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Examining the link between intensive care unit nurses' burnout and perceived quality of life: a multicenter cross-sectional study

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Abstract

Background Intensive care unit (ICU) nurses are pivotal in ensuring high-quality care to patients with life-threatening conditions in the healthcare sector. These nurses operate in high-pressure environments that demand constant vigilance, technical proficiency, and emotional resilience. The challenging nature of their work can predispose them to burnout, a syndrome marked by emotional exhaustion, cynicism, and a low sense of personal accomplishment. Therefore, we investigated the relationship between burnout and perceived quality of life (QoL) among ICU nurses.

Methods A cross-sectional design was employed, with 265 ICU nurses in the Hail Region, Saudi Arabia, participating in this study. Two self-report scales (23-item Burnout Assessment Tool and 15-item Quality of Life Scale) were used to collect data from March to June 2024. Statistical analysis included descriptive statistics and Pearson correlation coefficients to explore the relationship between burnout levels and QoL dimensions.

Results The findings indicated a high prevalence of burnout, with 73.2% of nurses reporting high to very high levels of burnout. The overall QoL score was moderate, averaging 64.46 out of 105. Significant negative correlations were observed between burnout and all measured dimensions of QoL ($p=0.01$). These dimensions include material and physical well-being (-0.303, $p=0.01$), relationships with other people (-0.337, $p=0.01$), and personal development (-0.381, $p=0.01$).

Conclusion The study underscores a significant inverse relationship between burnout and QoL among ICU nurses. The data highlight the urgent need for targeted interventions to reduce burnout and improve the personal well-being of nurses. This will not only enhance the quality of patient care but also ensure the sustainability of the healthcare system.

Clinical trial number Not applicable.

Keywords Burnout, Cross-sectional study, Intensive care unit nurses, Quality of life

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Introduction

Nurses practicing critical care are indispensable in intensive care units (ICU). ICU nurses care for the most life-threatening and critical medical conditions [1]. As such, ICU nurses need to work for extended hours while continuously exposed to high stress levels, secondary traumatic experiences, and ethical dilemmas [2, 3]. These can lead to burnout symptoms: extreme emotional fatigue, depersonalization, and depleted personal achievements [4]. Burnout could seriously affect ICU nurses' physical and mental health, resulting in poor-quality patient care and increased medical and nursing errors [4, 5].

Burnout is characterized by a perceived reduction in competence and loss of personal identity [5]. This condition occurs due to long-term exposure to job-related stress [4, 6]. A preponderance of studies demonstrated burnout as the most common issue among ICU nurses [4, 7]. In ICUs, nurses often confront high levels of strain, emotional demands, and workloads that result in feelings of psychological fatigue, depersonalization toward patients, and depleted personal achievements [8–10].

Burnout among ICU nurses is a significant concern in healthcare settings due to its detrimental effects on nurses' QoL and quality of patient care [11]. Several studies have investigated the incidence and various factors linked with burnout among ICU nurses [4, 5, 11]. In 2024, a systematic review reported that 50% of ICU nurses experience burnout, negatively impacting job satisfaction [4]. Similarly, ICU nurses encountered significantly elevated burnout levels compared to medical-surgical nurses [12]. Villarante et al. reported in 2023 that ICU nurses experienced more pronounced stress levels and burnout than other nursing specialties; as such, they are one-fifth more likely to experience severe stress and burnout [13]. Depression, anxiety, stress, and burnout adversely impact ICU nurses work and life quality [11], while burnout reduces the caring behaviors of ICU nurses [5]. Moreover, high burnout prevalence rates are linked to unsatisfactory nursing care quality, increased medication errors, infection rates, and falls that negatively impact patient outcomes [14, 15]. Thus, emphasizing the unique challenges ICU nurses face in high-stress environments compared with other healthcare units [16].

ICU nurses QoL is a crucial factor that impacts well-being and the provision of quality care [8, 17]. As such, ICU nurses with higher QoL provide better patient care and are satisfied with their jobs [4]. Meanwhile, those with lower QoL were dissatisfied with their job, experienced higher burnout and nursing errors, and were likely to leave nursing [4]. Nurse burnout negatively impacted patient outcomes such as patient mortality rate, failure to provide immediate care, and prolonged hospital admissions [18]. These findings seem to underscore the connection between nurses' burnout and adverse patient outcomes, warranting further investigation.

In Saudi Arabia, 60% of ICU doctors and nurses suffer from burnout in all its dimensions [8]. Several factors linked to burnout among ICU nurses include the number of shifts, age, smoking status, job rank, gender, and hours worked [8]. Additionally, ICU nurses' lack of psychological resilience, work-family conflict, and moral distress have been found to intensify burnout [9].

There is a plethora of studies that focus on burnout and QoL among nurses [4, 19]. Previous studies in Saudi Arabia examined QoL's relationship with nurses' burnout, secondary traumatic stress, and job satisfaction before and during the COVID-19 pandemic [2, 8, 20] and among nurses working in general wards or units [21]. While these studies are relevant to the broader nursing context, further research is warranted in examining the relationship between burnout and QoL of ICU nurses in Saudi Arabia, especially after the pandemic when the situation may have changed.

Theoretical underpinnings

Maslach and Schaufeli's burnout theory postulated its three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment [22]. In nursing research, this theory is well-utilized in examining the multi-dimensional aspect of burnout among different cohorts of nurses and nursing students [4, 6]. The Maslach Burnout Inventory (MBI) is a standard instrument to evaluate the three dimensions of burnout [23, 24]. Accordingly, emotional exhaustion refers to the perception of being emotionally drained, depersonalization pertains to unfeelingly reacting to one's job or treating others impersonally, and reduced personal accomplishment occurs when an individual thinks that they are no longer getting any better at what they do best. MBI is reliable across studies conducted in various cultures and work settings by testing its three-dimensional structure reliability and validity [23, 24]. Maslach et al. (2008) reported that the Cronbach's alpha of the MBI were 0.90 for emotional exhaustion, 0.79 for depersonalization, and 0.71 for personal accomplishment [25]. Accordingly, MBI was a reliable scale among nurses in Saudi Arabia [26]. This instrument can measure levels of burnout in each dimension so that interventions can be designed more specifically toward dealing with severe problems in the workplace, whether at individual or organizational levels [27].

Employee well-being is a central tenet of the Job Demands-Resources (JD-R) model [28, 29]. In this model, work environment refers to everything outside an individual's control at their workplace. It focuses mainly on job demands and job resources, which basically deal with challenges or opportunities for growth respectively [30].

This theory states that there should be a balance between demand and support for an organization to have healthy working conditions. When requirements are significant, but supplies are poor, staff members tend to get burned out and become less engaged with their jobs. Conversely, if there are enough resources and high demand levels, employees may be more likely to be adequately prepared to face difficulties that they can even find stimulating [29]. The JD-R model, when applied to the nursing profession, can help identify the reasons behind burnout among critical care nurses, enabling organizations to develop strategies to create healthier workplaces and enhance employee well-being.

The JD-R model also guided our study because it focuses on the work environment's influence on burnout experience and QoL. By pinpointing specific job demands (e.g., workload, emotional stress) and resources (e.g., social support, development opportunities), researchers can explore how they relate to burnout and QoL. This model predicts high demands and low resources will increase burnout, reducing QoL. More importantly, it guides the development of interventions to enhance a supportive working environment for ICU nurses, leading to improved well-being and better patient care.

Study aims

This study examined the link between burnout and QoL among ICU nurses in the Hail region, Saudi Arabia. Specifically, this study sought to (a) determine the level of burnout and QoL as perceived by ICU nurses and (b) determine the relationship between burnout and QoL.

Methods

Research design, setting, sampling, and participants

This cross-sectional study was conducted from March to June 2024 to examine the relationship between ICU nurses' burnout and QoL simultaneously. Thus, this design provides a snapshot of the prevailing conditions of study variables. The STROBE checklist was used as a guide in reporting the study results.

This study included ICU and Critical Care Unit (CCU) registered nurses in the Hail region, Saudi Arabia. Four tertiary government-owned and two large private hospitals were the study settings. Included in the participants were nurses who have been working for at least one year in any of the aforementioned hospitals and are currently employed as bedside ICU nurses. Excluded in the study were nurse managers and other nursing roles not directly involved in bedside care during the data collection phase and those who were on leave or taking vacation during the data collection period. Target participants were contacted via their nurse managers and head nurses who sent the online study poster and survey link in their group chats (e.g., Messenger, WhatsApp) and posters placed in the ICU bulletin boards.

The total population of ICU nurses in study settings that met the inclusion criteria was 292, and they were included in the study through purposive sampling. 273 participants submitted the survey forms (response rate: 93.47%). However, only 265 responses (i.e., final sample size) were complete and included in the final data analyses (completion rate: 90.75%). The discarded 8 responses had incomplete demographic data ($n = 3$) and scale responses ($n = 5$). Bujang (2024) recommended that for Pearson's correlation, the recommended sample size range to achieve the desired effect is 12 to 143, using a confidence interval of 0.3 and a confidence level of 95% [31]. Hence, our sample size satisfied this requirement.

Instruments

Data were collected by a three-part survey questionnaire. The questionnaire (e.g., tools or scales) was administered in its English version. The first part focused on capturing demographic variables (e.g., age, sex, marital status, nationality, education level, and years of experience in intensive and critical care unit) of participants. The second part contains the Hadžibajramović et al.'s 23-item Burnout Assessment Tool (BAT-23) [32]. This tool is specifically designed to measure healthcare professionals' burnout. The BAT evaluates burnout through four dimensions: "Exhaustion" (8 items), which captures feelings of extreme fatigue; "Mental Distance" (5 items), assessing detachment from work; "Cognitive Impairment" (5 items), focusing on difficulties in concentration and attention; and "Emotional Impairment" (5 items), which measures feelings of being overwhelmed emotionally, along with helplessness and hopelessness. This tool is scored on a 5-point Likert scale ranging from 1 (never) to 5 (always). This scale does not contain reverse coded items [32]. The total score, indicative of the level of burnout, is derived by summing the responses, with higher scores reflecting greater burnout. The scoring of the BAT-23 is structured to categorize burnout levels as follows: scores averaging ≤ 1.60 are considered 'Mean Low,' indicating minimal burnout; scores between 1.61 and 2.40 denote 'Average Burnout'; scores from 2.41 to 3.29 are classified as 'High Burnout'; and scores ≥ 3.30 are categorized as 'Very High Burnout'. The Cronbach's alpha for the BAT showed strong reliability, exceeding 0.90 for the BAT-23 and 0.80 for subscales [32].

The questionnaire's third part included Burckhardt and Anderson's 15-item QoL Scale [33]. This scale measured the subjective QoL of ICU nurses, reflecting the overall well-being and satisfaction across various life domains. This scale is a short version of Medical Outcomes Study Short Form-36 (MOS SF-36) [34, 35]. The SF-36 is a health-related profile of QOL that contains 36

items and measures health status across three domains: functional status, well-being, and overall health evaluation [34, 35]. The SF-36 has 8 subscales: physical functioning (10 items), social functioning (2 items), physical role functioning (4 items), emotional role functioning (3 items), mental health (5 items), vitality (4 items), bodily pain (2 items), and general health (5 items) [34, 35]. Similarly, Burckhardt and Anderson's 15-item QoL Scale adopts a multidimensional approach to evaluate how different aspects of life contribute to overall life satisfaction, providing a comprehensive view of the factors influencing nurses' QoL [33]. The 5 dimensions covered by the 15-item QoL Scale include Material and Physical Well-being (2 items), which assesses satisfaction with material resources and physical health; Relationships with Other People (4 items), evaluating the quality of interactions with family, friends, and colleagues; Social, Community, and Civic Activities (2 items), measuring engagement and satisfaction with social and community involvements; Personal Development and Fulfillment (4 items), gauging feelings of personal growth, educational development, and job satisfaction; and Recreation (3 items), assessing the level of satisfaction with leisure time and activities. The items were rated on a 7-point Likert scale, ranging from 1 (terrible) to 7 (delighted). The total scores from the scale provide an overall measure of QoL, where higher scores indicate a better QoL. Scores above 90 suggest a high QoL, indicating significant satisfaction across various aspects of life. Conversely, a score lower than 90 might indicate a low QoL, highlighting potential areas of concern such as work-related stress, inadequate staffing, resource limitations, or personal life stressors that could negatively affect the nurses' well-being. The scale's reliability is robust, with Cronbach's alpha ranging from 0.82 to 0.92 [33], reflecting strong internal consistency and making it a reliable tool for measuring the QoL among nurses.

Scale's reliability

Although the original BAT-23 and 15-item showed good validity and reliability and considering that these scales were first utilized among ICU nurses in Saudi Arabia, we determined the scale's internal reliability by conducting a pilot test among 20 nurses. The Cronbach's alpha was 0.92 and 0.91 for BAT-23 and 15-item QoL Scale, respectively, showing excellent reliability. No items were removed, and the original English versions were used for this study.

Data collection

Data was collected from March to June 2024 using a structured questionnaire distributed via Google Forms. This online survey tool was chosen for its accessibility and efficiency, allowing ICU and CCU nurses across the Hail Region to participate conveniently. The questionnaire comprised sections designed to assess burnout levels and QoL, ensuring comprehensive data collection to effectively analyze the relationship between these two variables. This method facilitates efficient and widespread data gathering, which is crucial for the robust analysis required in this cross-sectional study.

Data analysis

To analyze the gathered data, they were displayed using Excel sheets and entered in Statistical Package for Social Sciences (SPSS) Version 23. The participants' demographic profiles were analyzed using frequency and percentage distribution. Levels of burnout and QoL were analyzed utilizing percentage, mean, and standard deviation. After normality testing using Shapiro-Wilk, the data were found to be normally distributed. Thus, the relationship between burnout and QoL was examined using the Pearson moment correlation coefficient. A p-value of < 0.05 was considered statistically significant.

Ethical considerations

Ethical approval

Ethical approval for this study was obtained from the University of Hail Research Ethics Committee (H-2024-145; approved March 18, 2024). Securing ethical clearance from the research board before the project began was essential. After receiving this clearance, the researchers communicated the research objectives and justifications to the hospital staff nurses in the ICU and CCU. The informed consent form was placed in the first section of the online survey form. It contains information on participants right to withdraw from the study if they felt uncomfortable answering the survey and participation is voluntary. When they complete and submit the survey form, it is implied consent to participate in this study [36]. Strict measures were implemented to ensure the confidentiality and anonymity of the information collected from the participants by storing the data in a password-protected laptop accessible only to the four researchers directly involved in data collection. Furthermore, researchers adhered to the Declaration of Helsinki in conducting research involving human participants [37].

Results

Sociodemographic profile of ICU nurses

Our findings revealed that majority of participants were female (78.11%), less than 40 years old (87.92%), married (72.83%), and Saudi nationals (80.00%). Majority had a bachelor's degree (73.20%) and 6–10 years of critical care experience (43.02%) (Table 1). Non-Saudi nationals were included in this study because almost 70% of nurses in

Table 1 Participants' demographic profiles ($n = 265$)

Demographic profile		Frequency (f)	Percentage (%)
Age (in years)	< 40	233	87.9
	≥ 40	32	12.1
Gender	Female	207	78.2
	Male	58	21.8
Marital Status	Married	193	72.8
	Single	72	27.2
Nationality	Non-Native	53	20.0
	Native	212	80.0
Education level	Diploma	39	14.7
	Bachelor	194	73.2
	Master's degree	32	12.1
Years of intensive or critical care nursing experience	1–5	56	21.1
	6–10	114	43.1
	> 10	95	35.8

Table 2 Levels of burnout and quality of life among ICU nurses ($n = 265$)

	Minimum	Maximum	Mean	SD
Burnout dimensions				
Exhaustion	8.00	36.00	24.04	4.29
Mental Distance	5.00	25.00	14.05	3.17
Cognitive Impairment	5.00	22.00	12.68	3.25
Emotional Impairment	5.00	25.00	12.68	3.36
Total	23.00	105.00	63.45	10.50
Quality of life dimensions				
Material and Physical Wellbeing	2.00	14.00	8.63	2.24
Relationships with Other People	4.00	28.00	17.27	4.27
Social, Community, and Civic Activities	2.00	14.00	8.48	2.33
Personal Development	4.00	28.00	17.30	4.00
Recreation	3.00	21.00	12.78	3.20
Total	15.00	105.00	64.46	13.91

Saudi Arabia are foreign nationals (e.g., Filipinos, Indians, Jordanians, and Egyptian) [38].

Levels of burnout and QoL perceived by ICU nurses

The burnout levels of ICU nurses are illustrated in Table 2. As indicated, ICU nurses experienced moderate levels of burnout across all dimensions (M = 63.45, SD = 10.50). Notably, the exhaustion dimension (M = 24.04, SD = 4.29) demonstrate the highest burnout level, while cognitive (M = 12.68, SD = 3.25) and emotional (M = 12.68, SD = 3.36) impairment dimensions displayed the lowest. Moreover, majority of subjects reported high burnout levels (73.2%), while only 2.6% exhibited low burnout levels (Fig. 1). These results underscore the significant impact of work-related stress on the well-being of nurses in critical care settings.

Regarding ICU nurses QoL, they have moderate QoL levels (M = 64.46, SD = 13.91) (Table 2). Across QoL dimensions, personal development revealed the highest QoL level (M = 17.30, SD = 4.00), whereas social, community, and civic activities had the lowest level (M = 8.48, SD = 2.33). Furthermore, a vast majority of subjects report a low QoL (91%), while only a small percentage perceive had high QoL (9%) (Fig. 2).

Relationship between burnout and QoL among ICU nurses

Overall, Table 3 illustrates the statistically significant negative correlations between total burnout dimensions and total QoL factors among ICU nurses. Notably, all burnout dimensions were negatively correlated with all QoL dimensions ($p = 0.01$). This comprehensive measure of burnout indicates that as burnout increases, QoL significantly decreases across all the measured dimensions. As such, these findings emphasize the critical need for addressing ICU nurses' burnout in healthcare settings to enhance QoL and reduce burnout.

Discussion

This study investigated the relationship between burnout and QoL among ICU nurses in Saudi Arabia. Our study highlighted a significant issue of burnout among ICU nurses of Hail region, Saudi Arabia with 73.2% reporting high levels and 9.8% reporting very high levels of burnout. These findings indicate a critical need for targeted interventions to reduce burnout and improve working conditions within these settings. Comparatively, international studies reported by Quijada-Martínez et al. in Venezuela (2021) revealed a lower prevalence of high burnout syndrome at 22.5%, with emotional exhaustion affecting 75.5% of the participants [39]. Also, a systematic review and metanalysis demonstrated that high emotional exhaustion (31%), high depersonalization (18%), and reduced personal accomplishment (46%) were noted globally among nurses working in the ICU with heavy workloads and longer hours directly linked to burnout syndrome [40]. Therefore, certain factors, such as regional differences in healthcare systems, resource distribution, organizational conditions and support, may significantly influence burnout levels.

Moreover, our findings aligned with international research that has similarly identified workplace factors and burnout as significant influences on nurses' quality of life. For instance, 65% of the variance in burnout and 37% in QoL among pediatric nurses could be explained by factors such as coworker support, job satisfaction, and exposure to workplace violence [41]. Thus, underscoring the critical role of supportive work environments in mitigating burnout and enhancing nurses' QoL. Accordingly, Swamy et al. (2020) emphasized that workplace climate, including perceptions of workload and staffing, was the

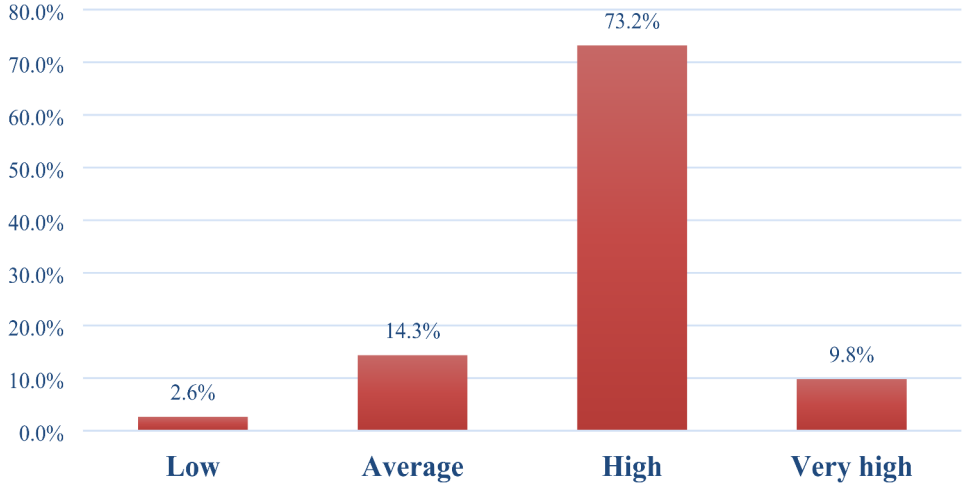

Fig. 1 ICU nurses' burnout levels ($n=265$)

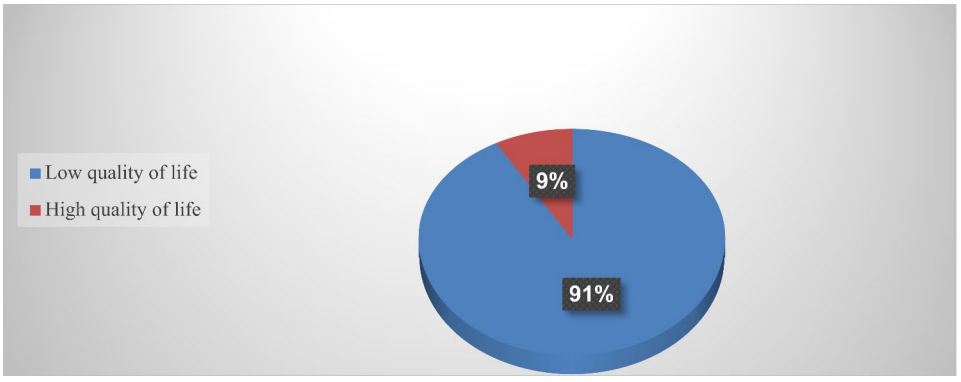

Fig. 2 ICU nurses' quality of life levels ($n=265$)

Table 3 Relationship between burnout and quality of life among ICU nurses ($n=265$)

	QoL dimensions					
Burnout dimensions	**Material and physical well-being**	**Relationships with other people**	**Social**	**Personal development**	**Recreation**	**Total**
Exhaustion	-0.303*	-0.337*	-0.296*	-0.381*	-0.316*	-0.384*
	(< 0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Mental distance	-0.307*	-0.284*	-0.258*	-0.344*	-0.322*	-0.353*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Cognitive impairment	-0.351*	-0.346*	-0.348*	-0.382*	-0.297*	-0.399*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Emotional impairment	-0.424*	-0.394*	-0.311*	-0.367*	-0.339*	-0.425*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Total	-0.461*	-0.456*	-0.406*	-0.495*	-0.427*	-0.523*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)

*Pearson correlation *p*-value significant at the 0.01 (2-tailed)

strongest predictor of burnout among nurses. Their study suggested that better workplace management and organizational support could significantly decrease burnout [42]. These insights are particularly relevant for the Hail region, where enhancing workplace climate could be a strategic focus to improve overall nurse well-being.

The impact of the work environment on nurse burnout is a recurrent theme in global studies [39, 42]. For instance, the study conducted by Ni et al. (2023) found that the work environment in Chinese ICUs significantly affected professional QoL, with job burnout and secondary trauma closely linked to environmental factors [43]. This report aligns with our findings, indicating that

workplace condition improvements could mitigate burnout rates. Healthcare organizations and nurse managers providing adequate or flexible staffing, rest periods, self-care programs, nurse empowerment, adequate recourses, and access to mental health programs (e.g., mindfulness, resiliency training, yoga) were reported effective in minimizing nurses' burnout and enhancing QoL [41, 44, 45].

Similarly, Gerami Nejad et al. (2019) emphasized the protective role of resilience against burnout among nurses, suggesting that fostering resilience through specific training programs could be beneficial [46]. Furthermore, there are varying burnout levels across different wards, with ICU nurses experiencing the highest [12, 40]. This comparative aspect highlights the need for targeted interventions in specific nursing areas, particularly in high-stress environments like ICUs. Their studies also noted that demographic factors such as age and nursing experience influenced burnout levels, suggesting a tailored approach to addressing burnout that considers these variables.

The results show that 91% of ICU nurses reported low QoL and only 9% had high QoL. The QoL assessment reveals moderate satisfaction levels across various life domains, yet the overall sentiment remains notably subdued. In international studies, similar findings were found with unique regional variations. For example, a study by Ni et al. (2023) identified significant correlations between the nursing work environment and QoL among ICU nurses in China, suggesting that environmental factors play a critical role in shaping overall life satisfaction [43]. This connection between work environment and QoL echoes our findings, indicating potential areas for intervention, such as improving workplace conditions to enhance overall life satisfaction.

In consistence with our findings, study conducted by Li et al. (2021) reported that higher levels of job burnout were linked to poorer QoL scores among nurses via the mediation of occupational stress [47]. This relationship underscores the intertwined nature of work stress, burnout, and QoL, reinforcing the need for comprehensive strategies that address workplace stressors and personal well-being. Nonetheless, the positive impact of resilience and personal development in mitigating the effects of job-related stress suggests that enhancing personal and professional growth opportunities could be beneficial [46]. These factors help buffer against the detrimental effects of a high-stress profession and improve overall QoL.

Odonkor and Frimpong (2020) also provide a broader perspective concerning burnout and QoL. They discovered that burnout varied widely among healthcare professionals, with nurses often experiencing higher burnout levels, directly impacting their quality of life and professional effectiveness [48]. Similarly, Ndlovu et al. (2022) identified demographic factors such as years of work experience, level of education, and nurse-patient ratios as significant predictors of professional QoL [17]. These results suggest that tailored strategies considering these variables could enhance nurses' QoL. Therefore, considering these findings, it is evident that interventions need to be multifaceted, targeting both the professional environment and personal support systems of nurses. Recommendations include enhancing physical and mental health support, promoting professional development programs, and improving the social aspects of the work environment. Such measures would not only address the immediate issues of burnout and QoL but also contribute to a more sustainable healthcare system where the well-being of nurses is prioritized as a component of effective patient care.

Our results indicate statistically significant negative correlations between all dimensions of burnout and QoL among ICU nurses. Notably, total burnout showed a marked negative correlation with overall QoL, underscoring the pervasive effect of burnout on all facets of life. These correlations highlight how elevated burnout levels are closely linked to diminished QoL. Our findings were consistent with global research that links nurse burnout to reduced QoL. For instance, a systematic review by Khatatbeh et al. (2022) synthesized data from 21 studies. They revealed a significant association between burnout dimensions and QoL among nurses, affirming the universal relevance of our findings [49]. Similarly, Ribeiro et al. (2021) demonstrated correlations between burnout symptoms like emotional exhaustion and lowered QoL, reflecting a global pattern where burnout adversely affects nurses' well-being [50]. A Venezuelan study also provides an additional layer of insight, suggesting that the severity of burnout can directly impact the professional QoL, with emotional exhaustion significantly affecting 75.5% of nurses [38]. These observations suggest that interventions to reduce burnout should consider the intensity of symptoms and their broad impacts on QoL.

Wang et al. (2019) and Lebni et al. (2021) emphasized the link between burnout and the quality of working life. They reported how job burnout is influenced by factors such as hospital type, age, income, and work shifts and how they correlate with nurses' work-life quality [51, 52]. These studies collectively underscore a critical narrative. While burnout is a significant worldwide issue among nurses, varying factors such as workplace environment, resilience levels, and the severity of burnout symptoms play crucial roles in shaping their QoL.

By and large, the high burnout among ICU nurses underscores the necessity for policy reforms and enhanced support systems. Strategies include revising nurse-to-patient ratios, adjusting shift lengths, and improving professional development opportunities

focused on building resilience and managing stress. By integrating these changes, healthcare settings can create a more supportive environment that reduces burnout and enhances the overall quality of care provided by these essential healthcare workers. These findings lay a foundation for future research and policy initiatives to improve nurse well-being and patient care quality on a broader scale.

Limitations and recommendations

Although the instruments used in this study are well-utilized and validated globally, adding to the finding's strengths, certain limitations were encountered in this investigation. While providing immediate data, the cross-sectional design cannot establish causality between burnout and QoL. Self-reported data may introduce bias, as ICU nurses might provide socially desirable answers or be unaware of their burnout or QoL status. The study focused only on ICU nurses in one geographic area that provided direct patient care, specifically in the Hail region, Saudi Arabia, which may limit the applicability of the findings to other regions or settings. Therefore, we recommend the following to future researchers. Future studies may utilize longitudinal designs to assess causes, predictors, and moderators of burnout and QoL. For instance, a multivariate analysis may determine the predictive value of QoL. Expanding this study across all regions in the country may enhance generalizability. ICU nurse managers may participate in the future to determine whether their leadership or managerial styles could influence burnout and QoL. Finally, an interventional program to be designed in terms of effectiveness can also be considered to reduce the ICU nurses' burnout levels and improve their QoL.

Implications for nursing practice

The findings underscored a critical need for healthcare institutions to adopt proactive measures to mitigate burnout among nurses, as it directly affects QoL and patient care outcomes. The nursing administrators can consider interventions to alleviate burnout and improve the QoL of the ICU nurses. Such interventional programs focus on staffing policies to reduce workload, such as a 1:1 nurse-patient ratio, providing psychological support during high levels of burnout, and creating a work-life balance protocol in the ICU and other hospital units.

Conclusion

This study reveals a significant relationship between burnout and quality of life among intensive care unit nurses in the Hail region of Saudi Arabia. High levels of burnout correlated negatively with all aspects of QoL, including physical well-being, personal development, and social interactions. The findings indicate that nurses experiencing higher burnout report lower QoL, emphasizing the need for targeted interventions. These include enhanced support systems, better workload management, and initiatives to boost resilience and job satisfaction among nurses. Additionally, fostering a positive work environment may mitigate the effects of burnout and improve the overall well-being of nurses. Given the study's implications, it is recommended to implement strategies focusing on reducing job stress and improving work conditions to enhance nurse well-being and patient care outcomes.

Abbreviations

BAT	23–Burnout Assessment Tool
CCU	Critical Care Unit
ICU	Intensive Care Unit
QoL	Quality of life

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Author contributions

Conceptualization: HNV, TAA, SAEGMS, RWAV, BA, AMA, LLD, OAN, TUAA. Methodology: HNV, TAA, SAEGMS, RWAV, BA, AMA, SMN, LLD, OAN, Software: HNV, TAA, SAEGMS, RWAV, SMN, SMR, IJC, SAA, MAEA. Validation: HNV, TAA, SAEGMS, RWAV, BSA, AMA, SMN, IJC, SAA, MAEA, RANG, DJEB. Formal Analysis: HNV, TAA, SAEGMS, RWAV, BA, AMA, SMN, LLD, OAN, TUAA, DJEB, RANG. Investigation: HNV, TAA, SAEGMS, RWAV, BA, AMA, LLD, OAN, TUAA, SMR, IJC, SAA, MAEA. Data Curation: HNV, TAA, SAEGMS, RWAV, TUAA, SMR, SAA, MAEA, DJEB, RANG. Writing - Original Draft: HNV, TAA, SAEGMS, RWAV, DJEB, RANG. Writing - Review & Editing: HNV, TAA, RWAV, DJEB, RANG. Visualization: HNV, TAA, SAEGMS, RWAV. Supervision: HNV. Project administration: HNV. Funding acquisition: HNV, TAA.

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Data availability

The data supporting this study's findings are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

Ethics approval was secured from University of Hail Research Ethics Committee (H-2024-145; approved March 18, 2024). Participants signed an informed consent and willingly participated in this study. Additionally, researchers adhered to the Declaration of Helsinki in conducting research involving human participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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References

1. Berdida DJE. Intensive and critical care nurses patient safety, care quality, professional self-efficacy, and missed nursing care: structural equation model analysis. Worldviews Evid Based Nurs. 2024;21(5):493–504. https://doi.org/10.1111/wvn.12741.
2. Alzailai N, Barriball KL, Alkhatib A, Xyrichis A. Factors that contributed to burnout among intensive care nurses during the COVID-19 pandemic in Saudi Arabia: A constructivist grounded theory. Aust Crit Care. 2023;36(1):19–27. https://doi.org/10.1016/j.aucc.2022.11.002.
3. Liu Y, Ying L, Zhang Y, Jin J. The experiences of intensive care nurses coping with ethical conflict: a qualitative descriptive study. BMC Nurs. 2023;22(1):449. https://doi.org/10.1186/s12912-023-01612-2.
4. Quesada-Puga C, Izquierdo-Espin FJ, Membrive-Jiménez MJ, et al. Job satisfaction and burnout syndrome among intensive-care unit nurses: A systematic review and meta-analysis. Intensive Crit Care Nurs. 2024;82:103660. https://doi.org/10.1016/j.iccn.2024.103660.
5. Efil S, Turen S, Yıldız Ayvaz M, Bulbul E, Yenı T. Burnout levels and care behaviours in intensive care nurses: A cross-sectional, multicentre study. Intensive Crit Care Nurs. 2022;71:103246. https://doi.org/10.1016/j.iccn.2022.103246.
6. Xia M, Wang J, Bi D, et al. Predictors of job burnout among Chinese nurses: a systematic review based on big data analysis. Biotechnol Genet Eng Rev. 2023;39(2):1163–86. https://doi.org/10.1080/02648725.2023.2168910.
7. Ye Y, Chandrasekaran A. (2023). The impact of nurse staffing on turnover and quality: An empirical examination of nursing care within hospital units. J Operations Manag. 2023;69(7):1124–1152. https://doi.org/10.1002/joom.1245
8. AlAteeq MA, AlQumayzi AA, AlOraini FS, Shihah ASB, AlHussain RA, et al. Burnout among intensive care units physicians and nurses at tertiary care hospitals in Riyadh, Saudi Arabia. J Clin Res Case Stud. 2023;1(4):1–8. https://doi.org/10.61440/JCRCS.2023.v1.19.
9. Guttormson JL, Calkins K, McAndrew N, Fitzgerald J, Losurdo H, Loonsfoot D. Critical care nurse burnout, moral distress, and mental health during the COVID-19 pandemic: A united States survey. Heart Lung. 2022;55:127–33. https://doi.org/10.1016/j.hrtlng.2022.04.015.
10. Miller MB. 307 Reducing moral distress in burn/trauma intensive care unit nurses. J Burn Care Res. 2023;44(Suppl 2):S199. https://doi.org/10.1093/jbcr/irad045.282.
11. Cecere L, de Novellis S, Gravante A, et al. Quality of life of critical care nurses and impact on anxiety, depression, stress, burnout and sleep quality: A cross-sectional study. Intensive Crit Care Nurs. 2023;79:103494. https://doi.org/10.1016/j.iccn.2023.103494.
12. Mahmoudi S, Barkhordari-Sharifabad M, Pishgooie AH, Atashzadeh-Shoorideh F, Lotfi Z. Burnout among Iranian nurses: a National survey. BMC Nurs. 2020;19:69. https://doi.org/10.1186/s12912-020-00461-7.
13. Villarante DM, O'Donoghue SC, Medeiros M, et al. A National survey of stress and burnout in critical care nurses: A prepandemic study. Dimens Crit Care Nurs. 2023;42(5):248–54. https://doi.org/10.1097/DCC.0000000000000598.
14. Gómez-Urquiza JL, De la Fuente-Solana EI, Albendín-García L, Vargas-Pecino C, Ortega-Campos EM. Cañadas-De La Fuente GA. Prevalence of burnout syndrome in emergency nurses: A Meta-Analysis. Crit Care Nurse. 2017;37(5):e1–9. https://doi.org/10.4037/ccn2017508.
15. Ryu IS, Shim J. The influence of burnout on patient safety management activities of shift nurses: the mediating effect of compassion satisfaction. Int J Environ Res Public Health. 2021;18(22):12210. https://doi.org/10.3390/ijerph182212210.
16. Friganović A, Selič P. Levels of burnout syndrome in Croatian critical care nurses: A Cross-Sectional study. Psychiatr Danub. 2020;32(Suppl 4):478–83.
17. Ndlovu E, Filmalter C, Jordaan J, Heyns T. Professional quality of life of nurses in critical care units: influence of demographic characteristics. South Afr J Crit Care. 2022;38(1). https://doi.org/10.7196/SAJCC.2022.v38i1.517.
18. Schlak AE, Aiken LH, Chittams J, Poghosyan L, McHugh M. Leveraging the work environment to minimize the negative impact of nurse burnout on patient outcomes. Int J Environ Res Public Health. 2021;18(2):610. https://doi.org/10.3390/ijerph18020610.
19. Ho MH, Liu HC, Joo JY, Lee JJ, Liu MF. Critical care nurses' knowledge and attitudes and their perspectives toward promoting advance directives and end-of-life care. BMC Nurs. 2022;21(1):278. https://doi.org/10.1186/s12912-022-01066-y.
20. Mhawish HA, Gano JQ, Stephen TJ, Diolaso SR, Aletreby WT. Professional quality of life among intensive care unit nurses in Saudi Arabia: A cross-sectional study. Saudi J Health Sci. 2024;13(2):133–8. https://doi.org/10.4103/sjhs.sjhs_35_24.
21. Al Mutair A, Al Bazroun MI, Almusalami EM, et al. Quality of nursing work life among nurses in Saudi Arabia: A descriptive Cross-Sectional study. Nurs Rep. 2022;12(4):1014–22. https://doi.org/10.3390/nursrep12040097.
22. Maslach C, Schaufeli WB. Historical and conceptual development of burnout. In: Schaufeli WB, Maslach C, Marek T, editors. Professional burnout: recent developments in theory and research. Taylor & Francis; 1993. pp. 1–16.
23. Maslach C, Jackson SE, Leiter MP. Maslach burnout inventory. Scarecrow Education; 1997.
24. Williamson K, Lank PM, Cheema N, Hartman N, Lovell EO, Emergency Medicine Education Research Alliance (EMERA). Comparing the Maslach burnout inventory to other Well-Being instruments in emergency medicine residents. J Grad Med Educ. 2018;10(5):532–6. https://doi.org/10.4300/JGME-D-18-00155.1.
25. Maslach C, Leiter M, Schaufeli W. Measuring burnout. In: Cartwright S, Cooper CL, editors. The Oxford handbook of organizational well-being. Oxford University Press; 2008. https://doi.org/10.1093/oxfordhb/9780199211913.003.0005.
26. Grande RAN, Berdida DJE, Villagracia HN, Raguindin SM, Cornejo LTO, Al Reshidi NM, Alshammari AT, Aljebari BJ, AlAbd AMA. The moderating effect of burnout on professionalism, values and competence of nurses in Saudi Arabia amidst the COVID-19 pandemic: A structural equation modelling approach. J Nurs Manag. 2022;30(7):2523–36. https://doi.org/10.1111/jonm.13754.
27. Bes I, Shoman Y, Al-Gobari M, Rousson V, Guseva Canu I. Organizational interventions and occupational burnout: a meta-analysis with focus on exhaustion. Int Arch Occup Environ Health. 2023;96(9):1211–23. https://doi.org/10.1007/s00420-023-02009-z.
28. Bakker AB, Demerouti E. The job demands-resources model: state of the Art. J Managerial Psychol. 2007;22(3):309–28.
29. Tummers LG, Bakker AB. Leadership and job Demands-Resources theory: A systematic review. Front Psychol. 2021;12:722080. https://doi.org/10.3389/fpsyg.2021.722080.
30. Scholze A, Hecker A. Digital job demands and resources: digitization in the context of the job demands-Resources model. Int J Environ Res Public Health. 2023;20(16):6581. https://doi.org/10.3390/ijerph20166581. Published 2023 Aug 15.
31. Bujang MA. An elaboration on sample size determination for correlations based on effect sizes and confidence interval width: a guide for researchers. Restor Dent Endod. 2024;49(2):e21. https://doi.org/10.5395/rde.2024.49.e21.
32. Hadžibajramović E, Schaufeli W, De Witte H. A Rasch analysis of the burnout assessment tool (BAT). PLoS ONE. 2020;15(11):e0242241. https://doi.org/10.1371/journal.pone.0242241.
33. Burckhardt CS, Anderson KL. The quality of life scale (QOLS): reliability, validity, and utilization. Health Qual Life Outcomes. 2003;1:60. https://doi.org/10.1186/1477-7525-1-60.
34. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care. 1992;30(6):473–83.

35. Ware JE, Snow KK, Kosinski M, Gandek B. SF-36 health survey manual and interpretation guide. Boston: The Health Institute; 1993.
36. Polit DF, Beck CT. Nursing research: generating and assessing evidence for nursing practice. tenth ed. Wolters Kluwer Health; 2020.
37. World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. JAMA. 2013;310(20):2191-4. https://doi.org/10.1001/jama.2013.281053. PMID: 24141714.
38. Ministry of Health. Statistical yearbook. Health Moed. Kingdom of Saudi Arabia. 2018. Retrieved from https://www.moh.gov.sa/en/Ministry/Statistics/book/Pages/default.aspx
39. Quijada-Martínez PJ, Cedeño-Idrogo IR, Terán-Ángel G. Quality of professional life and burnout of the nursing staff at an intensive care unit in Venezuela. Invest Educ Enferm. 2021;39(2):e08. https://doi.org/10.17533/udea.iee.v39n2e08.
40. Ramírez-Elvira S, Romero-Béjar JL, Suleiman-Martos N, et al. Prevalence, risk factors and burnout levels in intensive care unit nurses: A systematic review and Meta-Analysis. Int J Environ Res Public Health. 2021;18(21):11432. https://doi.org/10.3390/ijerph182111432.
41. Khatatbeh H, Al-Dwaikat T, Rababah J, Oláh A, Pakai A. Paediatric nurses' burnout, quality of life and perceived patient adverse events during the COVID-19 pandemic: testing an integrated model using structural equation modelling. J Clin Nurs. 2024;33(1):255–64. https://doi.org/10.1111/jocn.16114.
42. Swamy L, Mohr D, Blok A, et al. Impact of workplace climate on burnout among critical care nurses in the veterans health administration. Am J Crit Care. 2020;29(5):380–9. https://doi.org/10.4037/ajcc2020831.
43. Ni W, Xia M, Jing M, Zhu S, Li L. The relationship between professional quality of life and work environment among ICU nurses in Chinese: a cross-sectional study. Front Public Health. 2023;11:1104853. https://doi.org/10.3389/fpubh.2023.1104853.
44. Cohen C, Pignata S, Bezak E, Tie M, Childs J. Workplace interventions to improve well-being and reduce burnout for nurses, physicians and allied healthcare professionals: a systematic review. BMJ Open. 2023;13(6):e071203. https://doi.org/10.1136/bmjopen-2022-071203.
45. Zhang Y, Woods EH, Roemer EC, Kent KB, Goetzel RZ. Addressing workplace stressors emerging from the pandemic. Am J Health Promot. 2022;36(7):1215–23. https://doi.org/10.1177/08901171221112488b.
46. Gerami Nejad N, Hosseini M, Mousavi Mirzaei SM, Ghorbani Moghaddam Z. (2019). Association between resilience and professional quality of life among nurses working in intensive care units. Iran J Nurs. 2019;31(116):49–60.
47. Li X, Jiang T, Sun J, Shi L, Liu J. The relationship between occupational stress, job burnout and quality of life among surgical nurses in Xinjiang, China. BMC Nurs. 2021;20(1):181. https://doi.org/10.1186/s12912-021-00703-2. Published 2021 Sep 27.
48. Odonkor ST, Frimpong K. Burnout among healthcare professionals in Ghana: A critical assessment. Biomed Res Int.2020:1614968. https://doi.org/10.1155/2020/1614968.
49. Khatatbeh H, Pakai A, Al-Dwaikat T, et al. Nurses' burnout and quality of life: A systematic review and critical analysis of measures used. Nurs Open. 2022;9(3):1564–74. https://doi.org/10.1002/nop2.936.
50. Ribeiro EKDA, Santos RCD, Araújo-Monteiro GKN, Brandão BMLDS, Silva JCD, Souto RQ. Influence of burnout syndrome on the quality of life of nursing professionals: quantitative study. Rev Bras Enferm. 2021;74Suppl 3(Suppl 3):e20200298. https://doi.org/10.1590/0034-7167-2020-0298. Published 2021 Mar 19.
51. Wang QQ, Lu WJ, Qian RL, Zhang YH. Job burnout and quality of working life among Chinese nurses: A cross-sectional study. J Nurs Manag. 2019;27(8):1835–44. https://doi.org/10.1111/jonm.12884.
52. Lebni JY, Toghroli R, Abbas J, et al. Nurses' Work-Related quality of life and its influencing demographic factors at a public hospital in Western Iran: A Cross-Sectional study. Int Q Community Health Educ. 2021;42(1):37–45. https://doi.org/10.1177/0272684X20972838.

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