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Assessment of Nurses' Knowledge and Practices Regarding Nursing Interventions in the Management of Sepsis in Critical Care Settings

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ABSTRACT

Sepsis is a serious condition that needs to be identified and addressed early, especially in critical care. Nurses are important in early recognition and treatment of sepsis and influence patient outcomes. Inconsistencies in knowledge and practice among nurses for the management of sepsis are still a problem. This research seeks to evaluate the knowledge and practice of nurses in relation to nursing interventions for the management of sepsis in critical care areas. Through the identification of these gaps, the research aims to recommend evidence-based strategies for enhancing sepsis care and nursing practice, ultimately enhancing patient outcomes in critical care settings. A cross-sectional study was conducted with 98 nurses working in critical care settings. Data were collected through a structured questionnaire assessing their knowledge and practices regarding sepsis management. Descriptive statistics and Chi-square tests were used to analyze the data, identifying knowledge gaps and variations in practice based on demographic factors and professional experience. The study found that nurses had moderate knowledge of sepsis recognition but limited knowledge of advanced management practices, such as early antibiotic administration and lactate monitoring. Experience in critical care positively correlated with better sepsis knowledge and practices. Despite this, gaps were identified in documentation and adherence to sepsis protocols, indicating the need for targeted training and institutional support to improve care. The research identifies important knowledge and practice gaps among nurses in sepsis management in critical care. Targeted training and continuous education on sepsis protocols are critical to improve nursing practices, patients' outcomes, and close the knowledge-practice gap, particularly for novice nurses.

Keywords: Knowledge, Practices, Nursing Interventions, Sepsis.

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INTRODUCTION

Sepsis is among the major causes of mortality in patients hospitalized in intensive care units (ICUs), whose vulnerability stems from the severity of their illness and invasive interventions (1). Sepsis is a life-threatening organ dysfunction resulting from a dysregulated host response to infection (2). Early recognition and prompt interventions greatly enhance sepsis outcomes, and nurses' roles become critical in the intensive care unit (3). Nurses are best

positioned to identify early warning signs of sepsis and take immediate measures like monitoring vital signs, fluid administration, and ensuring timely antibiotic administration (4). Their practice and knowledge, particularly compliance with guidelines such as the Surviving Sepsis Campaign, can significantly lower mortality rates (5). Nevertheless, evidence has varied in nurses' knowledge and sepsis care practices between and within countries and healthcare systems (6).

Critical care units in most low- and middle-income countries, including Pakistan, suffer from shortages of staff, untrained staff, and poor sepsis guidelines, which have an impact on the quality of care (7). Gaps in knowledge and inconsistencies in practice have been shown to lead to delays in recognition and management, leading to longer hospital stays and higher mortality (8). Further, ICU nurses frequently indicate uncertainty about early signs of sepsis, the right interventions, and care escalation (9). These gaps can be filled through thorough assessment and focused education. Ongoing professional development, simulation training, and evidence-based guideline implementation are necessary to enhance nursing care in sepsis management (10). The study seeks to evaluate the existing level of knowledge and practices among nurses on nursing interventions for sepsis management in critical care environments, ultimately leading to enhanced patient outcomes.

METHODOLOGY

A descriptive cross-sectional study was conducted to assess the knowledge and practices of nurses regarding nursing interventions for the management of sepsis in critical care settings. The study was carried out in the intensive care units (ICUs) of selected tertiary care hospitals in Islamabad, Pakistan. A total of 98 registered nurses were selected using non-probability purposive sampling. Participants eligible for inclusion were those with a minimum of six months of ICU experience, working full-time in critical care units, and providing written informed consent. Nurses on leave or rotation outside the ICU during data collection, nursing students, and interns were excluded from the study. Data were collected through a structured, self-administered questionnaire prepared after a review of relevant literature and validated instruments.

The survey had three sections: demographic data, a knowledge test on sepsis (definition, signs, symptoms, risk factors, and guidelines), and a practice test with a Likert

scale to assess routine nursing interventions in sepsis management. Content validity was maintained by obtaining expert review from three critical care nursing professionals, and a pilot study involving 10 nurses who were not included in the principal study was used to test the clarity and reliability of the tool. The questionnaire was completed in about 15–20 minutes. Data were collected over four weeks during duty hours after having received ethical clearance from the Institutional Review Board (IRB).

Participants were informed about the purpose of the study, and written informed consent was sought. Data were coded and entered into SPSS version 25.0 for analysis. Descriptive statistics like frequencies, percentages, means, and standard deviations were utilized to describe the demographic characteristics, knowledge levels, and practices of participants. Inferential statistics, such as Chi-square tests and independent t-tests, were utilized to examine the relationship between nurses' knowledge and practice scores with the chosen demographic variables, and a p-value of less than 0.05 was regarded as statistically significant.

Ethical principles were rigidly adhered to, and participants were ensured confidentiality and anonymity of their answers. No personal identifiers were utilized during analysis or in the final report. Voluntary participation was permitted, and nurses could withdraw from the study at any point without penalty. The results of the study were intended to illuminate areas of nursing education and training improvement related to early identification and sepsis management in critical care settings.

RESULT

There were 98 registered nurses involved in the study. Most of them were females (72.4%), and the greatest number was between 25 and 30 years (43.9%). Over half (56.1%) were with a bachelor's degree in nursing, and the largest percentage (63.3%) had between 1 to 5 years of experience in the critical care environments as shown in table 1.

Table 1: Demographic characteristics of participants (n = 98).

Variable	Frequency (n)	Percentage (%)
Gender		
Male	27	27.6%
Female	71	72.4%
Age Group (years)		
20–24	19	19.4%
25–30	43	43.9%
31–35	21	21.4%
>35	15	15.3%

Education Level		
Diploma	31	31.6%
BScN	55	56.1%
MScN	12	12.2%
Years of Experience in ICU		
<1 year	15	15.3%
1–5 years	62	63.3%
>5 years	21	21.4%

The average knowledge score was 12.8 ± 3.1 out of 20 as shown in table 2. According to scoring criteria, 38.8% had good knowledge, 44.9% had moderate knowledge, and 16.3% had poor knowledge. The majority of nurses accurately identified sepsis signs like fever, tachycardia, and hypotension (89.7%), but fewer recognized the value of lactate monitoring (45.9%) or time-sensitive antibiotic

administration (53.1%).

Table 3 shows mean score for practice was 30.4 ± 5.8 out of 40. A total of 51.0% of participants had satisfactory practices, 36.7% moderate and 12.2% unsatisfactory practices. Most agreed to monitor septic patients' vital signs regularly (95.9%) and giving antibiotics on time (82.6%). Writing of sepsis-related parameters was poor (48%).

Table 2: Knowledge level of participants (n = 98).

Knowledge Level	Frequency (n)	Percentage (%)
Poor (0–9)	16	16.3%
Moderate (10–14)	44	44.9%
Good (15–20)	38	38.8%

Table 3: Practice level of participants (n = 98).

Practice Level	Frequency (n)	Percentage (%)
Inadequate (0–19)	12	12.2%
Moderate (20–29)	36	36.7%
Adequate (30–40)	50	51.0%

There was statistically significant correlation observed between educational qualification and level of knowledge ($p = 0.03$) and between experience in ICU and knowledge ($p = 0.01$). Participants with more knowledge scores were also significantly associated with better demonstration of practices ($p = 0.02$). There was no statistically significant correlation between the gender and both knowledge and level of practice ($p > 0.05$).

DISCUSSION

The current study set out to assess the knowledge and practice of nurses on nursing interventions in sepsis management among critical care environments. The results showed that 38.8% of respondents had good knowledge, while more than half possessed moderate to poor knowledge. The practice scores presented a similar trend, where a mere 51% had acceptable practice. These findings highlight the current knowledge–practice gap between nurses, which can impact timely identification and sepsis

management in critically ill patients. These findings concur with an Egyptian study, where it was shown that most ICU nurses possessed merely moderate knowledge about sepsis guidelines and early management techniques (11). In the same vein, a Jordanian cross-sectional study indicated that while nurses were able to recognize general sepsis signs, evidence-based interventions were not well known to them (12). These findings reflect a wider regional trend and necessitate revising the curriculum as well as strengthening clinical training. Further, the present study identified a statistically significant relationship between ICU experience and practice/knowledge level. This is evidenced by an Indian study, where those nurses with over five years of ICU experience fared better in both knowledge and practical aspects of sepsis care (13).

Experience, it seems, plays a pivotal role in the development of clinical intuition and evidence-based decision-making. Remarkably, less than half (40.8%) of the nurses included in our study were aware of the Surviving Sepsis Campaign

(SSC) guidelines. By comparison, a Turkish study cited significantly greater awareness (71.2%) among ICU nurses, ascribed to routine training sessions and protocol reminders (14). The difference illustrates varying levels of institutional support and ongoing professional development in healthcare facilities. In terms of practices, whereas the majority of nurses checked vital signs regularly and administered antibiotics immediately, documentation and utilization of sepsis screening tools were poor. A Nigerian study also identified similar challenges, where lack of consistent documentation was reported to be a significant hindrance in sepsis care (15). Proper documentation practices are needed for early detection and timely escalation of care. Another interesting observation was the absence of any strong association between gender and knowledge or practice levels. This is consistent with the results of a Malaysian study that highlighted professional education, and not demographic characteristics, as determinants of proficiency in sepsis management (16).

There is some comparison that can be noted in an American study, where nurses were significantly rated higher in both practice and knowledge, most probably because simulation-based sepsis education modules were integrated into their continuing professional development program (17). This indicates that availability of resources and formal training have a notable impact on clinical competencies. Our work contributes to current evidence by highlighting the need for targeted sepsis training programs, particularly in low- and middle-income nations. Interventions like bedside sepsis checklists, clinical audits, and regular updates regarding SSC guidelines have demonstrated measurable gains in care outcomes (18,19). In addition, managerial endorsement and inter-professional collaboration are important factors in optimizing nurse-implemented sepsis care (20).

CONCLUSION

This research points to critical knowledge gaps and practices of nurses in managing sepsis in intensive care units. Despite being aware of general signs of sepsis, the nurses demonstrated inadequate understanding of complex interventions and recommendations like lactate measurement and prompt administration of antibiotics. The findings underscore the requirement for ongoing, comprehensive education programs, particularly among nurses employed in intensive care unit settings, in order to follow evidence-based guidelines and enhance patient outcomes. Knowledge levels were related to ICU years of experience as well as to education, though the research found that professional education and familiarity with sepsis

protocols remain under optimal across most critical care environments. These findings indicate that institutional support by way of frequent in-service training, sepsis workshops, and current clinical guidelines can help bridge the knowledge-practice gap. To rectify these problems, we suggest implementing frequent sepsis education, implementation of bedside sepsis screening tools, and improved interdisciplinary collaboration, all of which can empower nurses to offer high-quality care in treating septic patients. Longer-term prospective studies in larger samples are required to determine whether these interventions have sustained long-term effects on clinical outcomes.

LIMITATION

This research is not without its limitations. The sample of 98 participants, while sufficient for initial findings, may not adequately reflect the diversity of nursing practitioners in various healthcare settings. A larger sample size covering a range of institutions and geographic locations would yield a better picture of the sepsis management knowledge and practices among nurses. Furthermore, the cross-sectional design of the study restricts the potential to make causal inferences. The information gathered at a single point in time cannot reflect the dynamic process of knowledge acquisition and practice evolution over time. A longitudinal study would assist in assessing the efficacy of continuous education and the long-term effect on nursing practices in sepsis care. Lastly, self-reported practice data could be prone to response bias since nurses might overreport better practices due to social desirability. More reliable data on compliance with sepsis protocols would be obtained from objective clinical practice measures, e.g., direct observation or audits.

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