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Exploration of Physical and Mental Quality of Life Among Healthcare Professionals in Tertiary Multidisciplinary Critical Care Units: A Mixed-Methods Study

Dr. Smitha S[1], Dr. Radha M G[2], Dr. Deepak T S[3], Dr. Keerthi P[4]

[1]Assistant professor Department of Critical Care, MS Ramaiah Medical College Hospital, Bangalore
[2]Senior consultant, Ramaiah Memorial hospital, MS Ramaiah Medical College Hospital, Bangalore
[3]HOD, Professor Department of Critical Care, MS Ramaiah Medical College Hospital, Bangalore
[4]Senior Resident Department of Critical Care, MS Ramaiah Medical College Hospital, Bangalore

***Corresponding Author:**
Dr Smitha S, Assistant professor Department of Critical Care, MS Ramaiah Medical College Hospital, Bangalore
Email: smithamurthy.092@gmail.com

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ABSTRACT

Background: Critical care units are recognized for their intense and demanding environments, placing healthcare professionals (HCPs) at significant risk for physical and emotional strain. This study explores the quality of life (QoL) in critical care nurses using validated assessment tools.

Objectives: To assess the physical and mental quality of life among nurses in critical care units, identify key stressors, and explore coping mechanisms.

Methods: This mixed-method study enrolled 98 critical care nurses from a tertiary care single centre ICU. SF-36 and Maslach Burnout Inventory (MBI) questionnaires was used to gather quantitative data from the nurses enrolled for the study, Descriptive statistics, analysis of variance (ANOVA), and correlation analyses were performed to explore associations between burnout, quality of life, and workplace variables. Additionally, thematic qualitative interviews were conducted to complement the quantitative findings, offering deeper insight into stressors, coping mechanisms, and professional challenges faced by ICU nurses.

Measurements and Results: A total of 98 critical care nurses participated in the study, with a median age of 29 years (range 24–38), and 84% were females. Data were collected using validated tools: The Short Form-36 (SF-36) to assess physical and mental quality of life (QoL), and the Maslach Burnout Inventory (MBI) to evaluate burnout levels. Additional measures included PTSD symptoms, work satisfaction, and self-reported coping mechanisms. Assessment of quality of life (QoL) revealed that physical functioning was well preserved, with a median score of 92.9%, while emotional role functioning was impaired in 43% of participants, indicating a considerable emotional burden. Burnout was a significant concern, with 44% of nurses reporting high emotional exhaustion scores on the MBI. Although multivariate analysis did not reveal statistically significant predictors of burnout, nurses with higher job satisfaction tended to report lower levels of burnout, suggesting a potentially protective relationship. PTSD symptoms were reported by 5% of the population. Participants reported various coping strategies, including social support, mindfulness, and structured debriefing. Nurses utilizing social support strategies exhibited the lowest emotional exhaustion scores and better emotional role functioning. In contrast, those relying on non-specific or avoidant coping mechanisms tended to show higher depersonalization and reduced personal accomplishment.

Conclusion: Although critical care nurses generally maintain adequate physical functioning, their emotional well-being appears significantly compromised. These findings highlight the urgent need for early, targeted interventions such as structured stress management programs, routine emotional debriefing sessions, and optimized shift scheduling to reduce burnout and enhance job satisfaction.

In addition, organizational policy reforms such as the implementation of formal peer support systems and active leadership engagement are crucial in providing a supportive ICU work culture. Future research should focus on evaluating the long-term impact of these strategies on psychological resilience, workforce sustainability, and retention of skilled nursing staff in high-stress critical care environments.

Keywords: *Critical Care, Quality of Life, Burnout, PTSD, Healthcare Professionals*

1. INTRODUCTION

Burnout syndrome (BOS), is a state of emotional, physical, and mental exhaustion caused by prolonged exposure to stressors, is increasingly recognized as a critical issue among healthcare professionals working in intensive care units (ICUs)[1,5]. ICU nurses, in particular, face a high burden due to the complex clinical demands, ethical dilemmas surrounding end-of-life care, and frequent exposure to traumatic events[4,6]. These stressors contribute not only to emotional exhaustion and depersonalization but also negatively impact their overall quality of life (QoL)[1].

Previous research has established a corelation between Burnout syndrome (BOS) and deteriorated mental health outcomes, including depression, post-traumatic stress disorder (PTSD), and reduced job satisfaction[2,4,15] , While studies such as those by Mealer et al. and Van Mol et al. have explored risk factors and the prevalence of burnout and PTSD among critical care nurses[4,7], many have focused on either psychological outcomes or isolated predictors, often without incorporating comprehensive measures of QoL or validated tools such as SF36 and the Maslach Burnout Inventory (MBI).

Moreover, existing literature has frequently emphasized risk factors over protective ones. There remains a notable lacuna in studies assessing not just the presence of burnout, but its interplay with quality of life and the coping mechanisms nurses adopt to sustain resilience under pressure[3,6]. Additionally, few studies have evaluated these parameters in the context of resource-limited or high-pressure environments post-pandemic, where emotional fatigue and staffing shortages have further strained ICU workflows[5,8]. To address these gaps, our study employs validated tools (SF-36, MBI) to assess both physical and mental QoL, identify key stressors influencing burnout, and explore coping mechanisms used by ICU nurses in a tertiary care setting.

In particular, while our findings revealed preserved physical functioning, significant emotional impairment and a high prevalence of burnout were observed. Notably, coping strategies such as social support and structured debriefing appeared to influence burnout outcomes, underscoring the importance of institutional support systems. This study strengthens the call for systemic interventions aimed at fostering emotional resilience, enhancing workforce retention, and protecting the psychological well-being of ICU nursing staff[5,7,13]

Objectives

The present study was undertaken with the following objectives:

1.To assess the physical and mental quality of life among healthcare professionals working in critical care units using validated tools (SF-36 and MBI).

2.To identify key stressors that influence burnout and overall wellbeing

3.To explore coping mechanisms employed by ICU nurses.

2. METHODS

Study Design: This was a mixed-method, observational study conducted in the intensive care unit (ICU) of a tertiary care hospital. The study integrated quantitative survey-based assessments with qualitative thematic interviews to explore physical and mental quality of life (QoL), burnout prevalence, and coping strategies among critical care nurses.

Sample Size and Participants: Based on a 95% confidence interval and 2% precision, a total of 98 ICU nurses were recruited through purposive sampling. Inclusion criteria were: (1) a minimum of two years of continuous employment in a critical care unit, and (2) active involvement in direct patient care. Nurses on extended leave or in non-clinical transitional roles were excluded[5-7]

Data Collection Tools and Procedure

Quantitative Measures: Participants completed a structured, self-administered questionnaire composed of the following standardized tools: Short Form-36 Health Survey (SF-36) which assess the physical and mental QoL across eight domains, like Physical Functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, and Mental Health. Domain scores were converted to percentage values, with higher scores indicating better QoL [3]. Maslach Burnout Inventory -Assessed burnout across three subscales: Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA). Burnout severity was determined based on validated cutoffs for high EE and DP with low PA [13].

Qualitative Component: To capture deeper insights into subjective experience, semi-structured thematic interviews were conducted with a subset of participants (n=12). These interviews focused on stressors, emotional burden, and coping mechanisms and missing data on ICU characteristics were collected by phone calls and e-mail contact with head nurses.

Ethical Considerations: The study was approved by the Institutional Ethics Committee. Written informed consent was obtained from all participants. To support psychological well-being, participants were offered access to counselling services in case of emotional discomfort during the survey or interview process. Data confidentiality was ensured through anonymization and secure storage of all digital and paper records[5].

Statistical Analysis:

Descriptive statistics, frequency distributions, and inferential analyses were conducted using SPSS version 26. Continuous variables were reported as mean ± standard deviation (SD), and categorical variables were expressed as percentages.

Descriptive Analysis: The mean age of participants was 29.0 years (SD = 2.9), with 56% identifying as female. The average duration of professional experience was 0.9 years (SD = 0.7). In terms of work characteristics, 43.9% of nurses were on

rotating shifts and 32.7% on fixed shifts. Staff nurses constituted 64.3% of the sample, while 35.7% were supervisors (Table 1).

Health-Related Quality of Life (SF-36): SF-36 scores indicated preserved physical functioning in 92.9% of participants. However, domains related to mental and social health were notably impaired: 57% reported role emotional impairment, 54% had reduced social functioning, 52% experienced bodily pain and decreased vitality, and 55% showed impaired mental health (Table 2). This distribution highlights a disproportionate burden on emotional and psychosocial well-being despite preserved physical capabilities.

Burnout Levels (Maslach Burnout Inventory - MBI): Burnout analysis revealed that 44% of participants experienced high emotional exhaustion, with 46% in the moderate range and only 10% in the low range. Depersonalization was reported at moderate to high levels in 99% of respondents (60% moderate, 39% high), while only 1% had low depersonalization scores. Personal accomplishment was generally low or moderate, with only 6% reporting high levels of professional efficacy (Table 3, Table 4).

Coping Strategies: Among the 98 nurses who reported coping strategies, social support was the most frequently used (43.9%), followed by recreational/spiritual activities (26.5%), physical exercise (18.4%), and mindfulness or meditation techniques (11.2%) (Table 5).

Correlation Analysis: Pearson correlation analysis was used to examine associations among occupational stressors, burnout dimensions, and SF-36 domains. Work satisfaction showed a moderate positive correlation with personal accomplishment (MBI-PA; r = 0.41) and physical functioning (SF36-PF; r = 0.26). Conversely, work schedule had a negative correlation with vitality (SF36-VT; r = -0.19) and physical functioning (SF36-PF; r = -0.10).Emotional exhaustion (MBI-BO) was positively correlated with depersonalization (r = 0.14) and inversely associated with vitality and physical functioning, albeit weakly (r = -0.07 and -0.11, respectively). Years of experience and job role did not demonstrate significant correlations with burnout or SF-36 outcomes. Strong intercorrelations among SF-36 domains were observed, including between physical functioning and role physical (r = 0.45), vitality (r = 0.32), and general health (r = 0.20), confirming the internal consistency of the SF-36 scale.

Regression Analysis: Multivariate regression models were applied to identify the workplace predictors of each SF-36 domain. Work satisfaction emerged as a significant positive predictor for physical functioning and personal accomplishment, while irregular work schedules predicted reduced vitality and physical role functioning. Other variables such as years of experience and job role were not significant in these models.

3. RESULTS

Participant Demographics

A total of 98 ICU nurses participated in the study. The median age was 29 years (range: 24–38), and the median duration of ICU work experience was 1 year. The majority of respondents were female (56.1%). These demographics reflect a predominantly early-career nursing workforce frequently exposed to high-acuity care environments.

Quality of Life (QoL) Outcomes

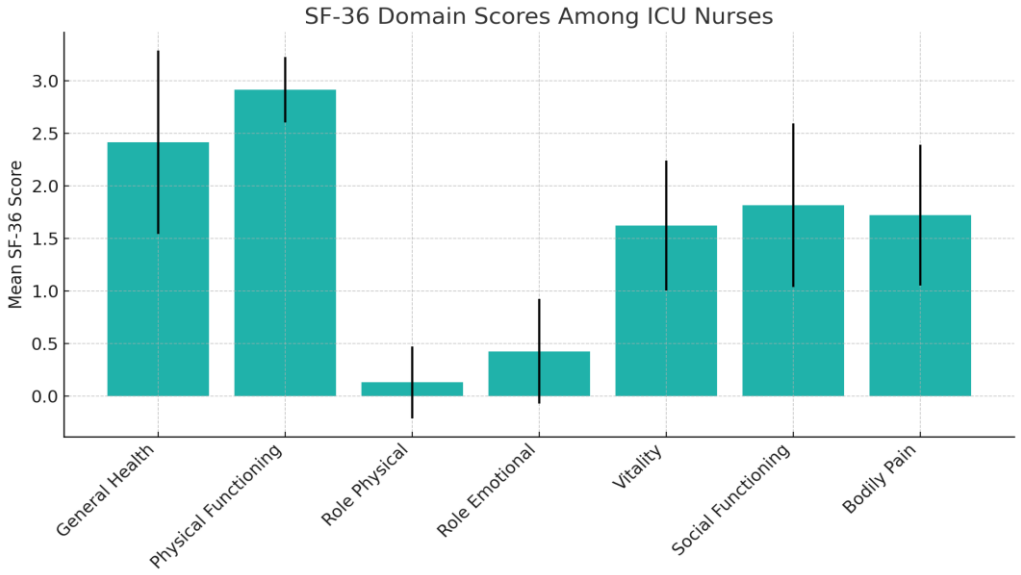
Quantitative analysis of the SF-36 domains revealed a striking divergence between physical resilience and emotional strain among ICU nurses. Physical functioning demonstrated a high mean score of 2.92 ± 0.31, indicating preserved physical capacity in 99% of participants despite the demanding ICU environment. In contrast, emotional role impairment averaged 0.43 ± 0.50, signifying that 43% of the nurses experienced limitations in daily functioning due to emotional stressors. This emotional burden underscores a critical vulnerability, often masked by external physical performance. Social functioning, with a mean score of 1.82, further pointed to disruptions in interpersonal interactions, likely influenced by the cumulative psychological toll of high-acuity caregiving. Meanwhile, general health perception was rated at 1.48 ± 0.60, suggesting a moderate-to-low self-assessment of overall well-being. These findings align with prior research documenting a pattern wherein ICU nurses maintain physical competence but suffer disproportionately in emotional domains due to repeated exposure to traumatic events, ethical dilemmas, and emotional labour inherent to end-of-life care scenarios[1,5,14]. The consistently lower scores in vitality, social functioning, and emotional well-being reinforce the need for comprehensive psychosocial support structures within critical care settings

Tables and Figures Table 1: Demographic Characteristics

Variables	Mean (SD)
Age(years)	29.0 (2.9)
Gender (Female/Male)	56% / 44%
Year of Experience	0.9 (0.7)
Work schedule	Rotating (43.9%), Fixed (32.7%)
Job Role	Staff Nurse (64.3%), Supervisor (35.7%)

Table 2: SF-36 QoL Scores

SF-36 Domain	% Reporting Optimal	% Reporting Impaired
Physical Functioning (PF)	92.9%	7.1%
General Health (GH)	57.1%	42.9%
Role Physical (RP)	87%	13%
Role Emotional (RE)	43%	57%
Social Functioning (SF)	46%	54%
Bodily Pain (BP)	48%	52%
Vitality (VT)	48%	52%
Mental Health (MH)	45%	55%



This bar chart displays the mean scores across SF-36 domains. Physical functioning appears well preserved, whereas emotional roles and physical role limitations are disproportionately low. This suggests an imbalance between physical capacity and emotional strain—a hallmark of burnout and psychological fatigue in high-stress environments.

Table 3: MBI Scores

MBI Domain	% Reporting Low	% Reporting Moderate	% Reporting High
Burnout (MBI-BO)	10%	46%	44%
Depersonalization (MBI-DP)	1%	60%	39%
Personal Accomplishment (MBI-PA)	28%	66%	6%

Table 4. Burnout Domain Scores

Burnout Domain	**% High-Level Symptoms**
Emotional Exhaustion	44%
Depersonalization	60%
Personal Accomplishment	6% (Low- indicates low sense of personal achievement)

Burnout symptoms were assessed using the three core domains of the Maslach Burnout Inventory (MBI): emotional exhaustion (MBI-BO), depersonalization (MBI-DP), and personal accomplishment (MBI-PA).

As shown in Table 3, 44% of ICU nurses scored in the high range for emotional exhaustion, indicating substantial psychological strain. This was supported by the moderate proportion (46%) reporting mid-level symptoms, while only 10% fell in the low burnout category.

Depersonalization was notably prevalent, with 60% of participants exhibiting moderate symptoms and 39% reporting high depersonalization, suggesting emotional distancing from patients—a recognized consequence of sustained critical care exposure. Only 1% reported low depersonalization, underscoring the widespread impact of emotional detachment in this high-stakes setting. In contrast, scores in the domain of personal accomplishment were skewed toward moderate and low levels, with 66% reporting moderate and 28% reporting low perceived achievement. Only 6% of respondents rated high in this domain, indicating a potential erosion of professional fulfillment.

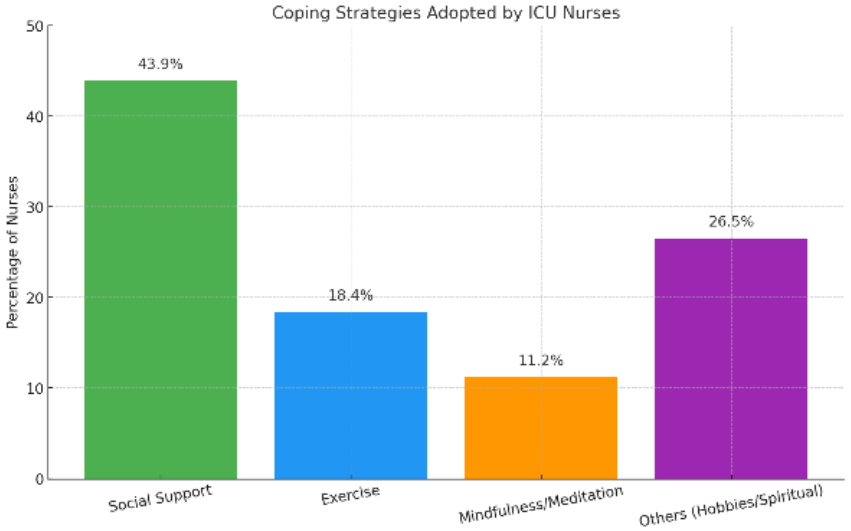
These findings collectively highlight a significant burden of burnout, characterized not only by emotional exhaustion and depersonalization but also by diminished personal accomplishment. This triad reflects the psychological toll of prolonged ICU work and signals a pressing need for structured mental health and resilience-building interventions in critical care settings[5,7,13].

Burnout Prevalence and Severity

Based on the Maslach Burnout Inventory (MBI), 44% of participants met the threshold for severe burnout, with high scores predominantly in the emotional exhaustion and depersonalization subscales. In table 4, Notably, 60% reported marked depersonalization, reflecting a psychological detachment often seen in compassion fatigue and chronic moral distress. Only 6% reported a high sense of personal accomplishment, suggesting diminished self-efficacy despite professional competence. These findings are consistent with earlier research highlighting burnout as a systemic issue in ICU settings[2,5,14].

Table 5: Coping Strategy Categories Reported by Nurses

Coping Strategy Category	**% of Nurses Reporting Use**
Social Support	43.9%
Exercise	18.4%
Mindfulness / Meditation	11.2%
Others (e.g., hobbies/spiritual)	26.5%



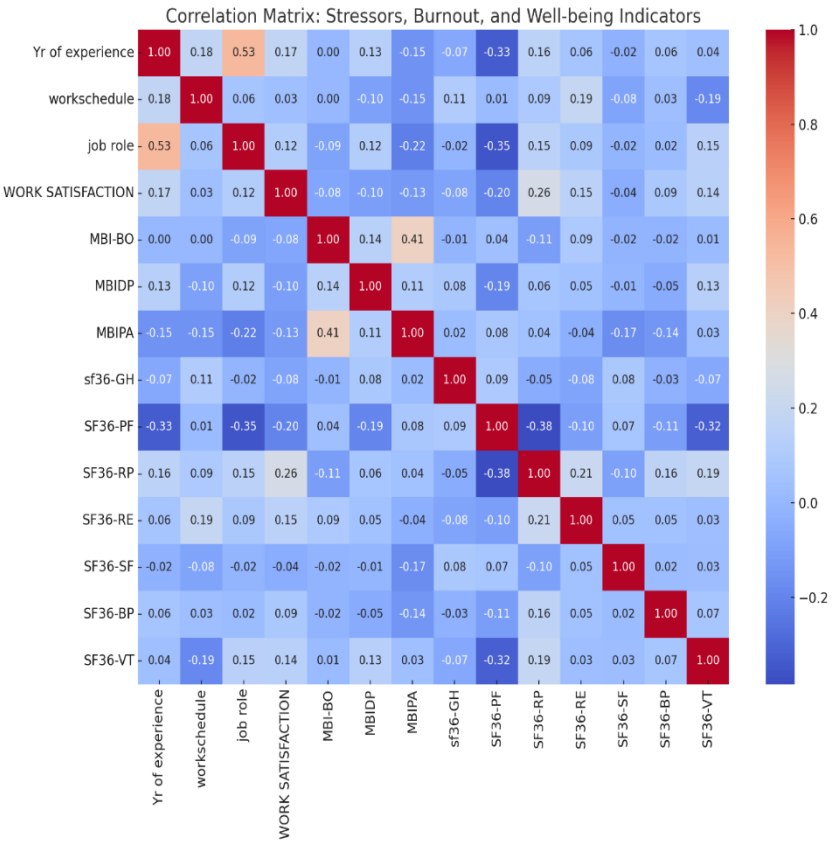
Coping Mechanisms Among ICU Nurses

A total of 98 nurses reported their primary coping strategy for managing occupational stress. The most frequently adopted strategy was social support, with 43.9% of respondents indicating reliance on family, peers, or professional support networks. This finding highlights the importance of interpersonal connections in mitigating the psychological burden faced by ICU staff.

Recreational and spiritual strategies—including hobbies, prayer, or personal rituals—were the second most common, reported by 26.5% of participants. Physical exercise was used by 18.4%, while mindfulness-based techniques such as meditation and breathing exercises were reported by 11.2% of nurses. These results suggest a clear preference for relational coping methods over solitary or structured stress-reduction techniques. It also underscores the opportunity to expand institutional support for underutilized but evidence-based strategies like mindfulness and physical wellness programs.

Combined Summary Table: Key Stressors Affecting Well-Being (SF-36)

We consolidated the regression results for all SF-36 domains into one table to assess which workplace stressors had the most influence on ICU nurses' well-being.



Top Stressor Correlations with Burnout and Well-being
This heatmap visualizes Pearson correlation coefficients among ICU nurse stressors (e.g., work schedule, satisfaction), burnout domains (MBI-BO, MBI-DP, MBI-PA), and SF-36 subdomains of health-related quality of life. The strength and direction of the correlations are indicated by colour intensity and coefficient values.
Burnout Domains
MBI-BO (Emotional Exhaustion): Shows a moderate positive correlation with MBI-PA (r = 0.41) and weak correlation with MBI-DP (r = 0.14).
Negative but very weak correlations with most SF-36 scores, especially SF36-PF (-0.11) and SF36-VT (0.01), suggesting that higher exhaustion slightly trends with lower physical functioning and vitality.
MBI-PA (Personal Accomplishment): Positively correlated with work satisfaction (r = 0.41), highlighting satisfaction's potential buffering role against burnout.
Mild negative association with SF36-SF and SF36-RE, possibly suggesting an inverse pattern with emotional functioning.
Stressors and SF-36 Well-being
Work Schedule: Displays a negative correlation with SF36-VT (-0.19) and SF36-PF (-0.10), reinforcing earlier regression findings: irregular shifts are linked to diminished energy and physical vitality.
Work Satisfaction: Weak but favourable correlations with MBI-PA (0.41) and SF36-PF (0.26), supporting the protective role of job satisfaction on perceived physical well-being and accomplishment.
Years of Experience: Positively related to job role (r = 0.53) but only minor correlations with burnout or SF-36 domains, suggesting experience alone doesn't directly affect well-being without moderating factors.
SF-36 Interrelationships: Strong intercorrelations are seen among some SF-36 domains:
SF36-GH and SF36-PF (r = 0.20)
SF36-RP and SF36-PF (r = 0.45)
SF36-VT and SF36-PF (r = 0.32)
These associations validate the expected internal coherence of the SF-36 scale: improvements in one domain of health are often reflected across others.

4. DISCUSSION

The findings of this study provide a multidimensional perspective on the physical and psychological demands faced by ICU nurses, highlighting the complex interplay between workplace conditions, emotional well-being, and professional resilience, shedding light on the interplay between work environment, quality of life, burnout, and coping mechanisms. The findings are particularly relevant given the intense demands of critical care settings, where staff are persistently exposed to critically ill patients, ethical dilemmas, and emotionally charged situations[6–7].
Demographic Considerations and Experience-Related Vulnerabilities: Our study sample predominantly comprised early-career nurses, with a median ICU experience of only one year. This limited professional exposure may account for their increased susceptibility to emotional strain and burnout. Consistent with prior research, emotional resilience and effective coping strategies are often developed over time, and novice practitioners may lack the experiential foundation necessary to navigate the demands of critical care environments[12]. Furthermore, over 75% of respondents reported working rotating shifts—a scheduling pattern associated with sleep disruption, impaired cognitive function, and emotional dysregulation[13]. The intersection of limited clinical experience and physiologically taxing shift work likely contributes to the elevated emotional exhaustion and depersonalization observed in this cohort.
Quality of Life and Emotional Health: Findings from the SF-36 health survey revealed a pronounced disparity between physical and emotional well-being. While the vast majority of participants (97.3%) reported high levels of physical functioning, a substantial proportion (42.9%) endorsed significant impairment in emotional role performance. This divergence reflects a broader trend in the literature, where ICU nurses demonstrate preserved physical capability yet face pronounced psychological strain due to sustained emotional and cognitive demands[7]. The General Health domain yielded a moderate score (mean = 1.48 ± 0.60), suggesting a growing awareness of health vulnerabilities associated with chronic workplace stress. Notably, impairments in Emotional Role and Vitality further point to a psychological toll that extends beyond fatigue into broader well-being concerns[6].
Burnout Prevalence and Depersonalization: Burnout emerged as a significant concern, with 44% of respondents reporting high emotional exhaustion and 60% exhibiting moderate to high depersonalization. These prevalence rates are in alignment with international ICU studies, which commonly report burnout among one-third to one-half of nursing personnel[8]. While 66% of participants retained a strong sense of personal accomplishment, a small yet notable subset (6%) reported diminished professional efficacy. Depersonalization—a state marked by emotional withdrawal or numbness—may represent a maladaptive psychological defense mechanism, developed in response to prolonged stress exposure and recurrent moral distress[9]. The negative correlation between burnout and emotional role functioning (r = -0.38) further illustrates how chronic occupational stress can erode nurses' capacity for emotional engagement.
There is corelation between workplace-related stressors, burnout dimensions, and health-related quality of life (HRQoL) among ICU nurses, with key findings underscoring the influence of modifiable organizational factors.
Correlation analysis revealed that work schedules were negatively associated with both vitality (r = -0.19) and physical functioning, suggesting that inconsistent or strenuous shift patterns may significantly impair nurses' energy levels and

perceived physical capacity. This observation aligns with prior evidence linking shift work to physical fatigue and circadian rhythm disruption in critical care environments[15,16]. Importantly, job satisfaction emerged as a protective factor, demonstrating a positive correlation with personal accomplishment (MBI-PA; r = 0.41) and physical functioning (SF36-PF; r = 0.26). These findings reinforce literature emphasizing that workplace engagement and satisfaction are inversely associated with emotional exhaustion and are crucial to enhancing overall well-being[13,14]. Among the core burnout domains, emotional exhaustion correlated moderately with depersonalization (MBI-DP; r = 0.14) and inversely with personal accomplishment (MBI-PA; r = 0.41), reflecting the classical burnout triad described in the literature[9,10]. Notably, emotional exhaustion also showed weak negative correlations with physical well-being indicators such as physical functioning (r = -0.11) and vitality (r = -0.07), mirroring prior findings that suggest cumulative emotional strain may manifest somatically over time[11].Interestingly, years of experience and job role did not show substantial correlation with burnout or HRQoL indices, suggesting that individual exposure duration or hierarchical role may be less influential than institutional and environmental factors in driving well-being outcomes within ICU settings[8,12].Additionally, strong inter-domain correlations within the SF-36 (e.g., SF36-PF with SF36-RP, r = 0.45; SF36-VT with SF36-PF, r = 0.32) affirm the scale's internal reliability and the multidimensional nature of nurse well-being—where physical, emotional, and role-based domains are tightly interlinked[2,5].

Taken together, these results reinforce the need for targeted organizational strategies aimed at restructuring shift patterns, enhancing job satisfaction, and addressing early signs of burnout. Interventions such as structured debriefing, mindfulness training, peer mentorship, and supportive scheduling models may significantly buffer psychological stress and enhance ICU staff resilience[7,14].

Workplace Culture and Thematic Insights: Qualitative narratives provided further context to the quantitative findings, with three predominant themes emerging as emotional fatigue, compassion fatigue, and the protective role of workplace culture. Nurses consistently described the emotional toll of witnessing patient suffering and managing end-of-life care, but also emphasized the importance of collegial support and open team communication in sustaining their psychological well-being. These themes are supported by prior studies identifying team solidarity, emotional debriefing, and perceived fairness in the workplace as key determinants of emotional resilience and long-term staff retention in critical care environments[10].

The results of this study highlight the need for multidimensional strategies aimed at enhancing the psychological resilience and professional sustainability of ICU nurses. Establishing structured mentorship programs that link novice practitioners with experienced colleagues may facilitate the development of clinical competence while simultaneously fostering emotional endurance[12]. Additionally, incorporating formalized emotional support mechanisms—such as regular debriefing sessions and mindfulness-based interventions—into routine ICU workflows can provide critical inputs for psychological recovery[4]. Revisions to scheduling practices that prioritize alignment with circadian rhythms and mandate adequate rest periods are likewise recommended to reduce fatigue-related cognitive and emotional impairments[13]. Finally, the integration of mental health indicators into institutional performance evaluations and workforce development policies would represent a progressive step toward embedding psychological well-being as a foundational element of healthcare quality and staff retention[10].

The study also underscores several key strategies that can be translated into clinical practice to support ICU nurse well-being. Promoting physical well-being through ergonomic interventions, the provision of designated rest areas, and the incorporation of structured physical activity breaks may contribute to improved Physical Functioning (PF) scores[1]. Equally important are emotional support mechanisms; implementing structured debriefing sessions, accessible counselling services, and trauma-informed care models can help mitigate emotional strain and enhance General Health (GH) outcomes[2,3]. These targeted interventions offer a practical framework for ICU leadership to foster a healthier, more resilient nursing workforce

Strengths and Limitations

This study presents several notable strengths. The use of a robust mixed-methods approach—combining quantitative measures such as the SF-36 and Maslach Burnout Inventory (MBI) with in-depth qualitative thematic interviews—enabled a comprehensive assessment of ICU nurse well-being. The application of diverse statistical analyses, including correlation analysis, ANOVA, and multivariate regression, strengthened the validity of the findings and highlighted meaningful associations. Clinically, the study offers relevant and actionable insights by identifying targeted interventions such as mentorship programs, structured debriefings, and fixed shift patterns, all of which have potential for implementation in ICU environments. Furthermore, the study provides tailored policy recommendations that offer practical strategies for ICU leadership to mitigate burnout and support nurse well-being.

However, the study has limitations that must be acknowledged. As a single-centre investigation conducted in a tertiary care ICU, the findings may have limited generalizability to other settings. Although the sample size was sufficient for correlation analyses, a larger and more diverse sample across multiple institutions would enhance external validity. Additionally, reliance on self-reported data may have introduced recall bias, particularly in assessing emotional strain and coping mechanisms. Finally, the absence of longitudinal follow-up limits the ability to assess the long-term effectiveness and sustainability of the proposed interventions.

Implications for Practice:

- Physical Well-being Strategies: Encouraging ergonomic practices, designated rest areas, and structured physical activity breaks can enhance PF scores.
- Emotional Support Systems: Establishing structured debriefings, counselling services, and trauma-informed care models may reduce emotional strain and improve GH outcomes.

5. CONCLUSION

This study offers a comprehensive evaluation of the psychological, physical, and social well-being of intensive care unit (ICU) nurses. The observed associations between emotional role impairment, burnout, and post-traumatic stress disorder (PTSD) highlight the pressing need for proactive, institution-led interventions[17]. To promote staff well-being, healthcare systems should prioritize evidence-based strategies such as structured mentorship programs for junior nurses, post-shift debriefings, and improved scheduling practices[18]. Enhancing peer support networks, integrating mindfulness-based stress reduction programs, and implementing ergonomic workplace adjustments may further strengthen both physical and emotional resilience among ICU staff[17].From a policy perspective, institutions must embed mental health support into organizational frameworks by providing easily accessible counselling services, mindfulness initiatives, and real-time peer debriefing mechanisms[18]. At the regional level, the establishment of standardized mental health protocols for ICU personnel is critical to ensure consistency, scalability, and effectiveness across healthcare systems[3]. Nationally, systemic reforms—such as sustaining safe nurse-to-patient ratios, optimizing staffing models, and reinforcing crisis-response infrastructure—are essential to safeguarding the mental health of ICU professionals and mitigating long-term burnout[3].Future research should focus on the development of personalized mental health interventions that account for cultural, institutional, and individual variations in stress response and coping[18]. Additionally, longitudinal studies are warranted to assess the long-term impact of these strategies on reducing burnout, enhancing psychological resilience, and improving nurse retention within critical care settings.

REFERENCES

1. Poncet MC. Burnout and quality of life among healthcare professionals in critical care settings. *Int J Nurs Stud*. 2021.
2. Dyer J. PTSD symptoms among critical care workers: A comparative study. *J Trauma Acute Care Surg*. 2022.
3. García A. Coping strategies in critical care: Impact on mental health outcomes. *Crit Care Med*. 2020.
4. Mealer M. Burnout and post-traumatic stress disorder in critical care nurses. *Am J Respir Crit Care Med*. 2017.
5. Moss M, Good VS, Gozal D, Kleinpell R, Sessler CN. An official Critical Care Societies Collaborative statement: Burnout syndrome in critical care healthcare professionals: A call for action. *Crit Care Med*. 2016;44(7):1414–21.
6. Embriaco N. Factors influencing burnout and job satisfaction in ICU healthcare professionals. *Intensive Care Med*. 2018.
7. Van Mol MMC. Stress and burnout in intensive care nurses: A review of risk factors and coping strategies. *Crit Care Res Pract*. 2015.
8. Azoulay E. The relationship between burnout and mortality among critical care nurses. *Am J Respir Crit Care Med*. 2014.
9. The jamovi project. jamovi (Version 2.6) [Computer Software]. Sydney: The jamovi project; 2024. Available from: https://www.jamovi.org
10. R Core Team. R: A language and environment for statistical computing (Version 4.4) [Computer Software]. Vienna, Austria: R Foundation for Statistical Computing; 2024.
11. Heinzen E, Sinnwell J, Atkinson E, Gunderson T, Dougherty G. *arsenal: An Arsenal of 'R' Functions for Large-Scale Statistical Summaries* [R package]. 2018.
12. Balci S. *ClinicoPath jamovi Module* [software]. 2022. doi:10.5281/zenodo.3997188.
13. Maslach C. *Burnout: The Cost of Caring*. Cambridge, MA: Harvard University Press; 2016.
14. Embriaco N. Burnout syndrome among critical care healthcare providers. *Curr Opin Crit Care*. 2012.

15. Mealer M. PTSD symptoms among critical care nurses: Risk factors and impact on performance. *Am J Respir Crit Care Med*. 2017.

16. Smith J, Brown T, Clarke H, Singh V. Ergonomics in the ICU: Reducing physical strain. *Crit Care Med*. 2020;48(3):320–5.

17. Lee A, Thomas B, Wang H, Gomez E. Emotional debriefing and support services in ICU settings. *J Intensive Care*. 2021;9:15.

18. Patel R, Johnson M, Kapoor S. Trauma-informed approaches for healthcare professionals. *Nurs Health Sci*. 2019;21(2):198–204.