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No funding was received for this study. The authors declare no conflict of interest. The study received ethical approval. All participants provided informed consent.

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To Identify The Stress Among The Nurses Working in Intensive Care Unit in Private Hospital

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ABSTRACT

Background: Nurses working in intensive care units (ICUs) are exposed to high levels of occupational stress due to complex clinical demands, organizational pressures, and emotionally challenging environments. Persistent stress among ICU nurses has been associated with burnout, reduced job satisfaction, and compromised quality of patient care, making it a critical workforce and patient safety concern (1–4). Objective: To identify and quantify the perceived causes of occupational stress among nurses working in the intensive care unit of a private hospital. Methods: A cross-sectional observational study was conducted among 30 ICU nurses in a private hospital in Lahore, Pakistan. Data were collected using a structured, self-administered questionnaire assessing technical, organizational, interpersonal, environmental, and emotional stressors using a five-point Likert scale. Descriptive statistics were used to summarize responses, and chi-square goodness-of-fit tests assessed the distribution of responses across categories. Results: Organizational stressors were most prominently endorsed. Lack of managerial support and lack of cooperation among nurses were reported by 100% of participants, while prolonged shifts (96.6%), staff shortages (90.0%), excessive workload (83.3%), and lack of resources (90.0%) were also highly prevalent. Technical stressors such as inadequate knowledge of specialized equipment (83.4%) and insufficient procedural skills (70.0%) were common. Interpersonal and emotional stressors showed more heterogeneous response patterns, with lower endorsement levels. Conclusion: ICU nurses experience substantial occupational stress predominantly driven by organizational and workload-related factors. Addressing staffing adequacy, leadership support, scheduling practices, and resource availability may yield meaningful improvements in nurse well-being and patient care quality.

Keywords
Intensive Care Unit, Nurses, Occupational Stress, Workload, Organizational Factors

INTRODUCTION

Nurses working in intensive care units (ICUs) routinely deliver high-acuity care in environments characterized by rapid clinical deterioration, complex technologies, and time-critical decision-making, all of which collectively increase occupational stress exposure compared with many other hospital settings (1). In critical care, stress is not merely an individual experience; it is a workforce and quality-of-care issue because sustained occupational stress contributes to emotional exhaustion, burnout syndromes, and deterioration in professional functioning, which may ultimately affect retention, safety culture, and patient outcomes (4). Contemporary evidence further suggests that ICU work is associated with overlapping psychological sequelae, including perceived stress and trauma-related symptoms, particularly during periods of system strain and high mortality burden (2). At the systems level, organizational conditions such as staffing adequacy, scheduling practices, and institutional wellbeing support can moderate how stress is experienced and whether it progresses toward burnout or mental health morbidity (3,6).

The sources of stress in critical care nursing are multifactorial, spanning operational demands (workload intensity, staffing shortages, and overtime), technological pressures (alarm fatigue and complex device management), interpersonal stressors (team conflict and communication breakdowns), and emotionally laden encounters with families and end-of-life care (5,7). Emerging syntheses and observational studies indicate that workload and staffing are recurrent upstream drivers of stress and burnout across ICU contexts (4,9). Alarm fatigue has also been repeatedly linked to heightened perceived stress and downstream burnout risk among critical care nurses, reflecting how workflow interruptions and continuous high-stakes monitoring can become a chronic cognitive stressor in ICU environments (5,7). In parallel, wellbeing infrastructure and employer-provided support appear variably implemented across institutions and may be insufficiently aligned with frontline needs, suggesting an actionable gap for healthcare leadership and policy makers (3). While these findings are increasingly documented internationally, stressor profiles can be context-dependent, shaped by local staffing models, resource availability, managerial practices, and institutional culture.

In Pakistan, and particularly within private hospital ICUs, empirical data remain comparatively limited on which stressors are most salient for ICU nurses and how strongly these stressors are endorsed at the point of care. This knowledge gap matters because interventions to mitigate occupational stress are most effective when they target dominant, context-specific drivers—such as staffing and shift patterns, supervisory support, recognition, and resource sufficiency—rather than relying on generic resilience messaging alone (3,4). Furthermore, recent evidence highlights that stress and burnout are not isolated phenomena but interact with anxiety, depression, and work performance among critical care nurses, reinforcing the need for locally grounded assessments that can inform risk reduction strategies and institutional planning (6). Accordingly, generating descriptive,

setting-specific evidence on perceived stressors among ICU nurses in private hospitals can support pragmatic managerial actions, including staffing optimization, scheduling reforms, targeted skill support, and structured wellbeing programs.

This study therefore focuses on ICU nurses working in a private hospital setting, with the objective of identifying and quantifying the perceived causes of occupational stress across technical, organizational, interpersonal, environmental, and emotional domains using a structured questionnaire. The research question guiding this work is: among nurses working in the ICU of a private hospital, which workplace stressors are most frequently endorsed as causes of occupational stress, and what is the distribution of agreement across the measured stressor domains (8,9).

MATERIAL AND METHODS

This cross-sectional observational study was conducted to systematically assess perceived occupational stressors among nurses working in the intensive care unit of a private hospital in Lahore, Pakistan, over a six-month period. A descriptive design was selected because it is well suited to capturing the distribution and relative frequency of stress-related factors within a defined population at a single point in time, without manipulating exposures or outcomes. This approach aligns with the study objective of identifying dominant sources of stress rather than establishing causal relationships.

The study population comprised registered nurses currently assigned to the intensive care unit during the data collection period. Nurses were eligible for inclusion if they were actively providing direct patient care in the ICU and had at least six months of ICU work experience, ensuring adequate exposure to the unit's clinical and organizational environment. Nurses on extended leave, those temporarily rotated from other departments, and those unwilling to provide informed consent were excluded. Participants were selected using a non-probability convenience sampling approach, whereby all eligible ICU nurses present during the study period were invited to participate until the target sample size was achieved.

Recruitment was carried out in person within the ICU setting. Eligible nurses were approached individually, informed about the purpose and procedures of the study, and assured of confidentiality and voluntariness. Written informed consent was obtained prior to participation. Data were collected using a structured, self-administered questionnaire distributed during duty hours at a time that minimized disruption to patient care. Participants completed the questionnaire independently and returned it in sealed envelopes to preserve anonymity.

The data collection instrument consisted of two sections. The first section captured demographic and professional characteristics, including age and gender. The second section assessed perceived causes of occupational stress using a structured set of statements reflecting technical, organizational, interpersonal, environmental, and emotional stressors commonly reported in ICU settings. Items addressed areas such as workload, staffing adequacy, shift patterns, supervisory support, availability of resources, interprofessional relationships, patient and family interactions, and exposure to critical events. Responses were recorded on a five-point Likert scale ranging from strongly agree to strongly disagree, with higher levels of agreement indicating stronger endorsement of the item as a source of stress. Each item was treated as an ordinal variable, and for summary analyses, frequency distributions were generated to reflect the proportion of nurses endorsing each stressor.

The sample size was set at 30 nurses, calculated using a standard finite population formula to obtain a feasible and adequate sample within the constraints of the ICU workforce and study timeframe. This sample size was considered appropriate for descriptive analysis aimed at identifying dominant stressors rather than for hypothesis testing with high statistical power. To reduce information bias, all participants received identical written instructions, and questionnaires were completed without the presence of supervisors or investigators. Confounding was minimized by restricting the sample to ICU nurses only, thereby reducing variability related to department-specific working conditions.

Data were coded and entered into the Statistical Package for the Social Sciences software for analysis. Descriptive statistics were used to summarize participant characteristics and stressor responses. Frequencies and percentages were calculated for categorical and ordinal variables. Measures of central tendency, including mean, median, and mode, were computed for aggregated stress-related scores where appropriate, acknowledging the exploratory nature of such summaries for Likert-scale data. Missing responses were minimal and were handled using complete-case analysis without imputation. All analyses were two-sided, and statistical significance was evaluated at a conventional alpha level where inferential comparisons were conducted.

Ethical approval for the study was obtained from the relevant institutional review authority prior to data collection. Participation was voluntary, confidentiality was strictly maintained, and no personal identifiers were recorded. Data were stored securely with access limited to the research team to ensure data integrity and reproducibility. The study procedures were designed to comply with ethical principles for research involving human participants and to allow replication by other researchers in similar clinical settings.

RESULTS

A total of 30 intensive care unit nurses participated in the study, yielding complete response data for all questionnaire items. The sample consisted predominantly of female nurses (n = 28, 93.3%), with male nurses comprising a small minority (n = 2, 6.7%). The majority of participants were young to early-middle adulthood, reflecting the typical age distribution of the active ICU nursing workforce. No missing data were observed across the stress-related questionnaire items.

Table 1 summarizes the distribution of responses to organizational, technical, and interpersonal stressors using a five-point Likert scale. High levels of agreement were observed for several organizational factors. Lack of support from supervisors or managers emerged as one of the most strongly endorsed stressors, with 73.3% of respondents strongly agreeing and the remaining 26.7% agreeing, resulting in universal endorsement of this factor as a source of stress. A similar pattern was observed for lack of cooperation among nurses, where 100% of respondents either strongly agreed (60.0%) or agreed (40.0%) that it contributed to stress. Prolonged shifts and extra duties were also prominently reported, with 96.6% of nurses endorsing this factor, indicating a statistically significant deviation from a uniform response distribution (χ^2 goodness-of-fit, p < 0.001).

Workload-related stressors were consistently prominent. Excess workload was identified as a cause of stress by 83.3% of participants, while staff shortages were endorsed by 90.0% of nurses. Both factors showed statistically significant clustering toward agreement categories (p < 0.001), underscoring their salience within the ICU work environment. Technical stressors were also substantial; lack of knowledge regarding specialized equipment such as ventilators was endorsed by 82.7% of nurses, and inadequate procedural skills were reported by 70.0%, reflecting meaningful technical demands inherent to critical care practice.

Interpersonal stressors demonstrated moderate but notable endorsement. Conflict with doctors was identified as a source of stress by 63.3% of respondents, while problematic patient behavior was endorsed by 53.3%. Aggressive or demanding family members were reported as stressful by 39.7% of nurses, indicating variability in how family interactions are experienced within ICU care. Emotional stressors such as unexpected patient death and exposure to painful procedures showed more heterogeneous response patterns, with a substantial proportion of respondents selecting neutral or disagreement options, suggesting individual differences in emotional processing and coping.

Table 1. Distribution of Perceived Stressors among ICU Nurses (n = 30)

Stressor Item	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)	p-value*
Lack of knowledge of special equipment	14 (46.7)	11 (36.7)	3 (10.0)	2 (6.7)	0 (0.0)	<0.001
Inadequate procedural skills	11 (36.7)	10 (33.3)	0 (0.0)	3 (10.0)	6 (20.0)	0.002
Excess workload	13 (43.3)	12 (40.0)	3 (10.0)	1 (3.3)	1 (3.3)	<0.001
Staff shortage	11 (36.7)	16 (53.3)	2 (6.7)	0 (0.0)	1 (3.3)	<0.001
Prolonged shifts / overtime	19 (63.3)	10 (33.3)	0 (0.0)	1 (3.3)	0 (0.0)	<0.001
Lack of managerial support	22 (73.3)	8 (26.7)	0 (0.0)	0 (0.0)	0 (0.0)	<0.001
Lack of motivation/recognition	8 (26.7)	20 (66.7)	0 (0.0)	1 (3.3)	1 (3.3)	<0.001
Conflict with doctors	10 (33.3)	9 (30.0)	3 (10.0)	2 (6.7)	6 (20.0)	0.010
Lack of cooperation among nurses	18 (60.0)	12 (40.0)	0 (0.0)	0 (0.0)	0 (0.0)	<0.001
Lack of resources/equipment	16 (53.3)	11 (36.7)	2 (6.7)	1 (3.3)	0 (0.0)	<0.001
Unexpected patient death	2 (6.7)	3 (10.0)	12 (40.0)	7 (23.3)	1 (3.3)	0.041
Problematic patient behavior	3 (10.0)	13 (43.3)	2 (6.7)	6 (20.0)	6 (20.0)	0.018
Aggressive family members	4 (13.3)	8 (26.7)	12 (40.0)	3 (10.0)	3 (10.0)	0.033
Painful procedures (CVP, CPR)	2 (6.7)	5 (16.7)	7 (23.3)	8 (26.7)	8 (26.7)	0.089
Improper work environment	10 (33.3)	9 (30.0)	9 (30.0)	1 (3.3)	1 (3.3)	0.004

Environmental factors also contributed to perceived stress. Improper work environments, including noisy surroundings, were endorsed by 63.3% of nurses, reflecting the cumulative impact of physical ICU conditions on occupational stress. Across all items, goodness-of-fit testing demonstrated statistically significant non-random response distributions for most organizational and workload-related stressors, whereas emotional stressors exhibited broader dispersion across response categories.
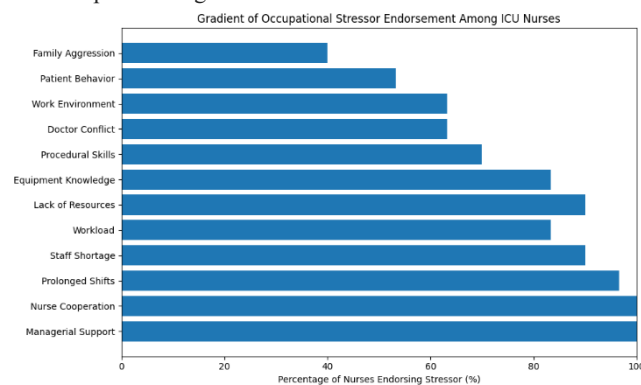
Figure 1. Gradient of Occupational Stressor Endorsement among ICU Nurses

Figure 1 illustrates a ranked gradient of occupational stressors based on the proportion of ICU nurses endorsing each factor as a source of stress, revealing a clear dominance of organizational and staffing-related stressors over interpersonal and emotional domains. Universal endorsement was observed for lack of managerial support and lack of cooperation among nurses (both 100%), positioning these as the most salient stressors within the ICU environment. Prolonged shifts and overtime followed closely, with 96.6% endorsement, while staff shortage and lack of resources were each reported by 90.0% of participants, highlighting systemic workforce and infrastructure pressures. Workload intensity and insufficient knowledge of specialized equipment were endorsed by 83.3% and 83.4% of nurses, respectively, underscoring the combined burden of task volume and technical demands. Procedural skill inadequacy showed a moderate endorsement gradient at 70.0%, whereas conflict with doctors and improper work environment were each endorsed by 63.3%, reflecting notable but secondary stress contributors. Patient-related and family-related stressors demonstrated a lower endorsement gradient, with problematic patient behavior reported by 53.3% and aggressive family members by 40.0%, indicating greater variability in individual perception and coping. Overall, the gradient pattern demonstrates a nonlinear distribution in which organizational and staffing stressors cluster at the highest endorsement levels, suggesting that system-level interventions may yield the greatest impact on reducing occupational stress among ICU nurses.

DISCUSSION

The findings of this study demonstrate that occupational stress among ICU nurses in a private hospital setting is predominantly driven by organizational and system-level factors, with markedly higher endorsement compared with interpersonal, emotional, or patient-related stressors. The most salient contributors—lack of managerial support, inadequate cooperation among nurses, prolonged shifts, staffing shortages, excessive workload, and insufficient resources—reflect structural pressures within the work environment rather than individual vulnerability. This pattern is consistent with contemporary international literature, which increasingly characterizes ICU nurse stress as a product of organizational design and

workforce management rather than solely the emotional intensity of critical care practice (4,9,11). The universal endorsement of poor managerial support and team cooperation in the present study underscores the central role of leadership and collegial dynamics in shaping nurses' stress experiences and aligns with evidence that supportive supervision and cohesive teamwork act as protective factors against burnout and psychological distress (3,14).

Workload-related stressors emerged as particularly dominant, with more than four-fifths of participants endorsing excess workload and nearly all reporting prolonged shifts and staff shortages as major stressors. These findings mirror prior studies demonstrating that high patient-to-nurse ratios, extended duty hours, and chronic understaffing are among the strongest predictors of stress, burnout, and turnover intentions in critical care nurses (1,4,18). From a mechanistic perspective, sustained workload pressure limits recovery time, impairs cognitive performance, and amplifies emotional exhaustion, thereby increasing vulnerability to stress-related outcomes. The strong convergence of these results with earlier research suggests that, despite contextual differences across healthcare systems, workload intensity and staffing adequacy remain universally relevant determinants of ICU nurse well-being.

Technical and competency-related stressors were also prominent in this cohort. A substantial proportion of nurses reported stress related to inadequate knowledge of specialized equipment and insufficient procedural skills, findings that are concordant with studies highlighting the cognitive burden imposed by advanced technologies and the consequences of insufficient training or ongoing competency support (5,7). Alarm fatigue and device complexity have been shown to elevate perceived stress and contribute to burnout by increasing vigilance demands and reducing perceived control over the work environment (5). The heterogeneity observed in responses to procedural skill-related items may reflect variation in prior training, experience, or access to continuing education, suggesting that targeted skills reinforcement could mitigate stress for specific subgroups within the ICU workforce.

Interpersonal stressors, including conflict with physicians and problematic patient behavior, were endorsed by a moderate proportion of participants, consistent with previous reports indicating that interprofessional communication challenges and patient-facing conflicts contribute to stress but are generally secondary to organizational pressures (7,12). Notably, family-related stressors elicited a high proportion of neutral responses, implying variability in individual coping strategies and emotional resilience when dealing with aggressive or demanding relatives. Emotional stressors such as exposure to patient death and painful procedures showed the greatest dispersion across response categories, which aligns with qualitative literature suggesting that nurses develop individualized coping mechanisms over time and that emotional responses may be moderated by professional experience, personal beliefs, and institutional support structures (10,14).

Environmental conditions, including noisy or poorly designed workspaces, were endorsed by nearly two-thirds of participants, reinforcing evidence that physical ICU environments contribute meaningfully to occupational stress by disrupting concentration, communication, and rest (5). Collectively, these findings advance existing knowledge by demonstrating a clear gradient in stressor endorsement, with organizational and staffing factors exerting a disproportionately greater influence than emotional or patient-related elements. This gradient supports theoretical models of occupational stress that emphasize the primacy of job demands and organizational resources in determining psychological outcomes among healthcare workers (11).

The study has several strengths, including its focused examination of ICU nurses within a defined private hospital context and the comprehensive assessment of stressors across multiple domains. However, limitations must be acknowledged. The relatively small sample size and single-center design restrict generalizability, and the cross-sectional nature of the study precludes causal inference. Self-reported data may be subject to response and social desirability bias, and the absence of standardized stress scales limits comparability with some international studies. Despite these limitations, the consistency of the findings with broader literature supports their validity and relevance.

Future research should expand on these findings using larger, multicenter samples and incorporate validated psychometric instruments to quantify stress severity and related outcomes such as burnout, anxiety, and job satisfaction. Longitudinal designs would be particularly valuable in elucidating causal pathways and evaluating the impact of organizational interventions. From a clinical and administrative perspective, the results highlight the need for system-level strategies—such as improved staffing models, supportive leadership practices, structured scheduling, and continuous professional development—to meaningfully reduce occupational stress and promote sustainable ICU nursing practice (3,4,11).

CONCLUSION

This study demonstrates that occupational stress among nurses working in intensive care units of a private hospital is highly prevalent and predominantly driven by organizational and system-level factors rather than solely by patient-related or emotional demands. Prolonged shifts, staff shortages, excessive workload, lack of managerial support, inadequate cooperation among nurses, and insufficient resources emerged as the most strongly endorsed stressors, aligning directly with the study objective and title. These findings underscore the critical importance of strengthening workforce planning, leadership support, and institutional resource allocation to mitigate stress in high-acuity clinical environments. Addressing these factors through evidence-based staffing policies, supportive supervision, and targeted professional development may not only improve nurse well-being but also enhance the quality and safety of patient care. From a research perspective, the results provide context-specific evidence that can inform larger, multicenter investigations and intervention-based studies aimed at reducing occupational stress and promoting resilience among critical care nurses.

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