in 77.8% nurses. The statistically significant stresses among nurses include working with incompetent personnel (t=-1.3129, p = 0.037), dealing with challenging patients (t=-1.1196, p = 0.037), and unfriendly interactions with superiors, coworkers, and subordinates (t=-2.3333, p = 0.020) [16].

Groups	N	Mean Rank	Sum of Ranks
ENSS score of ICU Nurses	150	185.33	27799.00
ENSS score of non-ICU Nurses	150	115.67	17351.00
Total	300		

Table 5. Mann-whitney-u test- Ranks

	Score on ENSS
Mann-Whitney U	6026.000
Wilcoxon W	17351.000
Z	-6.962
Asymp. Sig. (2-tailed)	0.000

Table 6. Mann-whitney-u test- Test statistics

However, role ambiguity (uncertainty in communication with patients’ families) and administrative burden (having to do non-nursing tasks) are stronger stressors among non-ICU nurses in our study in contrast to earlier studies. With mean scores of 3.18 and 2.19, respectively, the Expanded Nurse Stress

Scale (ENSS) identified death and dying and treatment uncertainty as work-related stressors among nurses. In private hospitals, work-related stress was determined by working in surgical wards (8.6%) and job dissatisfaction (25.8%), whereas in public hospitals, work-related stress was determined by working in emergency rooms and intensive care units (14.4% and 11.8%) with overall level of work-related stress among nurses as 48.4% [17]. All staff nurses working in critical care units experience stress, with 71% of them reporting severe stress. Critical care unit employees are subjected to high workloads, a shortage of nurses, and inadequate pay [18].

The causes of occupational stress in nurses include the excessively stressful duties (63.3%), the unfriendliness of senior nurses (64.4%), and aggression from patients and family (54%) [19]. 60.6% of nurses reported moderate stress due to increases in patient number or heavier workload than usual [20].

	Stress Factor	Average Score with Standard Deviation for ICU Nurses	Average Score with Standard Deviation for Non-ICU Nurses
1	"Performing procedures that patients experience as painful"	2.38±0.683	1.88±1.07
2	"Conflict with physician"	2.913±0.784	2.22±1.09
3	"Conflict with nursing administration"	3.2427±0.729	2.44±1.07
4	"Lack of opportunity to discuss problems with other personnel"	3.0609±0.891	2.18±0.99
5	"Unpredictable staffing and scheduling"	3.000±0.835	2.65±1.11
6	"Being blamed for anything that goes wrong"	3.000±0.759	2.80±1.12
7	"Death of patient"	3.12±0.779	2.50±1.21
8	"Lack of support from other personnel"	2.898±1.0109	2.69±1.08
9	"Have to deal with violent patients"	2.9±0.900	2.41±1.23
10	"Being exposed to health and safety hazards"	3.06±0.884	2.52±1.03
11	"Not enough staff to adequately cover the unit"	2.89±0.883	2.53±1.19
12	"Having to deal with abusive patients"	2.75±0.94	2.9±1.09
13	"Not enough time to respond to patients' families demands"	2.72±0.956	2.52±1.32
14	"Watching patients suffer"	3.31±0.752	2.76±1.14
15	"Having to work through breaks"	2.746±0.949	2.49±1.39
16	"Having to make decisions under pressure"	2.74±0.922	2.89±1.05
17	"Experiencing discrimination"	2.88±0.810	2.25±1.11
18	"Patients making excessive demands"	3.46±0.854	3.14±1.06
19	"Not enough time to complete all tasks"	2.86±0.811	1.89±0.99
20	"Talking to patient who is approaching death"	3.29±0.764	2.63±0.846
21	"Making decision for patient when physician is unavailable"	2.94±0.761	2.51±1.18
22	"Uncertainty regarding the operation or equipment"	2.67±0.958	2.44±1.14
23	"Feeling inadequately trained or inexperienced"	2.95±0.832	2.58±1.39
24	"Fear of making mistake in treating patient"	3.1±0.88	2.66±1.109
25	"Difficulty in working in the immediate work setting"	3.05±0.766	2.36±1.43
26	"Difficulty in working outside immediate work setting"	3.12±0.858	2.88±1.35
27	"Criticism from other personnel"	3.48±0.662	2.80±1.18
28	"Not knowing what to be told the patients' families about patients' condition or treatment"	3.14±0.802	3.33±1.33
29	"Not knowing whether patients' families will report for inadequate care"	2.813±0.846	3.28±1.36
30	"Having to do non-nursing tasks"	3.55±0.863	3.39±1.38

Table 4. Averages of work-related stressors on enss

There was a substantial negative correlation (P<0.001) between nurses' workability and occupational stress [21]. Most female nurses working in the public hospital's inpatient rooms experience mild (42.1%) and severe stress (57.9%). Female nurses' workplace stress was significantly impacted by individual characteristics (p = 0.000), employment factors (p = 0.003), and factors outside of work (p = 0.001) [22].
The emergence of occupational stress in nurses is significantly influenced by job-related factors.

CONCLUSION

Since all ICU nurses and majority of non-ICU nurses had severe levels of occupational stress, indicating that occupational stress was more common among nurses and that it affected ICU nurses more than non-ICU nurses.
Recognizing work-related stressors and their contribution to stress-related problems in a healthcare unit is an important step in the development of focused solutions. Specific interventions that involve measures to lessen the workload and facilitate the working environment can help reduce the pressures that nurses face. By addressing occupational stress early, healthcare organizations can contribute to burnout prevention, workforce retention, and high-quality patient care. To compare the stress levels of nurses and other medical workers, more research can be done. The findings of this study reflect the stressors most consistently reported across the sample but do not include other aspects of occupational stress to which the participants did not respond. Future studies should consider strategies to improve questionnaire completion, such as shorter validated tools or electronic administration to determine the full range of stress experiences. Future studies can also investigate the effects of other elements including pay, family environment, personality type or personal characteristics and promotion criteria.

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POREĐENJE PROFESIONALNOG STRESA KOD MEDICINSKIH SESTARA U JEDINICAMA INTENZIVNE I NEINTENZIVNE NEGE U BOLNICAMA GRADA ABOTABADA, PAKISTAN

Sažetak:
Uvod: U jedinicama intenzivne i neintenzivne nege, profesionalni stres predstavlja čestu kliničku pojavu koja utiče na kvalitet života medicinskih sestara i kvalitet pružene zdravstvene zaštite. Cilj ove komparativne presečne studije bio je da se utvrdi stepen profesionalnog stresa i radno-uslovljenih stresora kod medicinskih sestara zaposlenih u jedinicama intenzivne i neintenzivne nege u bolnicama u Abotabadu. Metode: Uzorak je obuhvatio 150 medicinskih sestara iz jedinica intenzivne nege i 150 iz jedinica neintenzivne nege, odabranih metodom prigodnog uzorkovanja. Za prikupljanje podataka korišćen je standardizovani upitnik koji je obuhvatao demografske podatke i proširenu skalu stresa kod medicinskih sestara (Expanded Nursing Stress Scale – ENSS). Nivo stresa i statistički parametri za svaki faktor stresa izračunati su primenom softverskih paketa SPSS i MS Excel. Rezultati: Od ukupno 300 medicinskih sestara, težak nivo profesionalnog stresa prema ENSS zabeležen je kod 100% (150) sestara iz jedinica intenzivne nege i 68,7% (103) iz jedinica neintenzivne nege. Prosečan skor na ENSS kod sestara iz jedinica intenzivne nege iznosio je 89,92±9,23, dok je kod sestara iz jedinica neintenzivne nege iznosio 77,84±14,82. Najčešće prijavljeni stresor kod obe grupe bio je „obavljanje zadataka koji ne spadaju u sestrinsku delatnost“, sa prosečnim vrednostima 3,55±0,86 i 3,39±1,38. Vrednost neparametrijskog testa od 0,000 < p = 0,05 ukazuje na postojanje statistički značajne razlike u nivou stresa između grupa [(srednji rang ICU)=185,3 > (srednji rang non-ICU)=115,67]. Zaključak: Profesionalni stres je bio visoko zastupljen kod medicinskih sestara i izraženiji kod sestara zaposlenih u jedinicama intenzivne nege, s obzirom na to da su sve sestre iz intenzivne i većina sestara iz neintenzivne nege imale težak nivo profesionalnog stresa.
Ključne reči: profesionalni stres, medicinske sestre, jedinica intenzivne nege (ICU), jedinica neintenzivne nege (non-ICU)