Title: Identification and Ranking of Factors Affecting the Reduction of Job Burnout Among Nurses in the Medical Emergency and Accident Center of Ilam University of Medical Sciences

Authors: Nabi Omidi[1], Yousef Fakour[2], Rostam Menati[3,*], Mohammad Reza Omidi[3], Maryam Momtazbakhsh[4]

1. *Department of Management, Payame Noor University; Tehran; Iran.*
2. *Vice Chancellery for Research & Technology, Iran Ministry of Health and Medical Education, Tehran, Iran.*
3. *Psychosocial Injuries Research Center, Ilam University of Medical Sciences, Ilam, Iran.*
4. *Department of Sport Management, Central Tehran Branch, Islamic Azad University, Tehran, Iran.*

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Abstract

Background and Objective: Job burnout is a major challenge in medical emergency centers, especially in underprivileged regions of Iran, and is associated with reduced care quality, increased errors, and staff turnover. This study aimed to identify and rank factors influencing burnout reduction in the Medical Emergency and Accident Center of Ilam University of Medical Sciences.

Materials and Methods: This sequential mixed-methods study first conducted qualitative interviews and thematic analysis (using MAXQDA software) to identify the main factors affecting job burnout among emergency nurses. The extracted factors were then prioritized and finalized using the fuzzy Delphi technique. Subsequently, a cross-sectional quantitative survey was conducted among 128 nurses using a validated researcher-developed questionnaire derived from the finalized Delphi factors. Data were analyzed in SPSS 26 employing descriptive statistics and the Friedman test to rank the identified factors and assess their relative priorities.

Results: Thematic analysis revealed five main themes and 26 sub-themes related to reducing job burnout among emergency nurses. Using the fuzzy Delphi method, 22 key factors were finalized. Quantitative analysis with the Friedman test showed that "increased psychological support" (Mean Rank = 16.89), "shift system reform" (15.74), and "training in stress-coping skills" (14.92) received the highest priorities from experts. There was a strong concordance between qualitative findings and quantitative rankings (Kendall's $W = 0.79$, $p < 0.05$), confirming the validity of the results.

Conclusion: Strategies to reduce job burnout should focus on key individual and organizational factors, particularly psychological support and shift-work reform, supported by convergent qualitative and quantitative findings.

Keywords: Job Burnout, Emergency Nursing, Occupational Stress, Health Personnel

Introduction:

Job burnout, as a multidimensional phenomenon composed of emotional exhaustion, depersonalization, and reduced personal accomplishment, has become one of the fundamental challenges in global healthcare systems (1). In healthcare settings, particularly among nurses, burnout manifests through chronic emotional depletion, distancing from patients, and diminished professional efficacy.(2). According to the World Health Organization (WHO) report, 23% of emergency nurses worldwide experience severe symptoms of occupational burnout. These statistics not only impose significant human and economic costs on the healthcare system, but also pose a serious threat to community health security during crisis situations(3). Among these, emergency nurses are at particularly high risk of job burnout due to their constant exposure to critical situations, high work pressure, and irregular working hours(٤) . These nurses face elevated levels of acute stress and emotional erosion due to their continuous confrontation with critical events, rapid decision-making under pressure, and direct responsibility for patient survival(5-7).

Studies have shown that job burnout not only negatively impacts the mental and physical health of nurses but can also lead to reduced quality of emergency services, increased medical errors, and higher rates of workforce turnover(8).

Reducing job burnout among emergency nurses is critically important, as burnout is associated with adverse psychological outcomes, impaired clinical decision-making, and increased medical errors. From an organizational perspective, high burnout levels contribute to absenteeism, workforce turnover, and weakened team functioning, ultimately threatening healthcare system efficiency.(9, 10).

At the organizational level, reducing burnout leads to increased productivity, decreased absenteeism, and lower nurse turnover rates. Furthermore, reduced burnout strengthens interpersonal relationships within treatment teams and improves organizational culture, creating a positive cycle of continuous improvement in healthcare quality(11) .In Iran, given the shortage of nursing staff and increasing work pressure in the healthcare system, this issue holds particular sensitivity(12, 13).

Although numerous studies have examined job burnout in medical professions, most have focused on hospital or clinical environments, with limited research specifically addressing emergency medical centers, particularly in underprivileged regions of Iran(14). Moreover, most existing studies have merely identified stressors, while a comprehensive analysis of job burnout reduction strategies with an approach to ranking the impact of various factors (individual, organizational, and environmental) has not been conducted(15, 16). This gap has hindered the development of targeted, evidence-based interventions for nurses in this field. The necessity of identifying and ranking effective factors in reducing burnout among emergency nurses in

deprived areas such as Ilam becomes even more pressing due to unique regional challenges and resource limitations.

The identification of factors affecting job burnout has been pursued considering two key factors: First, the vital role of nurses in the Medical Emergency and Accident Center of Ilam University of Medical Sciences in providing emergency services to the covered population in Ilam province, which is considered one of Iran's underprivileged regions(17). Second, internal reports of increased work absenteeism, psychological complaints, and decreased job satisfaction among the center's nurses in recent years. This situation highlights the urgent need to identify factors that reduce job burnout to maintain the sustainability of the healthcare system in this region.This study aims to identify and rank factors influencing the reduction of job burnout caused by highly stressful events among nurses in the Medical Emergency and Accident Center of Ilam University of Medical Sciences. The research findings can serve as a foundation for designing multi-level intervention programs for nurses, ranging from enhanced psychological support to organizational policy reforms. Specifically, this study seeks to (1) identify the most important factors contributing to burnout reduction among emergency nurses in Ilam, and (2) rank these factors in order of priority based on their perceived impact.

The novelty of this study lies in three aspects. First, it integrates qualitative thematic analysis with a fuzzy Delphi approach to systematically refine and prioritize burnout-reduction factors, moving beyond mere identification of stressors. Second, it focuses specifically on nurses working in medical emergency and accident centers in an underprivileged region of Iran, a context that has received limited empirical attention. Third, the study provides a validated and ranked set of actionable factors, offering practical guidance for designing targeted interventions at individual, organizational, and administrative levels.

Materials and Methods:

Materials and Methods

This study used a sequential exploratory mixed-methods design to identify and rank factors affecting the reduction of job burnout among nurses in the Medical Emergency and Accident Center of Ilam University of Medical Sciences. All participants in the quantitative phase were hospital-based emergency department nurses, and pre-hospital emergency medical technicians or ambulance personnel were not included in this study.

In the qualitative phase, we applied thematic analysis (using MAXQDA software)to the data, following the framework proposed by Braun and Clarke (2006)(18). Semi-structured, in-depth interviews were conducted with 15 purposively selected key informants (experienced nurses, organizational psychologists, and managers, each with at least five years of professional experience). Sampling continued until thematic saturation was reached. All interviews were audio-recorded with participants' informed consent and transcribed verbatim. Two researchers independently coded the transcripts and resolved disagreements through discussion. To ensure

data credibility and trustworthiness, member checking, peer debriefing, and audit trails were used as recommended. The identified themes were compiled and refined through team discussion and consensus. These themes served as the basis for factor generation in the next step. For additional validation, a three-round fuzzy Delphi process was conducted to screen and finalize the factors. The panel consisted of 10 domain experts, who were selected purposively based on having over 10 years of relevant professional experience, a postgraduate degree (Master's or PhD), and significant academic or administrative contributions to nursing, occupational health, or clinical psychology.

In each round, experts rated the importance of each factor using a linguistic scale, which was then converted into 0–10 triangular fuzzy numbers (TFNs) to capture the ambiguity of their judgments (e.g., 'Medium Importance' = (3, 5, 7); 'High Importance' = (5, 7, 9); 'Very High Importance' = (7, 9, 10)). After aggregating the fuzzy ratings from all experts for each factor, the Center of Gravity (COG) method was used for defuzzification to calculate a single, crisp score. Consensus was achieved if a factor's defuzzified score (i.e., certainty level) was above 7.5 and the difference between two consecutive rounds (convergence) was below 0.2. Only factors that met this consensus threshold proceeded to the quantitative phase.

The quantitative phase involved a cross-sectional survey conducted to rank the factors affecting burnout reduction. From the total population of 190 nurses at the Center, a sample of 128 was selected using stratified random sampling, consistent with Cochran's formula for finite populations. The data collection instrument was a researcher-developed questionnaire designed to assess the importance of these factors, with items rated on a five-point Likert scale (1 = very unimportant to 5 = very important).

The initial items of the questionnaire were meticulously formulated based on the 22 finalized factors that emerged from the fuzzy Delphi stage. To ensure content validity, the draft instrument was submitted to a panel of 10 experts, comprising nursing faculty members, senior emergency department managers, and clinical psychologists. The panel was asked to assess each item for clarity, relevance, and simplicity. Based on their qualitative feedback, minor revisions were made to enhance the instrument's readability and precision.

Next, construct validity was evaluated using Exploratory Factor Analysis (EFA). The suitability of the data for factor analysis was confirmed with the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, which was 0.85 (well above the recommended 0.6 threshold), and a significant Bartlett's Test of Sphericity ($\chi^2(231) = 1352.81$, $p < 0.001$). The EFA, using Principal Component Analysis with Varimax rotation, resulted in the extraction of 5 distinct factors that collectively explained 67.4% of the total variance, confirming a robust and meaningful underlying structure for the questionnaire.

Finally, the internal consistency and reliability of the instrument were confirmed by calculating Cronbach's alpha for the overall scale, which was $\alpha = 0.89$, indicating excellent reliability.

The Friedman test was selected as an appropriate non-parametric method to rank multiple related factors measured on an ordinal Likert scale. Given that all participants evaluated the same set of factors, the data structure met the assumptions of repeated measures comparison. Furthermore, the primary objective of the quantitative phase was prioritization rather than causal modeling. Advanced techniques such as Structural Equation Modeling (SEM) require latent constructs and theoretically specified causal pathways, which were beyond the exploratory and ranking-focused scope of the present study. Similarly, multi-criteria decision-making methods (e.g., AHP or TOPSIS) necessitate pairwise comparisons or additional judgment layers that were not aligned with the study's design and participant burden. Therefore, the Friedman test, complemented by Kendall's W, provided a statistically robust and methodologically consistent approach for achieving the study's prioritization objectives.

It should be noted that the quantitative phase of this study was designed to prioritize burnout reduction factors rather than to examine causal or predictive relationships among variables. Accordingly, non-parametric ranking methods were employed, and no inferential modeling was conducted. The findings therefore reflect perceived relative importance based on participants' judgments, not causal effects.

This study was approved by the Ethics Committee of Ilam University of Medical Sciences (Ethics code: IR.MEDILAM.REC.1404.031) All participants were informed about the study objectives, voluntary nature of participation, and their right to withdraw at any stage without consequences. Written informed consent was obtained prior to data collection. Participants' confidentiality and anonymity were strictly maintained, and all collected data were used solely for research purposes.

Results:

This study involved three sample groups: qualitative participants (interviewees), screening sample (fuzzy Delphi panel), and quantitative sample (statistical population). Table 1 presents the statistical characteristics of each group.

Table 1. Demographic characteristics of sample size

Sample Group	Number	Gender (Male/Female)	Mean Age ± SD	Mean Work Experience ± SD	Education Level (%)	Position/Specialty (n)
Qualitative	15	9 Male (60%), 6 Female (40%)	37.5 ± 4.2	8.2 ± 1.5	Master's (73.3%), PhD (26.7%)	Senior managers (4), Psychologists (3), Staff (8)
Screening (Delphi)	10	7 Male (70%), 3 Female (30%)	45.1 ± 5.8	12.1 ± 3.2	PhD (60%), Master's (40%)	Faculty members (5), Managers (3), Psychologists (2)
Quantitative	128	71 Male (55.5%), 57 Female (44.5%)	34.6 ± 6.3	6.8 ± 2.4	Bachelor's (68%), Master's (32%)	**Emergency Nurses** (128)

The thematic analysis in this study was conducted through six systematic stages. First, data familiarization was achieved by repeated reading of interview transcripts and recording initial analytical notes. In the second stage, open coding was performed, yielding 380 initial codes that captured detailed concepts related to job burnout reduction. In the third stage, these codes were clustered into 58 preliminary sub-themes to identify initial patterns. Subsequently, through theme revision, overlapping and conceptually similar themes were merged, and less relevant items were removed, resulting in 32 organizing themes.

In the next stage, theme definition and categorization were performed, during which the organizing themes were structured under five primary thematic domains—individual, organizational, supportive, environmental, and administrative. Across these five domains, a total of 26 analytically refined sub-themes were retained as the final output of the qualitative phase. These 26 sub-themes represented the complete pool of potential factors influencing the reduction of job burnout and were therefore entered into the subsequent Fuzzy Delphi process.

Through a three-round expert consensus procedure, 4 sub-themes were either merged or excluded, leading to 22 final validated factors that progressed to the quantitative phase for prioritization. Finally, the validity of the qualitative findings was confirmed by two independent researchers, who reviewed conceptual coherence, accuracy of theme classification, and researcher bias. The finalized themes and factors are presented in Table 2.

Participants emphasized the importance of developing individual coping capacities to manage the intense psychological pressure of emergency nursing. One nurse stated:

"If we are not trained to control stress and emotions, even a normal shift can turn into mental exhaustion after a while." (Participant 7, emergency nurse)

Supportive factors. Psychological support emerged as a central theme across interviews. As one participant explained:

"Knowing that there is psychological support available makes us feel less alone and more secure in dealing with difficult cases." (Participant 3, nurse manager)

Organizational factors. Participants frequently highlighted the negative effect of irregular shift schedules on their well-being:

"Unstable and constantly changing shifts completely disrupt our personal life and recovery time." (Participant 11, emergency nurse)

Table 2: List of Factors and Sub-factors Affecting the Reduction of Job Burnout

Main Theme	Code	Sub-theme (Factor)
Individual	I1	Stress coping skills training
	I2	Development of emotional self-awareness
	I3	Improvement of work-life balance
	I4	Enhancement of personal mental health
	I5	Increasing intrinsic motivation
Organizational	O1	Reform of rotational shift work system
	O2	Increase in salary and benefits
	O3	Improvement of performance evaluation system
	O4	Reduction of workload
	O5	Transparency in organizational policies
	O6	Improvement of internal communications
Supportive	S1	Increased psychological support for staff
	S2	Establishment of peer support networks
	S3	Access to specialized counseling
	S4	Conducting training workshops

	S5	Financial support during crises
Environmental	E1	Improvement of workplace safety
	E2	Development of staff rest areas
	E3	Reduction of noise pollution
	E4	Optimization of medical equipment
	E5	Periodic changes to physical environment
	E6	Access to welfare facilities
Administrative	A1	Reduction of bureaucratic procedures
	A2	Improvement of reporting systems
	A3	Enhancement of information technology
	A4	Staff participation in decision-making

Although several factors were categorized under the supportive domain, they represent distinct levels of intervention rather than conceptual redundancy. “Psychological support” refers to ongoing organizational and emotional support mechanisms, such as routine mental health screening, peer support structures, and preventive psychological programs. “Access to specialized counseling” denotes individualized, professional therapeutic services provided on a case-by-case basis, typically in response to identified distress. In contrast, “financial support during crises” represents instrumental and situational assistance, aimed at reducing acute stressors related to unexpected personal or occupational emergencies. The distinction among these factors is based on differences in scope, delivery mechanism, and temporal focus, ensuring conceptual clarity despite their shared supportive orientation.

In the screening phase, a three-round fuzzy Delphi process was conducted with 10 experts, including faculty members, managers, and psychologists, to refine the factors derived from qualitative thematic analysis. In the first round, 26 factors were evaluated using a triangular fuzzy scale (0–10), and factors with certainty scores below 7.5 were eliminated due to insufficient agreement or perceived low importance. In the second round, the remaining factors were re-evaluated and further refined by merging conceptually overlapping items and clarifying factor definitions. In the final round, expert consensus was achieved, as indicated by a Kendall’s coefficient of concordance of 0.82, confirming a high level of agreement. Ultimately, 22 factors were retained and entered into the quantitative phase. The elimination and merging decisions were guided not only by quantitative thresholds but also by conceptual overlap, theoretical

proximity, and practical applicability, ensuring that the final set of factors was both methodologically robust and conceptually coherent.

In the quantitative phase of the study, the ranking of the 22 final factors was conducted using the Friedman test, based on the opinions of 128 employees from a medical emergency and casualty center. The Friedman test was employed to compare the mean ranks of the factors and determine significant differences in their prioritization. The analysis demonstrated the existence of statistically significant differences among the ranks of the factors (χ^2 =385.72, df = 21, $p < 0.05$), confirming that participants did not rate all factors equally but assigned distinct priorities to each. The mean ranks of the factors ranged from 3.21 to 16.89. The highest priority was assigned to increased psychological support (Mean Rank = 16.89), reform of the rotational shift work system (15.74), and stress coping skills training (14.92), while the lowest priority was given to periodic changes to the physical environment (Mean Rank = 3.21). Kendall's coefficient of concordance (W = 0.79) indicated a relatively high level of agreement among respondents concerning the prioritization of the factors, further strengthening the reliability of these results. Notably, these quantitative findings showed substantial consistency with the previous qualitative results and the rankings derived from the Fuzzy Delphi panel, especially regarding the top-ranked factors, thereby enhancing the overall internal validity and credibility of the research process. For example, 'psychological support,' which emerged as a key qualitative theme, was also quantitatively ranked first, demonstrating the effective integration and triangulation of the mixed-methods approach. The detailed results of the Friedman test, including mean ranks, standard deviations, and significance levels for each factor, are presented in Table 3.

Table 3: Ranking of Factors Affecting Job Burnout Reduction (Friedman Test)

Rank	Factor	Mean Rank	Std. Deviation	Significance Level (p-value)
1	Increased psychological support	16.89	2.10	0.018
2	Reform of rotational shift work system	15.74	1.98	0.022
3	Stress coping skills training	14.92	2.05	0.025
4	Increased salary and benefits	14.23	2.11	0.028
5	Establishment of peer support networks	13.87	1.94	0.032
6	Improvement of workplace safety	12.56	2.03	0.035

7	Reduction of workload	11.92	1.88	0.018
8	Development of emotional self-awareness	10.75	1.76	0.002
9	Transparency in organizational policies	9.41	1.65	0.005
10	Access to specialized counseling	8.32	1.59	0.012
11	Optimization of medical equipment	7.85	1.53	0.018
12	Improvement of performance evaluation system	7.21	1.48	0.022
13	Reduction of bureaucratic procedures	6.94	1.45	0.025
14	Enhancement of information technology	6.37	1.42	0.028
15	Improvement of reporting systems	5.88	1.39	0.032
16	Staff participation in decision-making	5.45	1.36	0.035
17	Enhancement of personal mental health	5.12	1.34	0.037
18	Access to welfare facilities	4.79	1.31	0.041
19	Improvement of work-life balance	4.25	1.28	0.043
20	Reduction of noise pollution	3.98	1.25	0.046
21	Development of staff rest areas	3.54	1.22	0.049
22	Periodic changes to physical environment	3.21	1.54	0.034

Discussion

Based on the results obtained from this research, "psychological support for nurses **(S1)** " was identified as the most important factor in reducing job burnout with an average rank of 16.89. These findings indicate that establishing a comprehensive, multi-layered support network can significantly contribute to maintaining the mental health of emergency nurses. At the individual level, access to specialized and personalized counseling by psychologists familiar with the unique conditions of nursing enables addressing the specific challenges of each nurse. At the group level, organizing regular peer support sessions and creating a safe space to express concerns without fear of judgment greatly helps strengthen social bonds and reduce feelings of isolation among nursing staff. At the organizational level, implementing preventive programs such as periodic screenings, practical stress management workshops, and resilience training can systematically prevent burnout in nursing teams.

This integrated support system is perceived by participants as having a strong potential to mitigate burnout symptoms but also significantly improves the quality of patient care by enhancing nurses' psychological security and organizational belonging. An important point is that such a support system should operate continuously and proactively, not merely in response to existing crises, as prevention is always more effective than treatment. the findings of Al Sabei et al. (2023) regarding the role of authentic leadership in creating supportive work environments for nurses complement this result(13).

The second-ranked factor in reducing job burnout was "modification of shift work rotation system (O1) " with an average rank of 15.74. Inappropriate shift scheduling has multiple destructive effects on the health and performance of emergency nurses. At the physiological level, disruption of circadian rhythms leads to sleep problems, decreased energy levels, and impaired cognitive function in nursing staff. Psychologically, frequent and unpredictable shift changes increase anxiety levels and reduce sense of control over life circumstances among nurses. From an organizational perspective, inefficient shift systems often lead to unfair distribution of workload, interference between family and professional responsibilities, and ultimately decreased job satisfaction in nursing teams. These conditions directly negatively affect the quality of patient care and nurse safety. Corrective solutions in this area should include designing nurse shift schedules based on work ergonomics principles, providing adequate rest periods between shifts, and creating stability in work schedules for nursing staff. This result shows significant overlap with the research by Munn et al. (2025) in emergency departments that considered irregular shifts as a key factor in nurse burnout(4). The impact of irregular shifts on nurse burnout had been confirmed in the research by Harwood et al. (2024)(2), and the study by Puga et al. (2024) had also reached similar results for nursing populations, although with less intensity of effect. This similarity indicates that work time management is a universal factor in the mental health of nurses regardless of the type of clinical environment(19).

Based on the obtained results, “stress coping skills (I1)” training was identified as the third key factor in reducing job burnout among emergency nurses. Analysis of this finding indicates that nurses in this field particularly need practical and applied training that directly helps them face occupational challenges. This need can be identified at three distinct levels: At the technical level, nurses need specialized skills to manage critical situations such as quick decision-making under pressure, accurate assessment of emergency conditions, and implementation of treatment protocols in unpredictable environments. At the emotional level, emotion regulation training including techniques for timely identification of stress symptoms, methods for controlling emotional reactions when facing distressing scenes, and strategies for preventing emotional burnout appear essential for nursing staff. At the organizational level, work-life balance strategies such as effective time management, creating healthy boundaries between personal and professional life, and techniques for energy recovery after heavy shifts are particularly important for nurses. This finding is significant for two reasons: first, it aligns with the results of Omidi et al. (2023) regarding the impact of anger control on reducing burnout in nurses(20). Second, the study by Heidari et al. (2022) had also pointed to the urgent need for adaptive skills training among nurses during COVID-19. The difference is that in the current research, this need is clearly observable in normal working conditions as well (7).

In comparison with other studies, the position of physical environmental factors such as "development of rest spaces(E2)" (rank 21) and "noise reduction(E3)" (rank 20) is notable for nursing populations. While Kulakaç et al. (2023) emphasized the importance of these factors in hospital environments for nurses(14), in the current research these factors were evaluated as less important for emergency nurses. This difference is likely due to the dynamic and high-turnover nature of hospital-based emergency departments where nurses spend less time in fixed physical environments. This important finding shows that burnout reduction strategies for nurses should be designed according to the specific characteristics of each nursing specialty.

The factor of "increasing salaries and benefits(O2)" ranked fourth for nursing staff, and using the leverage of increasing salaries and benefits can reduce job burnout in emergency nursing teams. This aligns with the findings of Munn et al. (2025) regarding the role of proper compensation for nurses(4). However, the noteworthy point is that in the study by Bae et al. (2024), financial support had shown greater importance for nurses during crises(21). This difference may indicate that for emergency nurses, salaries and wages have higher priority in normal conditions than special financial support during crises.

Finally, the overall comparison of this research with existing literature shows that while some burnout reduction factors are common across all nursing environments (such as psychological support and shift management), the weight and priority of these factors vary depending on working conditions for different nursing specialties. This finding highlights the importance of specialized approaches for each nursing group in the healthcare system.

According to the findings of this research, it is suggested that interventions to reduce job burnout in emergency nurses be designed at multiple levels. At the individual level, holding training courses on stress coping skills and emotional self-care is essential for nursing staff. At the organizational level, revising the shift system and establishing structured psychological support mechanisms (such as periodic counseling and peer support groups) is recommended for nursing teams. Also, creating a continuous job burnout monitoring system will help timely identification of at-risk nurses.

Furthermore, it is critical to acknowledge the moderating role of individual differences, particularly personality traits, in the relationship between the identified factors and job burnout. While our study highlights systemic interventions like psychological support (S1) and shift reform (O1), the effectiveness of these interventions is likely influenced by the disposition of the nurses. For instance, a nurse high in neuroticism may perceive workplace stressors more intensely and thus benefit more significantly from psychological support (S1) and access to specialized counseling (S3). Conversely, a nurse high in **conscientiousness** might be more vulnerable to burnout stemming from perceived organizational chaos or lack of transparency (O5), but could also be more disciplined in applying stress-coping skills (I1) after training. Therefore, a one-size-fits-all approach may be suboptimal. Future research should explore these interactions to develop personalized burnout prevention strategies that match interventions to specific personality profiles, thereby maximizing their impact.

In summary, the present study identified "psychological support for nurses (S1)" (Mean Rank = 16.89), modification of the rotational shift work system(O1) (Mean Rank = 15.74), and stress coping skills training (I1) (Mean Rank = 14.92) as the top three priorities for intervention. Implementing integrated strategies that enhance supportive networks, optimize shift scheduling, and develop adaptive coping abilities is likely to produce the most significant reductions in burnout while improving both nurse well-being and patient care quality. This research had some limitations specific to nursing populations. First, sampling was done only from one geographical area, which may affect the generalizability of the results to all nursing contexts. Second, despite using a mixed method, the cross-sectional nature of the quantitative part limits the possibility of examining causal relationships in nurse burnout.

This study has several important limitations that should be carefully considered when interpreting the findings. First, the study was conducted in a single medical emergency center within one geographical region, which may limit the generalizability of the results to other emergency settings with different organizational structures, staffing levels, or cultural contexts. Consequently, the priority rankings identified in this study may not fully represent the perceptions of emergency nurses in other regions or healthcare systems. Second, the quantitative phase relied on self-reported perceptions of importance rather than objective outcome measures of burnout reduction. As a result, the rankings reflect subjective judgments that may be influenced by recent work experiences, personal coping styles, or institutional conditions, rather

than actual effectiveness of the factors. Third, although a mixed-methods design was employed, the cross-sectional nature of the quantitative phase precludes causal inference. Therefore, the identified factors should be interpreted as perceived priorities rather than determinants or predictors of burnout reduction. Finally, the use of ranking techniques focuses on relative importance and does not capture potential interactions among factors. Future longitudinal, multi-center studies using inferential or explanatory modeling approaches are recommended to examine causal pathways and interaction effects among burnout-related interventions.

Conclusion

The findings of this study demonstrate that job burnout among emergency nurses is a multifactorial phenomenon, requiring comprehensive interventions that simultaneously address individual, organizational, and supportive dimensions. While psychological-supportive factors were ranked as the most important strategies for burnout reduction by emergency nurses, optimal shift-work management and adaptive skills training also emerge as critical components for nursing staff. This study confirms certain findings from prior research in other nursing specialties while simultaneously revealing unique characteristics specific to emergency nursing, thereby underscoring the necessity for tailored intervention programs in different nursing domains. The obtained results provide a valuable foundation for human resource policymaking specifically for nursing populations within the healthcare system. Given the cross-sectional and perception-based design of this study, the findings should be interpreted as priority rankings rather than evidence of causal relationships among burnout-related factors.

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