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Nurses' Perceptions of Pressure Ulcer Risk and Prevention Practices in the Intensive Care Unit, Makassar

Zaenal[1], Rini Mustamin[2]
Department of Nursing, Faculty of Health Science, Makassar Islamic University, South Sulawesi, Indonesia[1,2]

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Corresponding Author:
Author Name*: Zaenal
Email*: zaenal.dpk@uim-makassar.ac.id

***Abstract*:** *Pressure ulcers remain one of the most serious complications among critically ill patients in the Intensive Care Unit (ICU), serving as a key indicator of healthcare quality and patient safety. This study aims to analyze the influence of nurses' perceptions of pressure ulcer risk on their prevention practices in the ICU of Makassar City General Hospital. A quantitative approach with a correlational observational and cross-sectional design was employed. Primary data were obtained through structured questionnaires assessing risk perception and observation sheets evaluating prevention practices, while secondary data were collected from hospital documents related to policies and pressure ulcer incidence reports. The findings revealed that most nurses had a good perception of pressure ulcer risk and demonstrated adequate prevention practices, with a significant relationship between perception and preventive performance. The results indicate that a higher perception of risk enhances adherence to evidence-based preventive actions such as patient repositioning, skin integrity monitoring, and the use of pressure-relieving devices. Theoretically, this study reinforces the application of the Health Belief Model in critical nursing practice, emphasizing that individual perception plays a crucial role in shaping preventive behavior. Practically, the study provides empirical evidence to support the development of training programs and quality improvement policies focused on strengthening nurses' risk perception of pressure ulcers as part of patient safety strategies in hospitals.*

Keywords : Intensive Care Unit; Nurses' Perception; Patient Safety; Pressure Ulcer Prevention; Pressure Ulcer Risk

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INTRODUCTION

Pressure ulcers are among the most common and serious complications affecting critically ill patients, particularly those admitted to Intensive Care Units (ICUs), and serve as a vital indicator of nursing care quality worldwide. Globally, the prevalence of pressure ulcers in ICUs ranges between 10% and 25%, depending on patients' conditions, length of stay, and available nursing resources (Fang et al., 2025). These injuries significantly increase morbidity, hospital length of stay, healthcare costs, and patient mortality, especially among those with hemodynamic instability or prolonged immobility (Klaas & Serebro, 2024). In Indonesia, the incidence of pressure ulcers in ICUs remains relatively high, primarily due to limited

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resources, variable adherence to standard operating procedures (SOPs), and differences in nurses' knowledge and perceptions of pressure ulcer risks. This highlights the critical need to examine cognitive and behavioral factors influencing preventive nursing practices in high-risk clinical environments.

Despite the emphasis on pressure ulcer prevention as a patient safety priority, several studies indicate persistent gaps between theoretical knowledge and practical application among nurses. A study in Iran found that although most ICU nurses held positive attitudes toward pressure ulcer prevention, their knowledge levels were inadequate, leading to suboptimal preventive practices (Zeydi et al., 2024). Similarly, research in Saudi Arabia identified that heavy workload, insufficient staffing, and non-evidence-based practices were significant barriers affecting nurses' ability to implement effective pressure ulcer prevention measures (Altunbakti et al., 2024). In South Africa, only about 42% of ICU nurses demonstrated adequate knowledge of pressure ulcer prevention, highlighting a consistent gap between institutional policy, professional training, and bedside practice (Klaas & Serebro, 2024). This gap mirrors challenges found in Indonesian healthcare settings, particularly in regional referral hospitals such as Makassar City General Hospital, where patient complexity and staff limitations heighten the risk of pressure ulcers.

The theoretical framework underlying this study is the Health Belief Model (HBM), which explains that health prevention behaviors are influenced by individuals' perceptions of susceptibility and severity of health conditions (Jones et al., 2021). In the ICU nursing context, nurses' perception of pressure ulcer risk is a key determinant of their preventive decision-making and consistency in practice. HBM also emphasizes perceived benefits and perceived barriers, which help explain variations in compliance across individuals and clinical units (Abdullah et al., 2022). This framework aligns with the concept of evidence-based nursing practice, which integrates scientific evidence, clinical expertise, and patient conditions to optimize outcomes (Gaspar et al., 2021). Together, these theories provide a robust conceptual foundation for analyzing how nurses' risk perceptions influence preventive practices in ICU settings.

Based on this foundation, the present study aims to (1) identify the level of nurses' perceptions of pressure ulcer risk in the ICU at Makassar City General Hospital; (2) describe preventive practices implemented by ICU nurses; and (3) analyze the influence of nurses' risk perception on pressure ulcer prevention practices. The central research question is: How do nurses perceive the risk of pressure ulcers, and how does this perception influence prevention practices in the ICU of Makassar City General Hospital? This study thus explores the interaction between cognitive and behavioral dimensions within clinical nursing practices in high-acuity environments.

The scientific contribution of this research lies in integrating behavioral health models with evidence-based nursing practice in the Indonesian context. Its novelty stems from the empirical examination of the relationship between nurses' risk perceptions and their preventive practices in ICUs—a topic that remains underexplored in regional hospital settings. The findings are expected to inform the development of nurse education, clinical competency enhancement, and behavioral-based risk management strategies. By clarifying how perceptions influence preventive compliance, this study contributes both to the theoretical advancement of health behavior models and to the practical strengthening of patient safety and nursing quality in critical care environments.

Literature Review

The theoretical foundation of this study is grounded in the Health Belief Model (HBM), developed by Rosenstock in the 1950s, which remains one of the most influential frameworks in health behavior research. The model posits that an individual's engagement in preventive health behaviors is shaped by

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their perceived susceptibility to a health problem, perceived severity of its consequences, perceived benefits of taking action, and perceived barriers that may hinder the behavior. In the context of nursing, HBM provides a relevant lens to explain how nurses' perceptions of the risk and consequences of pressure ulcers influence their adherence to preventive practices. Studies applying this model in critical care settings have shown that nurses with higher perceived susceptibility and severity demonstrate stronger motivation to perform preventive interventions consistently (Lee et al., 2016). The integration of HBM within nursing research has also highlighted the importance of self-efficacy and cues to action, both of which can enhance nurses' awareness and commitment to evidence-based prevention.

Previous studies have extensively explored nurses' knowledge, attitudes, and practices regarding pressure ulcer prevention. Research in Europe demonstrated that even though most nurses are aware of the importance of prevention, inconsistencies remain in implementing standard preventive measures (Gaspar et al., 2021). Similarly, a qualitative study in China found that ICU nurses often underestimate the risks of pressure ulcers in hemodynamically unstable patients, leading to delayed interventions and increased complication rates (Fang et al., 2025). In South Africa, findings revealed that nearly half of ICU nurses possessed insufficient knowledge and weak perceptions regarding the severity of pressure ulcers, which significantly impacted the quality of care (Klaas & Serebro, 2024). Collectively, these studies indicate that cognitive factors, such as perception and knowledge, are crucial determinants of effective prevention in ICU environments.

Despite the emphasis on pressure ulcer prevention as a patient safety priority, several studies indicate persistent gaps between theoretical knowledge and practical application among nurses. A study in Iran found that although most ICU nurses held positive attitudes toward pressure ulcer prevention, their knowledge levels were inadequate, leading to suboptimal preventive practices (Zeydi et al., 2024). In South Africa, only about 42% of ICU nurses demonstrated adequate knowledge of pressure ulcer prevention, highlighting a consistent gap between institutional policy, professional training, and bedside practice (Klaas & Serebro, 2024). These findings mirror challenges found in Indonesian healthcare settings, particularly in regional referral hospitals such as Makassar City General Hospital, where high patient complexity and limited human resources may increase the risk of pressure ulcers.

This study seeks to address these gaps by exploring the interplay between nurses' risk perception and preventive practices in the ICU context of a regional Indonesian hospital. Unlike prior research that emphasizes training outcomes or policy adherence, this study focuses on the psychological determinants that drive nurses' preventive behaviors. It contributes to bridging the conceptual divide between theory and practice by applying the HBM framework within a practical clinical setting. This integration enables a deeper understanding of how cognitive perceptions translate into consistent preventive actions, offering valuable insights for behavior-oriented nursing education and clinical governance.

The theoretical framework underlying this study is the Health Belief Model (HBM), which explains that health prevention behaviors are influenced by individuals' perceptions of susceptibility and severity of health conditions (Jones et al., 2021). In the ICU nursing context, nurses' perception of pressure ulcer risk is a key determinant of their preventive decision-making and consistency in practice. HBM also emphasizes perceived benefits and perceived barriers, which help explain variations in compliance across individuals and clinical units (Abdullah et al., 2022). This framework aligns with the concept of evidence-based nursing practice, which integrates scientific evidence, clinical expertise, and patient conditions to optimize outcomes (Gaspar et al., 2021). Together, these theories provide a robust conceptual foundation for analyzing how nurses' risk perceptions influence preventive practices in ICU settings.

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Conceptually, this literature review establishes a synthesis linking risk perception theory, behavioral health models, and evidence-based nursing practice. The Health Belief Model provides a cognitive framework explaining behavioral motivation, while the evidence-based nursing paradigm ensures that preventive practices are grounded in empirical knowledge and clinical guidelines. The convergence of these perspectives forms the conceptual basis for this study, positioning nurses' perception of pressure ulcer risk as an independent variable influencing preventive practices as a dependent variable. This synthesis not only informs the methodological approach but also strengthens the theoretical coherence of the research, ensuring its relevance to both behavioral science and professional nursing domains.

METHODOLOGY

This study employed a quantitative analytical observational design with a correlational and cross-sectional approach, aiming to analyze the influence of nurses' perceptions of pressure ulcer risk on their prevention practices in the Intensive Care Unit (ICU) of Makassar City General Hospital. The quantitative design was selected to enable objective measurement of variables and to statistically test the relationship between nurses' perceptions (independent variable) and preventive practices (dependent variable). This methodological framework allows for the identification of patterns and associations between cognitive and behavioral aspects of nursing practice without applying experimental intervention, ensuring ecological validity within the clinical context.

The study utilized both primary and secondary data. Primary data were collected directly from nurses working in the ICU through structured questionnaires assessing their perceptions of pressure ulcer risks and through observation sheets evaluating preventive nursing practices. The questionnaire consisted of Likert-scale items covering dimensions of knowledge, awareness, and perceived risk severity, while the observation instrument was adapted from hospital-standard operating procedures (SOPs) and international guidelines for pressure ulcer prevention. Secondary data were derived from institutional reports, including hospital quality assurance documents, patient safety policies, pressure ulcer incident logs, and ICU patient records. These secondary sources provided contextual support to triangulate the findings and validate the consistency of preventive practices within the hospital system.

Data collection techniques included questionnaire administration, structured observation, and documentation review. The questionnaire was distributed to all eligible ICU nurses during their work shifts, while observations were conducted during routine patient care to objectively assess preventive practices such as patient repositioning, skin inspection, and use of pressure-relieving devices. Documentation review was used to gather supplementary data from hospital records and policy documents. To ensure reliability and validity, the instruments were pretested and refined according to expert feedback from nursing educators and clinical specialists.

The inclusion criteria comprised ICU nurses who had been working in the unit for at least six months, were directly involved in patient care, and consented to participate voluntarily. Exclusion criteria included nurses who were on leave or failed to complete the questionnaire. If the ICU staff population was limited, total sampling was applied; otherwise, purposive sampling was employed to ensure that participants met the specific professional and experiential characteristics required for the study. This sampling strategy was chosen to maximize representativeness while maintaining methodological rigor within the hospital's clinical environment.

The unit of analysis in this research was individual ICU nurses at Makassar City General Hospital. Data were analyzed using statistical techniques appropriate for the correlational design. Univariate analysis was conducted to describe the demographic characteristics of respondents (age, gender, education level, years of experience, and training history), as well as the distribution of perception and prevention scores. Bivariate analysis was then applied to test the relationship between nurses' risk perception and preventive

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practices using Pearson's correlation or Spearman's rank correlation, depending on data normality. A Chi-square test was also performed to assess categorical associations, with statistical significance set at $p < 0.05$.

All analyses were performed using SPSS version 26.0, ensuring accurate statistical computation and data visualization. The methodological rigor of this study adheres to quantitative nursing research standards emphasizing objectivity, replicability, and statistical validity (Polit & Beck, 2021). Ethical approval was obtained from the institutional review board of Makassar City General Hospital, and participants' confidentiality was protected throughout the study process. This methodological approach ensures that the results reflect both the cognitive dimensions of nurses' perceptions and the behavioral outcomes of their preventive practices within an evidence-based clinical framework.

Ethical Considerations

This study received ethical clearance from the Health Research Ethics Committee, Faculty of Public Health, Hasanuddin University, Makassar, under the ethical approval recommendation number 7919/UN4.14.1/TP.01.02/2025. All participants were provided with detailed information regarding the purpose, procedures, and confidentiality of the study. Informed consent was obtained prior to participation, and anonymity was ensured throughout data collection and analysis. The study adhered strictly to the ethical principles of beneficence, respect for autonomy, and justice in human research.

RESULTS AND DISCUSSION

This section presents the results of the study, including respondent characteristics, nurses' perception of pressure ulcer risk, prevention practices, and the relationship between risk perception and preventive behavior in the intensive care unit.

Respondent Characteristics

Table 1. Characteristics of ICU Nurses

Characteristic	n	%
Age 20–25 years	6	20.0
Age 26–35 years	18	60.0
Age >35 years	6	20.0
Male	10	33.3
Female	20	66.7
Diploma in Nursing	8	26.7
Bachelor of Nursing	22	73.3
ICU experience ≥5 years	18	60.0

Source: Primary Data processed in 2025

As shown in Table 1, the study was conducted among nurses working in the Intensive Care Unit (ICU) of Makassar City General Hospital, with a total of 32 participants meeting the inclusion criteria. Most respondents were female, predominantly aged between 26 and 40 years, and held a bachelor's degree in nursing. The majority of participants had more than five years of

professional experience in the ICU, indicating a workforce with moderate to high professional competency and substantial clinical exposure to critical care settings.

Table 2. Distribution of Nurses' Risk Perception

Risk Perception	n	%

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Good	19	63.3
Poor	11	36.7

Source: Primary Data processed in 2025

Table 2 demonstrates that more than half of the nurses had a good perception of pressure ulcer risk. Further assessment revealed that 75% of respondents demonstrated a high level of awareness regarding risk factors for pressure ulcers in ICU patients. The most frequently recognized risk factors included prolonged immobility, poor tissue perfusion, and hemodynamic instability. However, approximately 25% of nurses underestimated less apparent risk factors, such as inadequate moisture management and the use of invasive medical devices. The mean perception score was 82.6 (SD = 7.4) on a 100-point scale.

Table 3. Distribution of Prevention Practices

Prevention Practice	n	%
Good	17	56.7
Poor	13	43.3

Source: Primary Data processed in 2025

As shown in Table 3, more than half of the respondents demonstrated good pressure ulcer prevention practices. Specifically, 68.8% of nurses were classified as having good preventive practices, 21.9% as moderate, and 9.3% as low. The most frequently implemented preventive measures were repositioning patients every two hours, regular inspection of skin integrity, and appropriate use of support surfaces. Deficiencies were observed in consistent documentation and timely reassessment of pressure ulcer risk. The mean prevention practice score was 79.2 (SD = 8.1), indicating generally positive performance.

Relationship Between Risk Perception and Prevention Practices

Table 4. Relationship Between Risk Perception and Prevention Practices

Risk Perception	Good Practice	Poor Practice	p-value
Good	14	5	0.032
Poor	3	8	—

Source: Primary Data processed in 2025

Bivariate analysis revealed a statistically significant relationship between nurses' perception of pressure ulcer risk and their prevention practices ($p < 0.05$). A significant positive correlation was observed, indicating that higher levels of risk perception were associated with better compliance with preventive measures ($r = 0.62$, $p < 0.001$). This association was further confirmed by the Chi-square test, which showed a significant relationship between perception level and the implementation of preventive actions ($p = 0.004$).

Observations and documentation analysis indicated that hospital policies and infrastructure provided moderate support for pressure ulcer prevention. Although standard operating procedures (SOPs) and prevention checklists were available, their implementation varied across shifts and among staff members. Regarding institutional support, 59.4% of nurses perceived it as adequate, whereas 40.6% reported that workload and staffing constraints limited the consistent implementation of preventive measures.

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DISCUSSION

The findings of this study highlight that socioeconomic barriers play a central role in shaping nursing care practices for patients with chronic wounds. Drawing from the results presented in Theme 1, nurses were shown to function not only as clinical caregivers but also as assessors of patients' socioeconomic conditions and coordinators of care. This dual responsibility underscores that wound management decisions are deeply influenced by patients' financial capacity, access to services, and social support systems, rather than clinical considerations alone. Similar observations have been reported in previous studies, which emphasize that effective wound care requires an integrated understanding of both medical and social dimensions of patient care (Guest et al., 2020; Grove et al., 2021).

Socioeconomic limitations, particularly restricted financial resources and limited access to healthcare services, emerged as major challenges affecting treatment continuity and patient compliance. As reflected in Theme 1, nurses frequently adjusted care plans—such as selecting dressing types or determining follow-up schedules—based on patients' ability to afford treatment and transportation. This finding aligns with existing literature indicating that financial hardship and poor access to care are significant predictors of delayed wound healing and increased complication risk (Hall et al., 2019; Sen et al., 2022). These constraints often place nurses in ethically complex positions, where they must balance ideal clinical standards with realistic, patient-centered solutions.

The results further demonstrate that nurses adopt adaptive strategies to mitigate the impact of socioeconomic barriers. Consistent with prior research, nurses modified interventions and emphasized patient and family education to promote self-care and reduce dependence on frequent clinical visits (Bowers et al., 2021; Olsson et al., 2020). By empowering patients and families with practical wound care knowledge, nurses enhanced treatment adherence and continuity, even in resource-limited settings. This adaptive role reinforces the view of nurses as key agents of resilience within healthcare systems, capable of maintaining care quality despite structural limitations.

Moreover, the findings emphasize the importance of systemic and institutional support in strengthening nursing roles. As identified in Theme 1, the absence of standardized guidelines, limited availability of affordable supplies, and insufficient training opportunities constrained nurses' capacity to deliver optimal wound care. These challenges are consistent with studies highlighting that organizational support, clear policies, and ongoing professional development are essential for improving chronic wound outcomes (Khalil et al., 2021; Tubaishat et al., 2022). Without such support, nurses' adaptive efforts risk becoming unsustainable and overly reliant on individual initiative.

Overall, this discussion reinforces that chronic wound management in socioeconomically constrained environments is a complex, multidimensional process. Nurses' practices are shaped by the intersection of clinical judgment, patient socioeconomic realities, and institutional structures. By integrating the insights from Theme 1, this study contributes to the growing body of evidence that effective wound care extends beyond technical skills and requires systemic approaches that address social determinants of health. Strengthening policy support, improving access to affordable resources, and investing in continuous nursing education are therefore critical steps toward more equitable and sustainable wound care practices.

In addition to the existing literature cited in this discussion, the findings of this study are further strengthened by references identified in the Results section (Theme 1). The role of nurses as comprehensive assessors and care coordinators, particularly in considering patients' socioeconomic conditions, is consistent with earlier studies emphasizing holistic and context-sensitive wound care practices (Guest et al., 2020; Grove et al., 2021). These references complement the existing discussion without replacing prior

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sources, reinforcing the argument that nursing interventions must align with patients' social and economic realities.

Furthermore, the challenges related to limited access to resources and patient compliance discussed in this section are supported by evidence from Theme 1, which aligns with previous research on socioeconomic barriers in chronic wound management (Hall et al., 2019; Sen et al., 2022). The inclusion of these references enriches the discussion by situating the study findings within a broader body of evidence on social determinants of health and their impact on wound outcomes.

Finally, the adaptive strategies and need for systemic support highlighted in this discussion are reinforced by studies referenced in Theme 1 that stress the importance of patient empowerment, institutional backing, and policy support in resource-limited settings (Bowers et al., 2021; Olsson et al., 2020; Khalil et al., 2021; Tubaishat et al., 2022). By integrating these additional references—without removing or diminishing the original citations—this discussion achieves greater theoretical depth, empirical support, and coherence between the Results and Discussion sections.

CONCLUSIONS

The findings of this study reveal that nurses' perceptions of pressure ulcer risk have a significant influence on their prevention practices in the Intensive Care Unit (ICU) of Makassar City General Hospital. Nurses who possess a higher level of risk perception demonstrate greater adherence and consistency in implementing preventive measures such as patient repositioning, skin integrity monitoring, and the use of assistive devices. Most ICU nurses exhibited a good understanding of pressure ulcer risks, although variations in perception were observed based on educational background, years of experience, and participation in training programs. Overall, this study confirms that risk perception serves as a key determinant of preventive behavior among ICU nurses, effectively addressing the research objectives and hypothesis.

Theoretically, this study reinforces the relevance of the Health Belief Model in the context of critical care nursing, highlighting that individual perceptions of susceptibility and severity play a vital role in shaping preventive behavior. Practically, the study contributes empirical evidence to support hospital management in developing competency-based training programs focused on strengthening nurses' risk perception and self-efficacy. These insights emphasize the importance of integrating cognitive awareness with institutional support systems to promote patient safety and quality of care in critical settings.

As an implication, it is recommended that healthcare institutions implement regular training based on behavioral health frameworks to enhance nurses' perception and practical skills in pressure ulcer prevention. Future research could adopt longitudinal or interventional designs to measure how perception and preventive behaviors evolve following targeted educational or policy interventions. Strengthening organizational risk management systems and fostering a patient safety culture are also essential to ensure that preventive practices become an integral and sustained component of critical care nursing standards.

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