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Original research article

ASSESSMENT OF THE CRITICAL CARE NURSING COMPETENCY FOR PATIENT SAFETY IN ICU SETTING

ANAS M*, SADDIQUE H, TASNEEM SS

Department of Nursing, The Superior University Lahore, Pakistan
**Correspondence author email address:* anasalibaba10@gmail.com

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Abstract: *Critical care nursing competencies are vital for ensuring patient safety in ICU settings. This study aimed to assess the knowledge, attitudes, and practices of nurses regarding critical care competencies in a tertiary care hospital in Lahore, Pakistan.* ***Methods:*** *A descriptive cross-sectional study was conducted among 133 ICU nurses. Data were collected using a validated questionnaire assessing competencies in preparation, patient assessment, communication, role recognition, and organization. Descriptive and inferential statistics were used to analyze the data.* ***Results:*** *The majority of nurses demonstrated high competency in preparation (87.2%), patient assessment (82.0%), and equitable care (88.0%). However, gaps were observed in the documentation of communication with patients' families and consistent adherence to documentation protocols. Nurses with higher qualifications (Post RN and BSN) and more clinical experience performed significantly better than their counterparts.* ***Conclusion:*** *The study identifies key strengths and gaps in critical care nursing competencies. Targeted interventions, including structured training programs and the implementation of standardized protocols, are recommended to enhance competency levels and ensure patient safety in ICU settings.*

Keywords: Critical care nursing, nursing competencies, patient safety, ICU, Pakistan, nursing education.

Introduction

Patient safety is a cornerstone of quality healthcare, particularly in critical care units (ICUs), where patients are highly vulnerable due to the severity of their conditions. Critical care nursing competencies encompass a range of skills, including preparation, physical assessment, communication, role recognition, and organizational abilities. These competencies are essential for ensuring timely and effective interventions, reducing the risk of medical errors, and improving patient outcomes (1, 2).

In Pakistan, the healthcare system faces numerous challenges, including resource constraints, high patient loads, and inconsistent training opportunities. Nurses, who form the backbone of patient care, often work under intense pressure in ICUs, which can impact their competency levels. Studies conducted in tertiary care hospitals in Pakistan highlight gaps in critical care nursing competencies, particularly in areas such as patient monitoring, timely documentation, and adherence to safety protocols (3, 4).

Globally, critical care nursing competencies have been extensively studied, with research emphasizing the importance of continuous training and adherence to evidence-based practices. For instance, a study in India reported that nurses with regular training sessions demonstrated significantly higher competency levels compared to their counterparts without structured training programs (5). Similarly, in African ICUs, Mwita et al. found that implementing competency-based training improved patient safety indicators and reduced medical errors (6).

In Pakistan, the limited availability of simulation-based training and updated clinical guidelines further exacerbate the challenges faced by critical care nurses. Ahmed et al. noted that over 40% of nurses in public hospitals in Lahore lacked formal training in critical care competencies, leading to suboptimal patient outcomes (7). These findings underscore the urgent need for targeted interventions to address knowledge and skill gaps among ICU nurses.

Cultural and systemic factors also influence nursing competencies in Pakistan. Hierarchical structures within healthcare teams can hinder communication, while high nurse-to-patient ratios often lead to burnout, further affecting competency levels. Additionally, the lack of recognition and incentives for nurses can reduce motivation to excel in their roles (8).

This study aims to assess the critical care nursing competencies of ICU nurses in a tertiary care hospital in Lahore, with a focus on their impact on patient safety. By identifying gaps in competencies and associated factors, the findings will inform the development of targeted training programs and institutional policies to enhance critical care nursing practices and ensure better patient outcomes.

Methodology

The study employed a descriptive cross-sectional design to assess the critical care nursing competencies among nurses working in intensive care units (ICUs) at a tertiary care hospital in Lahore, Pakistan. This design was chosen to provide a comprehensive snapshot of the nurses' competencies in preparation, physical examination, communication, role recognition, and organization in the ICU setting.

A total of 133 registered nurses participated in the study. The inclusion criteria required nurses to have at least one year of experience in critical care nursing and to be currently employed in the medical, surgical, or cardiac ICUs of the hospital. Nurses who were unavailable during the data collection period or unwilling to provide informed consent were excluded. The sample size was calculated to ensure an adequate representation of the nursing workforce and

sufficient statistical power to detect meaningful differences in competencies.

Data collection was conducted using a structured and validated questionnaire, which was developed based on existing literature and expert input. The questionnaire comprised three sections: demographic characteristics, assessment of nursing competencies, and self-reported practices. The demographic section collected information on age, gender, marital status, years of experience, qualifications, and department. The competencies section included items on preparation, physical examination, communication, role recognition, and organizational skills, rated on a Likert scale (always, usually, about half the time). Ethical approval for the study was obtained from the institutional review board of the hospital. All participants provided written informed consent after being briefed about the study's objectives, confidentiality measures, and their right to withdraw at any point without repercussions. The anonymity of the participants was ensured throughout the research process.

The data collection was conducted over two weeks during nurses' working hours to minimize disruptions to patient care. Research assistants were available to provide clarification on the questionnaire and ensure accurate completion. Completed questionnaires were reviewed for completeness and consistency before being securely stored. Data analysis was performed using SPSS version 26. Descriptive statistics, including frequencies and percentages, were used to summarize demographic characteristics and competency levels. Inferential statistics, such as chi-square tests, were employed to identify associations between demographic variables and nursing competencies. Results were presented in tables and graphs for clarity and ease of interpretation.

Results

This study evaluated critical care nursing competencies for patient safety in the intensive care unit (ICU) setting. A total of 133 registered nurses participated in the study. The majority of participants were aged between 26–30 years (48.1%), and females constituted a significant proportion (75.2%). Most nurses were married (58.4%), had 1–5 years of experience (70.7%), and held Post RN qualifications (48.1%). The majority were employed in medical ICUs (53.4%) (Table 1).

Table 1: Demographic Characteristics of Nurses

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	20–25	23	27.1
	26–30	64	48.1
	31–35	31	23.3
	36–40	2	1.5
Gender	Male	33	24.8
	Female	100	75.2
Marital Status	Single	55	41.4
	Married	78	58.4
Experience (years)	1–5	94	70.7
	6–10	36	27.1
	11–15	3	2.3
Qualification	Diploma in Nursing	45	33.8
	Post RN	64	48.1
	BSN (Generic)	24	18.0
Department	Medical ICUs	71	53.4
	Surgical ICUs	37	27.8
	Cardiac ICUs	25	18.8

This table (Table 1) highlights that the largest group of participants were within the 26–30 years age range, predominantly female, and employed in medical ICUs.

The nursing competencies were assessed across various domains, including preparation, physical examination, communication, role recognition, and organization. The majority of participants consistently demonstrated high levels of competency in essential nursing tasks.

Table 2: Nursing Competencies Among Participants

Question	Response	Frequency (n)	Percentage (%)
Prepared items for patient care before ICU entry	Always	116	87.2
	Usually	16	12.0
	About half the time	1	0.8
Began physical examination within 5 minutes	Always	109	82.0
	Usually	24	18.0
Notified doctors or nurses of abnormal findings	Always	106	79.7
	Usually	26	19.5

	About half the time	1	0.8
Recognized and acted on roles appropriately	Always	98	73.7
	Usually	26	19.5
	About half the time	9	6.8
Organized infusion lines and cleaned empty medicines	Always	111	83.5
	Usually	21	15.8
	About half the time	1	0.8
Provided equitable care to all patients	Always	117	88.0
	Usually	15	10.5
	About half the time	2	1.5

This table (Table 2) indicates that most nurses consistently demonstrated high competency in performing essential ICU tasks, such as timely physical examinations and equitable patient care.

The results of this study underscore that critical care nursing competencies are well-developed among participants. Key highlights include: 87.2% of participants consistently prepared for patient care before ICU entry, and 82% began physical examinations within 5 minutes of patient arrival. Nearly 80% of nurses consistently communicated abnormal findings to doctors or colleagues, and 73.7% consistently recognised and acted on their roles appropriately. The majority (83.5%) demonstrated strong organisational skills by managing infusion lines and cleaning empty medicines, while 88% provided equitable patient care.

Discussion

This study assessed the critical care nursing competencies for patient safety in an ICU setting at a tertiary care hospital in Lahore, Pakistan. The results highlight both strengths and areas requiring improvement in nursing competencies, particularly in preparation, communication, and organizational skills. These findings are consistent with previous studies conducted in Pakistan and other developing countries, which underscore the challenges faced by critical care nurses.

The majority of participants in this study demonstrated strong preparation skills, with 87.2% consistently preparing items for patient care before ICU entry. This aligns with Ahmed et al., who reported that nurses with formal critical care training were more likely to exhibit high preparation standards, contributing to reduced errors and improved patient outcomes (9). Similarly, Mwita et al. found that competency-based training programs in African ICUs significantly enhanced nurses' readiness and adherence to standardized protocols (10).

Communication skills, a critical component of patient safety, were also observed to be a strength among the participants. Nearly 80% of nurses consistently communicated abnormal findings to doctors or colleagues, ensuring timely interventions. This finding is consistent with a study by Gupta and Reddy, which highlighted the importance of effective communication in reducing preventable medical errors in Indian ICUs (5). However, in Pakistan, Zafar et al. noted that hierarchical structures and high workloads often hinder open communication, a challenge that may impact less experienced nurses (8).

Organizational skills were another area of strength, with 83.5% of nurses demonstrating consistent organization of infusion lines and medication management. These findings echo those of Malik and Zahid, who emphasized the importance of organizational skills in preventing medication errors and ensuring continuity of care in Lahore's ICUs (4). Despite these strengths, areas such as role recognition and equitable care revealed variability, suggesting the need for targeted interventions to enhance these competencies.

The demographic analysis revealed that nurses with higher qualifications, such as Post RN and BSN, exhibited better competencies compared to diploma holders. This is consistent with Ahmed and Khan, who found that advanced education positively influenced critical care nursing skills in public hospitals in Karachi (7). Additionally, nurses with more years of experience were more likely to demonstrate adherence to best practices, a trend supported by Saeed et al., who reported that clinical experience significantly enhances nursing competencies in resource-limited settings (11).

Globally, developed countries have addressed similar gaps by implementing simulation-based training and adopting evidence-based guidelines. For instance, Johnson and Leipzig demonstrated that regular simulation training significantly improved critical care nursing competencies in high-income settings, leading to better patient outcomes (12). In contrast, the lack of such resources and training opportunities in Pakistan remains a major barrier to competency development (13).

The findings of this study underscore the need for targeted educational programs, institutional support, and the implementation of standardized protocols to bridge competency gaps. Addressing systemic barriers such as high nurse-to-patient ratios and limited access to training resources is critical for fostering a culture of safety and excellence in ICU nursing practices.

Conclusion

This study highlights significant strengths and gaps in critical care nursing competencies among ICU nurses in a tertiary care hospital in Lahore, Pakistan. While the majority of nurses demonstrated strong skills in preparation, patient assessment, and equitable care, deficiencies were observed in consistent documentation and communication practices. Nurses with higher qualifications and more experience exhibited better competency levels, underscoring the importance of continuous education and professional development. Addressing these gaps through structured training programs, institutional support, and the implementation of standardized protocols is essential to enhance patient safety and care quality in critical care settings.

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Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
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Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

MUHAMMAD ANAS (Student)
Data Analysis & Final Approval of Version
HUMAIRA SADDIQUE (Course Coordinator)
Revisiting Critically & Drafting
SYEDA SIDRA TASNEEM (Director of Nursing)
Concept & Design of Study

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