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Knowledge, Attitude, and Practice of Intensive Care Unit Nurses Regarding Prevention and Care of Pressure Ulcer

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ABSTRACT

Pressure ulcers represent a significant financial burden in healthcare, ranking as the third most costly condition following heart disease and cancer. The prevalence of pressure ulcers serves as a key indicator of the quality of healthcare and nursing services. Nurses are integral to the prevention and management of pressure ulcers; thus, this study aimed to assess the knowledge, attitudes, and practices of nurses in this area. Conducted in 2022, the study employed a descriptive methodology. A convenience sample of 200 nurses from an educational and medical center affiliated with Lorestan University of Medical Sciences was utilized. Data were collected via a four-part questionnaire and analyzed using SPSS version 16, employing both descriptive and analytical statistical methods. The mean scores for nurses' knowledge, attitudes, and practices in the prevention and management of pressure ulcers were 51.1 ± 7.5, 60.35 ± 16.53, and 50.1 ± 10.5 out of 100, respectively. The findings indicate that nurses' knowledge and practices in pressure ulcer prevention and management are at a relatively satisfactory level. Given the threat that pressure ulcers pose to patient safety, it is imperative for healthcare center managers to implement strategies to enhance the capabilities of the healthcare team, particularly nurses.

Keywords: Pressure ulcers; Knowledge; Attitude; Performance; Nurse

Introduction

The management of skin wounds presents a significant challenge within healthcare settings [1]. Healthcare professionals encounter a diverse array of wounds, including pressure ulcers, diabetic foot complications, surgical site disruptions, and lesions related to vascular compromise [2].

Pressure ulcers, a prevalent issue in hospitals globally [3], are characterized as injuries to the skin, typically resulting from sustained pressure on underlying tissues [2]. These wounds commonly occur on bony prominences such as the sacrum, ischial tuberosity, heel, trochanter, occipital region, and scapula [4], and are both costly and preventable [5]. The prevalence of pressure ulcers in acute care centers worldwide has been reported to range from 6% to 18.5% [1].

Karimian et al. reported a prevalence rate of 19% in Iran [6]. Studies in Iran indicate a prevalence rate of 5% in general hospital wards, increasing to 10.1%–21% in intensive care units (ICUs) [7]. Furthermore, Zarei et al. noted that 8.9% of patients develop pressure ulcers during ICU hospitalization [8]. Patients in ICUs are particularly vulnerable to pressure ulcers [9] due to factors such as clinical instability, the invasive nature of interventions, limited physical activity, exposure to multiple therapeutic approaches [10, 11], central vascular access, and mechanical ventilation [12].

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Pressure ulcers are recognized as one of the costliest healthcare challenges, following heart disease and cancer, significantly impacting hospitals and health systems by increasing costs [1, 13]. These ulcers affect individuals and families physiologically, psychologically, and financially, causing severe pain, alterations in self-image, increased mortality, decreased quality of life, and reduced participation in social activities [14]. ICUs experience a 50% increase in workload and a 4.31-day extension in hospital stays due to high pressure ulcer rates [7]. The mean treatment costs vary significantly by injury severity, ranging from 12 USD (Stage 1) to 66,834 USD (Stage 4), resulting in aggregate costs of USD 519,991 across all cases [8]. Prevention costs for pressure ulcers range from $2.56 to $87.57 per patient daily, compared to treatment costs of $1.71 to $470.49 per day [15]. Consequently, treatment costs for pressure ulcers are 2.5 times higher than prevention costs [16], underscoring the economic advantage of preventive measures. Pressure ulcer prevention is a key quality-of-care indicator [17]. In 2014, the Clinical Practice Guidelines for Pressure Ulcer Prevention and Care were developed [18], offering clinical recommendations and a summary of evidence related to pressure ulcers. This protocol advocates for the periodic assessment of knowledge and attitudes concerning pressure ulcer prevention and care to facilitate the implementation of clinical guidelines and identify potential barriers and facilitators [14].

Despite a decade of research, pressure ulcer rates remain concerning, with prevention as a critical priority [19, 20]. The prevention of pressure ulcers relies on healthcare teams, particularly nurses, who consistently apply guideline recommendations in clinical practice. Nurses are directly involved in essential aspects of pressure ulcer prevention, such as risk assessment [21] and preventive interventions [13]. They play a crucial role in the early stages of pressure ulcer prevention and care [22], especially ICU nurses, who bear heightened responsibility [7].

In intensive care units (ICUs), healthcare teams must assess patients' primary conditions and monitor risks associated with hospitalization to effectively prevent pressure ulcers [12].

A systematic review has shown that nurses generally possess positive attitudes towards pressure ulcer prevention. However, these attitudes often do not translate into practical preventive strategies due to two main factors: constraints within the workplace environment and the lack of alternative measurement methods on a Likert scale. To address this issue, policymakers and nursing managers should prioritize the development of supportive clinical environments. Focusing on bridging the gap between attitudes and practice may be more effective in improving outcomes [23]. A Slovakian study involving 460 nurses found that 45.5% exhibited insufficient knowledge, while 67.9% held negative attitudes, both of which were significantly associated with educational level and clinical ward type. These findings suggest that further research is needed to adjust these variables to enhance the quality of wound care [20]. Additionally, Khojastehfar et al. examined 308 ICU nurses at hospitals affiliated with Iran University of Medical Sciences, reporting unsatisfactory knowledge and attitudes towards pressure ulcer prevention. Significant differences were observed in the knowledge scores of nurses across different groups based on sex, continuing education history, clinical practice duration, and ICU service length. Furthermore, significant differences were noted in attitude scores concerning sex, working hours per week, clinical practice duration, and ICU service length. The authors highlighted the critical need for targeted educational programs to improve knowledge and attitudes among healthcare providers, particularly nurses, in pressure ulcer prevention, given their inadequate competencies and the importance of enhancing patient safety in ICUs [24]. These findings are consistent with those reported by other studies, indicating similar knowledge-attitude gaps among nursing staff [14, 25-27].

A systematic review and meta-analysis (N=476) identified persistent gaps in nurses' knowledge regarding pressure ulcer prevention

and a lack of sufficient time, which limits their capacity for evidence-based practice, a situation observed in various countries [28].

Effective wound care relies on the necessary competencies and should be grounded in available evidence and current knowledge. Adequate knowledge enhances the quality of care and patient safety while reducing treatment costs when evidence-based interventions are implemented in clinical practice [29]. Current clinical evidence has limitations in addressing all wound types and clinical situations, necessitating guideline-based recommendations for healthcare teams [30].

Nurses tend to prefer experience, clinical practice, and peer knowledge sharing over evidence-based guidelines [29]. These findings highlight significant gaps in nurses' awareness of contemporary wound care protocols and current evidence-based practices. Nurses' activities may sometimes be based on experience or habits rather than knowledge [28]. Adequate knowledge and supportive attitudes towards pressure ulcer prevention are positively associated with adherence to evidence [1]. Therefore, nurses should demonstrate sufficient, relevant knowledge and a positive attitude towards these issues and utilize evidence-based guidelines to perform effectively [31]. Given the existing research gap in this clinical setting, the present study aimed to address nurses' knowledge, attitude, and practice in pressure ulcer prevention and care in a teaching hospital affiliated with Lorestan University of Medical Sciences.

Materials and Methods

This study was conducted in the intensive care units (ICUs) of a teaching hospital affiliated with Lorestan University of Medical Sciences in Iran, spanning from April to May 2023. The study population comprised all nurses employed in the ICUs of Khorramabad hospitals, selected through convenience sampling. The sole inclusion criterion was the nurses' consent to participate.

After obtaining coordination with hospital authorities, the questionnaire was disseminated to the nurses online. Two group reminders were issued to encourage completion, resulting in a response rate of 70%. Data collection involved two questionnaires: a three-part researcher-developed questionnaire informed by literature on pressure ulcers, and the Pieper questionnaire. The first questionnaire encompassed demographic data (5 items), nurses' attitudes towards pressure ulcer prevention and care (10 items), and their practices in this domain (30 items). The second questionnaire, based on the North American Pressure Ulcer Prediction and Prevention Guideline (Pieper), has been utilized internationally to evaluate nurses' knowledge [32].

The Pieper questionnaire comprised 41 items assessing nurses' knowledge of pressure ulcers, their characteristics, and preventive strategies. Knowledge was deemed sufficient when 90% or more of the items were correctly answered. Items were scored on a three-point Likert scale (yes =1, no =0, I do not know=0). Post-scoring, results were standardized on a 100-point scale and categorized into three levels: optimal (≥70%), moderately optimal (50-69%), and suboptimal (<50%). The attitude domain employed a three-point Likert scale (Agree, Neutral, Disagree), while the practice domain utilized a frequency-based scale (Always, Sometimes, Never). A standardized 0-2 scoring system was applied to the attitude and practice domains. For attitude items, positively worded items were scored from 2 to 0 (Agree=2, Neutral=1, Disagree=0), with negatively worded items reverse-scored (Disagree=0, Neutral=1, Agree=2). For practice items, positively worded items were scored from 2 to 0 (Always=2, Sometimes=1, Never=0), with negatively worded items reverse-scored (Always=0, Sometimes=1, Never=2).

Results were calculated on a 100-point scale and categorized into three levels: optimal (≥66%), moderately optimal (33-65%), and suboptimal (<33%). The validity of both questionnaires was confirmed by Farzi et al. [32], with a test-retest reliability of 0.85 [32].

Data analysis was conducted using descriptive inferential statistics and SPSS version 16 software.

Ethical considerations

To ensure ethical compliance and confidentiality, the questionnaires were anonymized using unique coding identifiers. This study is part of a research project approved by the Lorestan University of Medical Sciences, with the ethical code IR.LUMS.REC.A400.006.

Results

In total, 200 questionnaires were completed. The majority of participants were female (95%) and married (83%), possessing bachelor's degrees in nursing (97%), with a mean age of 34.3±7.1 years and an average work experience of 11.3±6.6 years. Table 1 details the demographic characteristics of the participants.

Table 1. Frequency distribution of the demographic characteristics

Variable		Number (percent
Gender	Female	190 (95)
	Male	10 (5)
Marital status	Single	34 (17)
	Married	166 (83)
Education	BSc	194 (97)
	MSc	6 (3)

The mean scores for nurses' knowledge, attitudes, and practices concerning pressure ulcers were 51.1±7.5, 60.35±16.53, and 50.1±10.5, respectively.

Discussion

This study aimed to assess nurses' knowledge, attitudes, and practices regarding pressure ulcer prevention and care in the intensive care units (ICUs) of a teaching hospital affiliated with Lorestan University of Medical Sciences. The mean scores for nurses' knowledge, attitudes, and practices concerning pressure ulcers were moderately optimal, yet they did not meet the desired benchmarks. Pressure ulcer rates serve as key quality indicators in healthcare and nursing care delivery systems. Consequently, targeted empowerment programs are necessary to enhance nurses' competencies, thereby improving care quality and patient outcomes. Ghaffarzadeh et al. reported satisfactory levels of knowledge and attitudes among ICU nurses in Mazandaran, highlighting the critical need to provide adequate resources for nurses to apply their knowledge effectively [33]. Additionally, Zeydi et al. identified suboptimal knowledge, attitudes, and practices regarding pressure ulcer prevention and care among 1,543 Iranian nurses, strongly advocating for the development of competency enhancement programs [34].

Conclusion

The findings suggest that improving ICU nurses' competencies in pressure ulcer prevention and care requires attitudinal transformation, knowledge augmentation, and optimization of clinical practice. The high prevalence of pressure ulcers among ICU patients underscores the necessity for nursing administrators to prioritize workforce empowerment initiatives. Nurses should implement preventive measures in practice, recognizing pressure ulcer prevention as a fundamental component of care. Furthermore, effective training programs should be instituted to enhance nurses' knowledge and practice. Finally, nursing managers should monitor nurses' practices in this domain to ensure the implementation of developed programs and to correct potential errors, thereby improving pressure ulcer prevention and care.

Conflict of Interests

The authors declare that they do not have any conflict of interests.

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