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Original Research

Burnout and Adherence to Pressure Injury Prevention Guidelines Among ICU Nurses in a Teaching Referral Hospital

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A R T I C L E I N F O

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A B S T R A C T

Burnout is a major problem among intensive care nurses, yet its relationship with adherence to pressure injury prevention remains unclear, especially in Intensive Care Unit (ICU) settings. This study aimed to determine the association between burnout levels and adherence to pressure injury prevention guidelines among nurses working in intensive care units of a Type A teaching hospital. A cross-sectional study was conducted among 144 ICU nurses in a teaching referral hospital in Depok. Data were collected using the Questionnaire for Adherence to Recommendations for Pressure Injury Prevention (QARPPU) and the Maslach Burnout Inventory–Human Services Survey (MBI-HSS). Univariate analyses summarized respondent characteristics, and chi-square tests with Cramer's V examined the association between burnout and adherence. The findings revealed that 58.3% of ICU nurses met the predefined threshold for adherence to pressure injury prevention practices, while 45.8% reported a high level of burnout. There was a strong statistical association between burnout level and adherence to pressure injury prevention ($\chi^2 = 27.65$, $p < 0.001$), with a moderate effect size (Cramer's $V = 0.438$). This work highlights that burnout may be associated with patient safety outcomes, especially pressure injury prevention in the ICU. Thus, hospital management should make greater efforts to implement burnout mitigation strategies to improve ICU nurses' adherence to pressure injury prevention..

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INTRODUCTION

Pressure injuries are a common chronic wound frequently occurring in both inpatient and outpatient care. In Indonesia, the prevalence is generally between 3.6% and 27%, indicating a persistent clinical concern within health facilities (Amir, Lohrmann, et al., 2017; Amir, Tan, et al., 2017; Sari et al., 2019). Pressure injuries in hospitals are

considered a major indicator of the quality of nursing care, especially in Intensive Care Units (ICUs). Seriously ill patients have a higher susceptibility to pressure injuries due to limited mobility, invasive devices, an unstable physiological condition, and long-term hospitalization (He et al., 2016; Khojastehfar et al., 2020). The incidence of pressure injuries not only reduces patients' quality of life but also increases treatment costs, prolongs hospital stay, and raises the institutional burden, which is an important indicator reflecting nursing performance (Tayyib et al., 2016; Yakupu et al., 2022).

There are several evidence-based nursing care practices, such as regular repositioning, skin moisture management, appropriate linen use, and risk assessments, that are proven in preventing pressure injury incidence (Mallah et al., 2015; Tayyib et al., 2016). However, this approach relies on the quality of nursing care, especially the adherence of nurses to pressure injury prevention guidelines. Reviewed studies reported that compliance with pressure injury prevention interventions is critical in reducing incidence, especially in intensive care settings (Khojastehfar et al., 2020).

The Job Demands-Resources (JD-R) theory offers insight to explain factors affecting nurses' adherence to clinical guidelines. This theory explains that high job demands, such as high workload, emotional stress, and complex patient care, may contribute to burnout, while adequate job resources may improve work performance and engagement (Montenegro Méndez et al., 2025). In this context, ICU settings have the potential to impose physical and psychological demands, which may reduce nurses' adherence.

It is difficult to ensure consistent compliance in ICU environments when clinical demands are high, emergencies occur more frequently, and workloads are also considerable. Additionally, these challenges are more pronounced in Type A teaching hospitals, where ICUs manage highly complex patients with multi-organ involvement, advanced life-support requirements, and rapid physiological deterioration (Tesema et al., 2021). The demanding clinical environment, along with the academic responsibilities of a teaching hospital, contributes to intense psychological pressure among ICU nurses. All these factors combine to increase the risk of burnout, characterized by emotional exhaustion, depersonalization, and a reduced sense of accomplishment (Li et al., 2024).
Burnout has been well documented to have a crucial impact on nursing performance by disrupting concentration, decreasing motivation, and lowering adherence to clinical standards. A number of studies have reported that burnout increases the likelihood of errors, reduces care quality, and weakens compliance with standard operating procedures (Li et al., 2024; Yestiana et al., 2019). Because pressure injury prevention depends on nurses' performance, the presence of burnout might critically influence nurses' compliance with prevention protocols.

However, despite the recognized impact of burnout on nursing performance, to date no study has investigated the relationship between the level of burnout among ICU nurses and pressure injury prevention guideline compliance within the Indonesian context. Most literature has predominantly focused on prevalence, risk factors, or general workload but has not considered how psychological factors, particularly burnout, may directly influence adherence in high-risk areas like the ICU (Alzahrani et al., 2024; Juanamasta et al., 2024; Kotb Basuony et al., 2023; Pappa & Dafogianni, 2020; Yestiana et al., 2019). This indicates a significant gap, as the prevention of pressure injury relies on the adherence of nurses to guidelines, which may be compromised when they experience burnout.

Moreover, ICU nurses in Indonesian Type A teaching hospitals work in highly demanding clinical and academic environments that may make them prone to physical and psychological exhaustion. This issue has not been adequately explored in previous studies. Understanding the association between burnout and adherence to pressure injury prevention is imperative to provide new evidence for developing strategies to reduce the incidence of pressure injuries in the ICU setting. The findings of this study may also be beneficial for nursing management, especially in anticipating burnout among nurses in ICU settings. Therefore, this study aimed to investigate whether burnout among nurses in the ICU is associated with compliance in the implementation of pressure injury prevention guidelines.

METHOD

Study design

This study is a quantitative study with a cross-sectional design.

Sample

This study included nurses who were placed in the ICU. Given the relatively limited number of nurses working in these specialized units, a total sampling strategy was employed. At the time of data collection, there were 144 nurses working in the ICU. All eligible nurses were invited to join the study.

Eligible participants were nurses who had been assigned to one of the critical care units for at least three months and provided written informed consent. Nurses were excluded

if they were on extended leave, temporarily inactive during the data collection period, or currently enrolled in advanced academic training programs. All 144 nurses met the criteria and were recruited into the study.

Instrument

Pressure injury prevention adherence was measured using the Questionnaire for Adherence to Recommendations for Pressure Injury Prevention (QARPPU), which consists of 18 items (Moya-Suárez et al., 2017). This instrument had previously undergone translation and contextual adaptation for use within Indonesian clinical settings which has demonstrated satisfactory reliability with a Cronbach's alpha of 0.929 (Efendi et al., 2025). Participants reported how consistently they performed key preventive practices, including repositioning, skin care, linen management, and use of pressure-relieving devices. Higher scores indicated better adherence.

For analytical purposes, adherence was categorized into adequate adherence and inadequate adherence. To date, there has been no pre-determined standard cut-off score reported in previous study. Thus, the cut-off point was determined using the mean score of the sample because the adherence variable demonstrated a normal distribution. In this study, a score of 69 served as the cut-off, with scores ≥ 69 classified as adequate adherence and scores < 69 classified as inadequate adherence.

Burnout was evaluated using the Maslach Burnout Inventory–Human Services Survey (MBI-HSS), a rigorously validated 22-item instrument widely applied in studies involving healthcare workers (Daryanto et al., 2022; Maslach et al., 1997). The scale comprises three subdimensions: Emotional Exhaustion (EE, 9 items), Depersonalization (DP, 5 items), and Personal Accomplishment (PA, 8 items), each scored according to the frequency of burnout-related experiences in routine clinical practice. Consistent with the MBI-HSS interpretive guidelines, burnout risk categories were classified into high-risk and low-risk. Participants were categorized as high-risk if they scored ≥27 on the EE dimension or ≥10 on the DP dimension, thresholds that have been internationally recognized as indicative of clinically meaningful burnout risk (Maslach et al., 1997). In addition to these main variables, several respondent characteristics were collected. Age was obtained through self-report and categorized into three groups. Gender, marital status, and highest educational attainment were recorded as categorical variables. Participants also reported their monthly income, which was documented in categories consistent with institutional standards. Work-related characteristics included duration of employment (categorized into three groups), type of intensive care unit where participants worked: ICU, ICU transition unit, Pediatric Intensive Care Unit (PICU), Neonatal Intensive Care Unit (NICU), or Intensive Cardiac Care Unit (ICCU), and history of wound care training, measured by asking whether respondents had ever attended wound-related professional development programs. All demographic and occupational variables were collected using structured questions within the same questionnaire packet.

Data collection

Data collection was coordinated by the researcher in collaboration with unit managers to ensure minimal disruption to clinical operations. Participants completed the questionnaires anonymously during designated periods within their work shifts. This study was conducted in a Type A teaching hospital located in West Java, Indonesia. This hospital is an academic medical center with a high case mix index and a complex critical care population. The study was carried out across five intensive care units; ICU, PICU, NICU, ICCU and ICU transitions. The data collection process was conducted between 13 and 28 November 2025.

Data analysis

Data analysis was conducted using IBM SPSS Statistics version 27. Univariate procedures were employed to summarize the characteristics of the study variables, including the calculation of proportions for all categorical measures. Bivariate analyses were subsequently performed to examine associations between independent variables and the primary outcomes. The Pearson chi-square test was used to assess statistical significance, accompanied by Cramer's V to quantify the strength of association for nominal-level variables. All analyses adhered to a two-tailed significance threshold of $p < 0.05$.

Ethical consideration

Ethical approval for the study was granted by the hospital's Research Ethics Committee prior to participant recruitment, with the approval number S-248/KETLIT/RSUI/X/2025.

RESULT

Table 1. Characteristics of respondents (N = 144)

Variable	Category	n	%
Gender	Male	13	9.0
	Female	131	91.0
Age	18–25 years	57	39.6
	26–59 years	87	60.4
Economic Status	≤ IDR 5,195,000	119	82.6
	> IDR 5,195,000	25	17.4
Marital Status	Married	27	18.8
	Not Married	116	80.6
	Widowed/Divorced	1	0.7
Educational Attainment	Diploma (D3)	10	6.9

	Bachelor of Nursing (Ners)	132	91.7
	Master/Specialist	2	1.4
Length of Work Experience	> 3 years	50	34.7
	1–2 years	15	10.4
	2–12 months	79	54.9
Type of Intensive Care Unit	Adult ICU	76	52.8
	ICCU	14	9.7
	NICU	29	20.1
	PICU	11	7.6
	Transitional ICU	14	9.7
Wound Care Training History	Ever attended	15	10.4
	Never attended	129	89.6

Notes: ICU: Intensve Care Unit; ICCU: Intensive Cardiac Care Unit; NICU: Neonatal Intensive Care Unit; PICU: Pediatric Intensive Care Unit

As shown in Table 1, a total of 144 nurses participated in this study. The majority were female (91.0%), and most respondents were between 26 and 59 years of age (60.4%). The vast majority reported a monthly income at or below IDR 5,195,000 (82.6%). Most participants were unmarried (80.6%), and almost all nurses had completed a bachelor's degree in nursing (91.7%). More than half had worked in their current clinical role for 2–12 months (54.9%). In terms of type of intensive care units, the largest proportion of respondents worked in adult ICUs (52.8%), followed by NICUs (20.1%). For wound care training, only a small proportion of respondents had ever attended formal training (10.4%).

Table 2. Association Between Pressure Injury Prevention Adherence and Burnout Among ICU Nurses (N = 144)

Adherence Level	Burnout High n (%)	Burnout Low n (%)	Total n (%)
Adequate adherence	23 (27.4)	61 (72.6)	84 (100)
Inadequate adherence	43 (71.7)	17 (28.3)	60 (100)
Total	66 (45.8)	78 (54.2)	144 (100)
Statistical test	$\chi^2 = 27.65$	$p < 0.001$	Cramer's V = 0.438

The analysis demonstrated a significant association between pressure injury prevention adherence and burnout level among intensive care nurses. As presented in Table 2, nurses with adequate adherence showed a considerably lower proportion of high burnout (27.4%) compared with those who exhibited inadequate adherence (71.7%). Conversely, low burnout was more common among respondents with adequate adherence (72.6%) than those with inadequate adherence (28.3%). The chi-square test indicated a statistically significant relationship between the two variables (χ^2 (1) = 27.649, $p < 0.001$). The strength of this association was moderate, as reflected by a Cramer's V value of 0.438. These findings suggest that lower adherence to pressure injury prevention practices is associated with a higher level of burnout.

DISCUSSION

This study has revealed several key findings regarding the level of burnout and the practice of pressure injury prevention among nurses working in the intensive care setting. Generally, while the proportion of nurses with high burnout was lower than that of those with low burnout, its prevalence is still noteworthy. ICUs are known to be at elevated risk for burnout due to persistent exposure to critically ill patients, high cognitive demands, and emotional strain (Alzahrani et al., 2024; Juanamasta et al., 2024; Yestiana et al., 2019). Previous studies consistently show that ICU nurses across the world demonstrate some of the highest rates of burnout among hospital professions (Papazian et al., 2023; Ramírez-Elvira et al., 2021). This concern becomes even more relevant in the context of a Type A teaching hospital serving as a referral centre for the surrounding region, including the city of Depok, where the bed occupancy rate remains high and patient case complexity is high. Compared with non-teaching ICUs, nurses are also involved in clinical teaching activities, which add additional burden to their workload. These factors create an atmosphere of continuous workload pressure that may contribute to emotional exhaustion and depersonalization among nursing staff (Yestiana et al., 2019).

Regarding pressure injury prevention adherence, the current study revealed that adequate adherence remained more prevalent than inadequate adherence. Such a pattern is consistent with previous studies indicating that adherence to standard preventive practices—such as repositioning, skin inspection, and moisture management—tends to be relatively high among ICU nurses, largely due to institutional protocols and routine audits (Ghazanfari et al., 2022; Grešš Halász et al., 2021; Khojastehfar et al., 2020). Interestingly, adequate adherence remained dominant despite high burnout levels among nurses. Pressure injury prevention activities are embedded in daily nursing activities, and this condition may not be strongly affected by nurses' psychological conditions. These explanations may account for why adequate adherence remained dominant despite high burnout.

However, despite the dominance of adequate adherence in this study, the proportion of nurses showing inadequate adherence was not negligible. Even a moderate level of non-adherence can meaningfully impact patient safety, particularly in units where patients are highly vulnerable to skin breakdown due to immobility, hemodynamic instability, or use of invasive devices (Masyitha & Puspita, 2020; Mervis & Phillips, 2019; Stadnyk et al., 2018).

The relationship analysis showed that burnout was significantly

associated with adherence levels. Nurses with high burnout were significantly more likely to demonstrate inadequate adherence to pressure injury prevention recommendations. This finding may imply that psychological fatigue, prolonged stress, and physical exhaustion may impair consistency in following pressure injury prevention protocols. Conceptually, this finding fits the JD-R model, which postulates that sustained job demands result in emotional exhaustion, diminished motivation, and decreased capability to carry out tasks that require consistency and vigilance (Montenegro Méndez et al., 2025). Burnout has been associated with increased clinical errors, lapses of judgment, and lower compliance with clinical guidelines (Kotb Basuony et al., 2023; Li et al., 2024; Sayrafi et al., 2024). Emotional exhaustion is considered the most critical dimension of burnout, as performing continuous protocols requires emotional stability. Therefore, this dimension may require greater attention from nursing management.

The effect size of the relationship, as evidenced by a Cramer's V value of 0.438, suggests a moderate association. This effect size suggests that burnout is not the sole factor contributing to nurses' adherence. It does play a clinically meaningful role. Other contextual variables such as staffing adequacy, teamwork, leadership support, and organizational culture may also influence adherence and should be explored in future research.

These findings have key implications for nursing practice. Given the crucial role of adherence to pressure injury prevention, structured interventions to mitigate burnout should be implemented in hospitals, particularly in high-intensity settings such as Type A teaching facilities. Such strategies could include workload redistribution, resilience building, regular psychological support, and supportive leadership at the unit level. Burnout surveillance integrated into routine nursing management may allow the identification of early risk patterns before they translate into compromised patient care. Nursing management should implement routine burnout screening at regular intervals to monitor burnout levels among ICU nurses.

However, it must be acknowledged that the present study has several limitations. The cross-sectional design does not establish a true cause-and-effect relationship, meaning that the directionality between burnout and adherence cannot be firmly established. Moreover, all measures were self-reported instruments, which may introduce response bias. Additionally, this study was conducted in a single large teaching hospital, which limits generalizability to other healthcare settings. Lastly, unmeasured organizational variables, such as staffing ratios or shift patterns, may also have influenced the outcomes.

CONCLUSION

This study demonstrates there is a significant association between burnout and adherence to pressure injury prevention guidelines among intensive care nurses working in a high-demand teaching hospital setting. Although adequate adherence to pressure injury prevention remained dominant, high burnout among nurses was considerably more likely to be associated with inadequate adherence. This finding may indicate that burnout may compromise patient safety. Ensuring adequate adherence requires organizational commitment to addressing burnout, optimizing working conditions, and reinforcing the importance of consistent pressure injury prevention practices. In particular, burnout management programs such as burnout screening, psychological support, and adequate staffing ratios are necessary. Future research is recommended to investigate additional factors that may contribute to nurses' adherence.

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