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Patient Safety Culture in Intensive Care Units from the Perspective of Nurses: A Descriptive Study

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ABSTRACT

One of the primary objectives of nursing is to provide safe care, prevent injury, and promote patient health. Patient safety in the intensive care unit is compromised due to various factors. This study aimed to assess the Patient Safety Culture from nurses' perspectives in the intensive care unit. This cross-sectional study was conducted in 2023. Convenient sampling was employed. The sample comprised 200 nurses working in the intensive care units of a teaching hospital affiliated with Lorestan University of Medical Sciences. Data were collected using the Hospital Survey on Patient Safety Culture. Descriptive statistics and SPSS 16 software were utilized for data analysis. Among the 12 dimensions of safety culture, nurses assigned the highest score to "teamwork within units" (93.1%) and "organizational learning-continuous development" (92.0%). They assigned the lowest score to "hospital handoffs & transitions" (25.0%) and "non-punitive response to errors" (33.3%). Overall, the average percentage of positive responses across the 12 areas of patient safety culture was 55%, indicating a moderate level of patient safety culture. The patient safety culture dimensions that exhibited low levels necessitated adequate attention, such as providing sufficient staff and developing a checklist for handoffs and transitions. Furthermore, to increase error reporting and promote a culture of patient safety, a system-based approach to address errors is recommended.

Keywords: Patient safety culture, Inte; Intensive Care Unit; Iran

Introduction

The World Health Organization (WHO) indicates that approximately one in ten hospitalized patients experiences harm while receiving healthcare services, which includes a broad spectrum of medical errors and adverse events [1]. In Intensive Care Units (ICUs), various incidents pose threats to patient safety due to the critical condition of admitted patients, rendering them more vulnerable to complications than those in general wards. Common threats to patient safety in ICUs encompass the high prevalence of hospital-acquired infections, pressure ulcers, and medication errors [2]. Consequently, prioritizing patient safety in ICUs is of utmost importance. The American Medical Association (AMA) defines patient safety as the prevention of harm through systematic improvements in healthcare delivery, with an emphasis on error prevention, organizational learning from reported incidents, and fostering a safety culture within healthcare organizations [3].

Safety culture arises from the interaction of individual and collective values, attitudes, perceptions, competencies, and behavioral patterns that determine an organization's commitment, style, and skill in safety management [4]. The care behaviors of health team members are influenced by the safety culture. In a positive safety culture, patient safety is regarded as a paramount priority for health team members. If safety incidents occur, they report them promptly and without fear,

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and they participate in managing safety incidents [5]. In other words, the safety culture significantly influences the quality of care delivery and clinical outcomes. Studies have demonstrated a significant relationship between patient safety culture, error reporting, and reduced adverse events and mortality [6]. Conversely, a higher incidence of medical errors has been observed in healthcare centers with a substandard safety culture [7]. Therefore, assessing safety culture is considered a fundamental measure to improve the quality of care [8, 7]. In a study by Ballangrud et al., nurses evaluated the overall patient safety climate as positive, although they emphasized the necessity of continuous improvements in reporting, feedback, and communication about errors, as well as organizational learning [9]. Additionally, Akbari et al. reported the level of patient safety culture as low to moderate [10]. Similarly, Farzi et al. revealed that ICU patient safety is threatened during handover and transfer within and between hospital units [11].

A literature search revealed no existing studies examining the safety culture in the ICU of teaching hospitals in Lorestan. Given the critical role of safety culture assessment as an initial step toward enhancing patient safety, the present study aimed to evaluate the patient safety culture in ICUs from the perspective of nurses.

Materials and Methods

Study design and participants

This descriptive cross-sectional study was conducted from April to May 2023. The sample was selected from the ICUs of one of the educational and therapeutic centers affiliated with Lorestan University of Medical Sciences using simple random sampling (lottery) and census sampling methods. Inclusion criteria required participants to have a minimum of three months of work experience in ICUs and a willingness to participate in the study. Following coordination with hospital authorities, the questionnaire was distributed online to the nurses. Two group reminders were issued to encourage completion, resulting in a final response rate of 75%.

Data collection tools

Data were collected using a two-part questionnaire comprising demographic information (five items) and the Hospital Survey on Patient Safety Culture (HSOPSC), originally developed by the U.S. Agency for Healthcare Research and Quality (AHRQ) in 2004 (available at www.ahrq.gov). The Persian version of this survey has been translated and validated in Iran, demonstrating strong test-retest reliability (r=0.86) [12,13]. This 42-item instrument evaluates twelve critical dimensions of patient safety culture, including teamwork within units (4 items), supervisor expectations and actions promoting safety (4 items), organizational learning and continuous improvement (3 items), management support for patient safety (3 items), general perceptions of patient safety (4 items), feedback and communication about error (3 items), open communication channels (3 items), frequency of events reported (3 items), inter-unit teamwork (4 items), staffing adequacy (4 items), handover and transitions (4 items), and non-punitive response to errors (3 items). Additionally, the survey includes two items assessing respondents' overall grading of patient safety in their workplace and the number of incidents reported over the past 12 months. All items are rated on a five-point Likert scale, ranging from 1 (strongly agree) to 5 (never).

The mean percentage of positive responses was utilized for data analysis across the 12 dimensions of patient safety culture. The percentage of positive responses was calculated by summing the percentages of the "strongly agree" and "agree," as well as the "always" and "most of the time" options. For negatively worded items, the percentage of the "strongly disagree" and "disagree," along with "rarely" and "never" options, were summed. The overall patient safety culture score was obtained by calculating the mean of the positive response percentages across all 12 dimensions. The final score was categorized

into high safety culture (more than 75% positive responses), moderate safety culture (50% - 75% positive responses), and low safety culture (less than 50% positive responses) [3].

Data analysis

The data were analyzed using descriptive statistics, including frequency distributions and mean, with SPSS software, version 16.

Ethical considerations

To ensure confidentiality, anonymous questionnaires were employed, each with a unique identification code. This study was derived from a research project approved by Lorestan University of Medical Sciences (ethical code: IR.LUMS.REC.1399.303).

Results

The mean age of the nurses was 34.3 ± 7.1 years, with an average work experience duration of 11.3 ± 6.6 years. The majority of the nurses were female (95%), married (83%), and possessed a bachelor's degree in nursing (97%). Table 1 details the demographic characteristics and work-related conditions of the nurses. Table 2 presents the mean percentage of positive responses across the 12 dimensions of patient safety culture. The findings indicated a high level of safety culture in the dimensions of "organizational learning-continuous improvement" and "teamwork within units." A moderate level of patient safety culture was observed in the dimensions of "feedback and communication about error," "supervisor expectations and actions promoting safety," "management support for patient safety," "frequency of events reported," and "general perceptions of patient safety." Conversely, the dimensions of "handover and transitions," "non-punitive response to errors," "staffing adequacy," "open communication channels," and "inter-unit teamwork" were rated at a low level of patient safety culture. Overall, the mean positive response rate across the 12 dimensions was 55%, indicating a moderate level of patient safety culture.

Table 1. Frequency distribution of demographic characteristics

Demographic characteristics		Number (percentage)
Gender	Female	190 (95.00)
	Male	10 (5.00)
Marital status	Single	34 (17.00)
	Married	166 (83.00)
Level of Education	BSc	194 (97.00)
	MSc	6 (3.00)

Table 2. Description and Comparison of Anxiety Subscales Among Nurses Based on COVID-19 and non-COVID-19 Wards at Gorgan Army Hospital

Dimensions	Mean percentage of positive responses(percent)
Teamwork within units	91.30
Supervisor/manager expectations and promoting safety actions	63.20
Organizational learning - continuous improvement	92.00
Hospital management support for patient safety	60.70
Overall perceptions of safety	55.00
Feedback and communication about errors	71.60
Communication facilities	47.00
Frequency of event reporting	34.10
Teamwork between hospital units	43.40
Staffing	44.70
Hospital handoover and transitions	25.00
Non-punitive response to errors	33.30
Total score of patient safety culture	55.00

Table 3. Frequency distribution of the grade on patient safety culture from the perspective of nurses

Grade	Number(percent)
Excellent	8(4.00)
Very Good	62(31.00)
Acceptable	116(58.00)
Poor	8(4.00)
Failing	6(3.00)

Table 3 illustrates the distribution of nurses' responses to the question, "How would you grade patient safety in your unit?" A majority of nurses (58%) rated patient safety in their unit as acceptable. Approximately 78% of nurses reported no errors, 12% reported 1–2 errors, 8% reported 3–5 errors, and 2% reported 6–10 errors over the past year.

Discussion

This study assessed patient safety culture in the ICUs of a teaching hospital in Lorestan, Iran. The findings indicated that the overall mean score of patient safety culture was 55%, suggesting a moderate level, with most nurses rating it as acceptable. However, the fact that nearly 78% of nurses reported no medical errors over the past year starkly contrasts with existing evidence of high error rates in ICUs. This discrepancy implies significant underreporting, likely due to punitive organizational responses and ineffective communication channels, as reflected in the low ratings for "non-punitive response to errors" and "open communication channels." Therefore, it is crucial to revise the current managerial approach to errors in the studied center to foster error reporting, improve error management, and ultimately enhance patient safety.

The results showed that the safety culture in the "organizational learning-continuous improvement" dimension was high, aligning with findings from other studies [3, 9]. Similarly, the "teamwork within units" dimension was rated high, consistent with results from several other studies [3, 13–16]. Conversely, Kakemam et al. reported a higher level of patient safety culture in the dimensions of "teamwork within units" and "handover and transitions" across 32 teaching hospitals in Iran [17], whereas these dimensions were rated low in the present study. This difference may be attributed to several factors. In Kakemam et al.'s study, most nurses were from general wards and emergency departments, where frequent interactions with other units occur throughout work shifts. These nurses often handle patient transfers, which naturally enhances interdepartmental communication. Moreover, enhanced communication protocols between hospital departments may have recently contributed to improved performance in these areas. This study was conducted in the ICU, where interactions with other departments are relatively limited. However, the nature of ICU settings may foster stronger intra-unit collaboration, potentially explaining the higher scores observed in the dimensions of "organizational learning-continuous improvement" and "teamwork within units."

This study shares the inherent limitations of cross-sectional designs, including limited generalizability across temporal and spatial contexts. Furthermore, the self-reported nature of patient safety culture assessment introduces potential response biases, as nurses may have been reluctant to disclose sensitive information despite stringent anonymity protections and assurances that responses would be aggregated for analysis. It is recommended that future studies assess patient safety culture using clinical audits to obtain more objective and reliable data. Additionally, longitudinal and interventional research is suggested to evaluate the impact of targeted strategies to improve the overall patient safety culture and strengthen its weaker dimensions.

Conclusion

Based on this study's findings, the overall patient safety culture was evaluated at a moderate level, indicating the need for improvement, especially considering the critical nature of ICUs.

Targeted interventions are required to enhance communication among personnel, ensure adequate staffing levels, and develop standardized checklists for patient handovers and transitions. The prevailing punitive culture within healthcare settings has led to nurses' underreporting of errors. Therefore, adopting a systems-based approach to error management may encourage error reporting and ultimately contribute to strengthening the patient safety culture in ICUs.

Conflict of Interest

The authors declare no conflict of interest.

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