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Nurses' knowledge, attitudes, and decision-making related to sepsis assessment and management in Palestinian intensive care units

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Abstract

Introduction Sepsis is a major global health issue leading to severe organ damage and causing 11 million deaths annually. It affects 50 million people worldwide and requires extensive knowledge and resources. Intensive care nurses play an important role in evaluating sepsis, identifying it, escalating care, and initiating treatment. This study aimed to assess the Intensive Care Unit (ICU) nurses' knowledge, attitudes, and decision-making skills related to sepsis assessment and management, and determine the factors influencing nurses' decision-making in ICUs.

Methods A cross-sectional study was conducted among ICU registered nurses in Palestine. A convenience sample of 243 participants was recruited. A structured self-reported questionnaire comprising three sections: socio-demographic characteristics, Nurses' Knowledge and Attitudes Survey, and the Nurses' Decision-Making Instrument (NDMI) was used to collect the data from April to June 2024.

Results The findings revealed that participants demonstrated means of 82.74 ± 16.34, 72.31 ± 22.32, and 88.36 ± 14.84 for knowledge, attitudes, and decision-making skills, respectively, reflecting high knowledge, moderate attitudes, and high decision-making skills levels. Decision-making skills were correlated with knowledge ($r = 0.348$, $p < 0.001$), attitudes ($r = 0.607$, $p < 0.001$), sex ($r = -0.193$, $p < 0.01$), and sepsis training ($r = 0.607$, $p < 0.001$). The predictors of decision-making skills were sepsis training ($B = 0.413$, $p < 0.01$), attitudes ($B = 0.354$, $p < 0.01$), and knowledge ($B = 0.147$, $p < 0.01$).

Conclusion This study highlights that ICU nurses' knowledge, attitudes, and training significantly influence their decision-making skills related to sepsis management. Targeted sepsis education programs, incorporating early recognition strategies, guideline adherence, and protocol-driven interventions, are crucial for enhancing nurses' clinical decision-making. Strengthening these educational initiatives will improve timely and evidence-based sepsis care, ultimately leading to better patient outcomes in ICUs.

Clinical trial number Not applicable.

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Keywords Knowledge, Attitudes, Intensive care units, Decision-making, Sepsis, Management

Introduction

Sepsis is a significant global health concern and a leading cause of morbidity and mortality worldwide. It is a life-threatening condition resulting from an uncontrolled and overwhelming response to infection, which can lead to high fatality rates [1–4]. The global burden of sepsis is substantial, affecting nearly fifty million people and causing approximately 11 million deaths annually, accounting for 20% of global fatalities [5]. Patients with sepsis frequently develop acute organ dysfunction, including kidney failure, respiratory distress, cardiac dysfunction, and coagulation disorders, which further complicate management and recovery [6–8].

Despite advances in critical care, sepsis continues to pose significant challenges, particularly in lower-middle-income countries (LMICs), where sepsis incidence and mortality rates are disproportionately high [5]. The high costs associated with sepsis treatment in intensive care units (ICUs) exacerbate these challenges, with many patients not surviving to discharge [9]. Effective sepsis management depends on early identification and timely intervention, yet recognizing sepsis in its early stages remains difficult due to its variable and nonspecific clinical presentations [10–12]. A Palestinian study revealed that septic shock was a predictor of mortality in patients in ICUs (OR: 27.1, 95% CI: 7.9–88.3, $p < 0.001$) [13]. To address this, the Surviving Sepsis Campaign, led by several critical care organizations, has developed evidence-based guidelines aimed at improving sepsis recognition, treatment, and patient outcomes [7, 14]. Adhering to such guidelines has been shown to reduce ICU admissions, shorten hospital stays, and lower mortality rates [15, 16]. In contrast, delays in implementing these recommendations are strongly associated with poorer prognoses and increased mortality rates [15, 16]. However, one of the primary challenges in sepsis management is early recognition, as its clinical presentation is highly variable and often nonspecific [17, 18]. This complexity makes timely diagnosis difficult, increasing the risk of delayed treatment and worsening patient outcomes. To address this issue, developing reliable diagnostic tools and standardized assessment criteria is essential for enhancing early sepsis identification and improving patient care [14].

Nurses play a critical role in the early detection and management of sepsis, as they are often the first to recognize subtle changes in a patient's condition. Their clinical decision-making directly impacts the quality of care provided to septic patients [5, 17–19]. Effective decision-making in sepsis care requires a comprehensive understanding of sepsis protocols, the ability to interpret clinical indicators, and the capacity to act swiftly in deteriorating conditions [6]. However, research suggests that various factors influence nurses' decision-making abilities, including their knowledge level, clinical experience, working conditions, and the nurse-to-patient ratio [9, 20].

The Cognitive Continuum Theory (CCT) provides a framework for understanding how nurses make decisions in complex clinical environments. According to CCT, decision-making can be either analytical or intuitive. When nurses encounter complex cases with high uncertainty, such as sepsis, they are more likely to rely on analytical decision-making which requires structured protocols and guidelines. In contrast, when faced with familiar and time-sensitive situations, nurses tend to depend on intuitive decision-making which is based on prior experience and pattern recognition [21].

Despite their critical role, many nurses lack sufficient knowledge and training in sepsis recognition and management. Studies have highlighted significant gaps in nurses' understanding of key sepsis indicators such as hypotension, hypoxia, and oliguria, which can delay recognition and treatment [19]. A study in Western Canada revealed that nurses often struggle with the timely identification and management of sepsis due to inadequate training and insufficient educational programs within healthcare institutions [9]. Similar findings have been reported globally, where a lack of effective sepsis evaluation has led to delays in initiating life-saving interventions [4, 22, 23]. Addressing these knowledge gaps through targeted education and continuous professional development is crucial for improving sepsis outcomes [17, 15, 22, 24–26].

In Palestine, research on sepsis remains limited, with only one notable study reporting an incidence of 13.6% in adult ICU patients [27]. This highlights a critical gap in sepsis management within the region. The available literature suggests that Palestinian healthcare professionals, particularly nurses, may have insufficient knowledge and training related to sepsis. One Palestinian study examining the knowledge, attitudes, practices, and barriers toward sepsis management among emergency nurses and physicians found that participants had poor-to-moderate levels of sepsis knowledge, with physicians demonstrating better attitudes toward sepsis management than nurses [28]. Additionally, a lack of monitoring equipment was identified as a major barrier to effective sepsis management in Palestinian hospitals [28].

Given the limited research in this area, there is an urgent need to explore ICU nurses' knowledge, attitudes, and decision-making processes in sepsis care within the

Palestinian healthcare system. Identifying gaps in nurses' knowledge and clinical decision-making will provide valuable insights for developing targeted educational programs, refining clinical guidelines, and improving patient care. This study aims to contribute to the Palestinian healthcare by addressing these gaps. This can lead to improved nurse training, and ultimately enhances patient-centered sepsis management. Therefore, this study aimed to assess the ICU nurses' knowledge, attitudes, and decision-making skills related to sepsis assessment and management and determine the factors correlated with nurses' decision-making. Thefollowing questions guided the study:

1. What are the levels of knowledge, attitudes, and decision-making regarding sepsis assessment and management among ICU nurses?
2. Is there any correlation between knowledge, attitudes, demographic factors (e.g., age, sex, education level, experience, and sepsis training), and decision-making skills regarding sepsis assessment and management among participants?
3. What are the predictors of decision-making skills regarding sepsis assessment and management among participants?

Methods

Study design, setting, and sample

This study had a cross-sectional design. The target population was ICU nurses in the West Bank hospitals in Palestine. A convenience sampling method was used to invite all ICU nurses employed at government and private hospitals in the southern West Bank, encompassing nine hospitals. The minimum required sample size was 218, which was calculated using the Raosoft software with an estimated population size of 500, a 50% response rate, and a 5% alpha level. The inclusion criteria were working as a registered nurse in the ICU for at least one year. Nurses who were on leave or worked part-time were excluded.

Study instruments

A self-reported questionnaire was used for data collection. It included socio-demographic variables (e.g., age, sex, educational level, years of experience in ICUs, and completing sepsis training), a knowledge and attitudes survey, and the Nursing Decision-Making Instrument (NDMI).

The knowledge and attitudes survey measured nurses' knowledge and attitudes toward sepsis management. The researchers developed this survey based on the guidelines adopted by the Surviving Sepsis Campaign and previous research [29, 30]. The developed survey consisted of 25 items measuring knowledge (16 items) and attitudes (9 items) regarding assessing and managing sepsis (Supplement 1). The part about knowledge consisted of multiple-choice questions, for which one mark was graded for each correct answer. The total scores were calculated as percentages of correct answers. Then, the total knowledge scores were grouped based on Bloom's cutoff point [31] into three groups: low (less than 60%), moderate (60–79%), and high (80–100%). The responses for attitude items were recorded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The degree of attitude was categorized into three categories based on the aggregate scores: negative level perception (less than 60%), fair level perception (60–79%), and positive level perception (80–100%) [31].

The validity of the knowledge and attitudes survey was established by consulting a panel of five nursing experts, following Lynn's recommendation to involve at least five experts when conducting a Content Validity Index (CVI) [32]. The experts, who possessed advanced qualifications in sepsis management, were asked to rate the relevance of each item in the survey to the defined concepts of knowledge and attitudes using the CVI. They rated each item on a 4-point Likert scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant) [33]. Both the Item Content Validity Index (I-CVI) and the Scale Content Validity Index (S-CVI) were calculated using average values [34]. The I-CVI for each item was calculated by dividing the number of experts who rated the item as either 3 or 4by the total number of experts. The S-CVI was then determined by calculating the averages of all the I-CVI values [34]. The results showed a value of 1.0 for all the I-CVIs, demonstrating that all items were highly suitable for the study's purpose. Additionally, all items were reported to be clear and understandable, without a need for deletion or modification. The S-CVI was also 1.0, reflecting a high level of overall content validity. A pilot test was conducted with 20 ICU nurses to evaluate the survey for clarity, relevance, and feasibility. These participants were excluded from the main study sample. Based on the pilot findings, no modifications were necessary, as the items were clear and understandable. The reliability of the entire scale was satisfactory (Cronbach's $\alpha = 0.86$), with Cronbach's alpha for knowledge items at 0.94 and for attitude items at 0.80, respectively.

Lauri and Salanterä developed the NDMI to measure nurses' decision-making skills [35]. The NDMI consisted of 24 items rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). The total score ranged between 24 and 120, and it was calculated by summing the score of each response after reversing the negative items. A total score ≤ 67 indicated analytical decision-making, 68–78 indicated quasi-rational decision-making (i.e., flexible, or both analytical and intuitive, based on the situation), and >78 reflected intuitive decision-making. The validity and

reliability of the NDMI were appropriate, with a Cronbach's alpha of 0.84 [35].

The validity and reliability of the variables (knowledge and attitudes) for the total sample were investigated. Item loadings were initially evaluated, and following the recommended threshold of 0.5 for item validity [36], all items from the tools demonstrated strong loadings and were thus retained in the study. Furthermore, convergent validity and construct reliability were assessed. The Average Variance Extracted (AVE) values exceeded the minimum requirement of 0.5, indicating sufficient convergent validity [36]. Similarly, composite reliability scores surpassed the 0.8 cutoff point, confirming the reliability and internal consistency of the constructs [36].

Data collection methods

After obtaining ethics approval, meetings were conducted with the head nurses of selected the ICUs, where the first researcher explained the study's aims and obtained lists containing the names and the schedules of nurses. Eligible nurses were invited to participate and signed informed consent forms. Then, questionnaires were distributed to the agreed participants by the researchers. Collection boxes were left in the selected ICUs to return the completed questionnaires after one week. The data were collected from April to June 2024.

Ethical considerations

Ethics approvals were obtained from the Palestinian Ministry of Health and Palestine Ahliya University with reference NO# CAMS/CCNA/16/124. The study's objectives were clearly explained to potential participants, and those who agreed to participate signed an informed consent form. Confidentiality was ensured by not collecting any identifiable personal information. Responses were completely anonymous. Completed questionnaires were stored securely in password-protected electronic files accessible only to the research team. Hard copies, if any, were kept in locked cabinets. Participation was entirely voluntary, and participants were informed that they could withdraw from the study at any time without any consequences.

Data analysis

Data analysis was conducted using SPSS version 26. Preliminary data screening included checks for missing values, outliers, and assessment of normality through histograms and the Kolmogorov-Smirnov test. The results indicated that the data were normally distributed, without missing values or outliers. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize the sample characteristics. Pearson and point biserial correlation tests were performed to examine associations between variables.

Table 1 Demographic characteristics of the participants ($N=243$)

Variable		M(SD)	*n* (%)
Sex	Male		109 (44.9)
	Female		134 (55.1)
Level of education	Bachelor		208 (85.6)
	Master and above		35 (14.4)
Marital status	Single		62 (25.5)
	Married		181 (74.5)
Sepsis training	Yes		81 (33.3)
	No		162 (66.7)
Age		31.9(5.2)	
Working experience in the ICUs		5.1(3.2)	

N: number; %= percentage; M: Mean; SD: Standard deviation

Table 2 Intensive care nurses' knowledge, attitudes, and decision-making related to sepsis assessment and management ($N=243$)

Variable		*N*	(%)	M (SD)
Knowledge	Low level (less than 60%)	75	30.9	82.74 (16.34)
	Moderate level (60–79%)	0	0	
	High level (80–100%)	168	69.1	
Attitudes	Negative level (less than 60%)	94	38.7	72.31 (22.23)
	Fair level (60–79%)	21	8.6	
	Positive level (80–100%)	128	52.7	
Decision-making	Analytically oriented (≤ 67) (Low)	12	4.9	88.36 (14.84)
	Quasi-rational (68–78) (Moderate)	39	16.1	
	Intuitively oriented (> 78) (High)	192	79.0	

N = Number; %= percentage; M: Mean; SD: Standard deviation

In addition, multiple linear regression analysis was conducted to identify significant predictors of decision-making. Statistical significance was set at $p<0.05$, and 95% confidence intervals (CIs) were reported for the regression coefficients to indicate the precision of the estimates.

Results

A total of 250 surveys were distributed, and 243 were returned, resulting in a high response rate of 97.2%. Among the participants, 44.9% were female and 55.1% were male. The majority (86.0%) held a bachelor's degree. The mean age of participants was 31.9 years (± 5.2), and the average period of ICU experience was 5.1 years (± 3.2). Additionally, 33.3% of the participants had received sepsis training (Table 1).

Table 2 shows that participants' mean knowledge score was 82.74 ± 16.34, reflecting high knowledge levels. The attitudes' mean score was 72.31 ± 22.32, indicating moderate levels of attitudes. The mean of decision-making

skills was 88.36 ± 14.84, reflecting intuitively oriented or high decision-making skills (Table 2).

Table 3 displays the factors associated with decision-making skills. The results showed a moderate positive correlation between decision-making skills and knowledge ($r = 0.348$, $p < 0.001$), and a strong positive correlation with attitudes ($r = 0.607$, $p < 0.001$). Additionally, decision-making skills were weakly negatively correlated with sex (r = -0.193, $p < 0.01$), while strongly positively correlated with prior sepsis training ($r = 0.607$, $p < 0.001$). Further analysis of sex differences indicated that male participants scored significantly higher in decision-making skills compared to females ($r = 3.05$, $p < 0.01$).

The correlating factors were entered into a regression model as independent variables, including sex, sepsis training, knowledge, and attitudes. The overall model was statistically significant ($F = 65.064$, $p < 0.001$, $R^2 = 0.522$, adjusted $R^2 = 0.514$). These variables explained 52.2% of the variance in participants' decision-making skills. The significant predictors of decision-making were sepsis training ($B = 11.745$, $p < 0.001$), attitudes ($B = 0.214$, $p < 0.001$), and knowledge ($B = 0.069$, $p = 0.002$) (Table 4).

Table 3 Factors correlating decision-making related to sepsis assessment and management among participants

Variable	Decision-making
	***r* (*p*. value)**
Age	0.002(0.980)
Working experience in the ICUs	-0.032 (0.618)
Knowledge	0.348(0.000)**
Attitudes	0.607(0.000)**
	p.b.r (p. value)
Sex	-0.193(0.003)**
Level of education	-0.005 (0.944)
Marital status	-0.009 (0.908)
Sepsis training	0.607(0.000)**

r = Pearson's Correlation, p.b.r = Point biserial Correlation

***Correlation is significant at the 0.01 level (2-tailed).*

Discussion

The results of this study provide significant findings about the knowledge, attitudes, and decision-making skills related to sepsis assessment and management among Palestinian ICU nurses. According to the study's results, the participants showed a high sepsis knowledge level. This result is higher than what was reported in a previous national study [28] and several international studies among nurses in different settings [9, 17, 20, 22, 23, 37]. This finding might be due to a combination of frequent exposure to sepsis cases, specialized training, availability of sepsis management guidelines and protocols, access to advanced clinical equipment, collaborative teamwork, and a high level of responsibility for patient outcomes. These factors might contribute to the participants' high understanding and expertise in managing sepsis [17, 38]. This high level of knowledge highlights the necessity of continuous education and training programs to maintain and further promote sepsis management skills [6, 22]. Research shows that sufficient knowledge decreases the risk of mortality by accelerating the diagnosis and treatment of sepsis [9, 19].

This study found that the participants had moderate attitudes toward sepsis assessment and management, which is consistent with a previous study [20]. This result might be due to a combination of factors such as stress, workload, varying levels of experience and confidence, institutional constraints, emotional burnout, and possible perceived limitations in the effectiveness of sepsis interventions. Addressing these factors through further training, institutional support, and efforts to improve sepsis care protocols can help shift attitudes toward a more proactive and confident approach to sepsis management [39–41]. According to Rababa et al., systematic training that supports positive attitudes improves clinical practice and decision-making skills should be conducted [6]. Promoting mentorship programs and highlighting the advantages of evidence-based approaches in enhancing patient outcomes are two ways to address negative attitudes [4, 16].

Most participants had high decision-making skills, which is consistent with previous studies [37, 42]. In contrast, this result is higher than previous studies that revealed low to moderate decision-making skills [43–45]. This study's findings could be attributed to various factors, including the participants' experience, which averaged nearly six years, a sufficient time to enhance their decision-making abilities [38, 42, 46]. Additionally, ICU

Table 4 Predictors of decision-making: multiple linear regression

Predictor					95.0% Confidence Interval	
	B	*Beta*	t	*p*. value	Lower bound	Upper bound
Sex	-1.982	-0.073	-1.584	0.115	-4.448	0.483
Sepsis training	11.745	0.413	8.254	0.000**	8.942	14.548
Attitudes	0.214	0.354	6.900	0.000**	0.153	0.275
Knowledge	0.069	0.147	3.074	0.002**	0.025	0.113

"CI = Confidence Interval, b = Unstandardized beta, B = Standardized beta"

*** Significant at p ≦ 0.01*

nurses have extensive clinical training, hands-on experience with complex and rapidly changing conditions, access to advanced technology, collaboration with multidisciplinary teams, and high autonomy and responsibility in patient care. These factors help them develop strong critical thinking, problem-solving, and clinical judgment, all of which are essential for making accurate and timely decisions in a high-pressure, life-critical environment [38, 46]. Torsvik et al. found that experienced nurses were familiar with clinical patterns and frequently depended on intuition [19].

Our study revealed a positive correlation between knowledge and decision-making skills, and knowledge was a predictor of decision-making skills. This finding is consistent with previous studies that demonstrated a positive relationship between nurses' knowledge and decision-making skills [15, 20]. This result supports the Cognitive Continuum Theory (CCT), which suggests that decision-making becomes more intuitive when the decision-maker possesses high knowledge and experience [21]. Nurses with greater knowledge of sepsis, covering early symptoms, diagnostic criteria, and evidence-based interventions, are better equipped to recognize the condition promptly and take appropriate actions. This high clinical competence enhances the speed and accuracy of decision-making, which is crucial in managing sepsis, where timely intervention is often lifesaving [47]. Knowledge also builds confidence, enabling nurses to act decisively without excessive reliance on others during critical situations. Furthermore, a strong knowledge base supports critical thinking, allowing nurses to interpret clinical data, anticipate complications, and choose the most effective interventions [47]. In contrast, limited knowledge can lead to delays, misinterpretation, and inappropriate responses. This is particularly significant within the Palestinian healthcare context, where ICU nurses may face high patient loads, limited training opportunities, and scarce resources. In such settings, knowledgeable nurses are better positioned to make autonomous and informed decisions that mitigate complications [48]. It is suggested that targeted sepsis training enhances both knowledge and decision-making capacity, underscoring the importance of continued education and professional development in improving patient outcomes [4].

Helpful attitudes toward sepsis, such as viewing it as a medical emergency, valuing early intervention, and trusting evidence-based protocols, enhance nurses' readiness to respond effectively [49]. These attitudes, often shaped by knowledge and experience, contribute to more accurate and timely decision-making. Nurses with positive attitudes tend to feel more confident and empowered, making them more likely to act decisively and take initiative in clinical situations [49]. Positive attitudes foster learning, collaboration, stress management, and problem-solving, all of which contribute to better decision-making in high-pressure and critical care environments [50]. In resource-constrained settings, like the Palestinian healthcare system, where staff face challenges such as limited training and high workloads, personal attitudes become crucial [48]. Nurses with strong, proactive attitudes may help bridge systemic gaps by remaining vigilant, collaborating effectively, and making sound clinical judgments. Additionally, sepsis-related training can further strengthen both attitudes and decision-making by increasing confidence and reducing uncertainty [6, 51]. Therefore, there is a need for focused tactics to change attitudes and create a more encouraging environment that promotes excellent practices.

This study found that sex correlated with decision-making skills, reflecting that males had higher decision-making skills than females. This result is incongruent with previous studies that found no correlation between sex and decision-making skills [38, 52]. Moreover, other studies found that female ICU nurses had higher decision-making skills [53, 54]. Our findings might be interpreted as males exhibiting higher confidence levels in their decision-making, which could positively impact their ability to make timely and decisive choices, particularly in high-pressure environments like the ICU. Confidence in decision-making can lead to quicker action and fewer second-guessing moments, enhancing performance in critical situations [55]. Additionally, our findings might be related to cultural factors, males might be socialized to take charge and make decisions more assertively, which could influence their behaviors in the workplace. This could manifest in the ICU setting, where assertiveness is often needed to make quick and impactful decisions [56]. Male nurses may sometimes exhibit better stress management strategies or a greater inclination to take risks, which could benefit decision-making in critical situations. The ability to stay calm and make decisions in high-stress environments is crucial in the ICU, and a greater willingness to take calculated risks may contribute to improved decision-making abilities [57]. There may be individual differences between male and female ICU nurses concerning traits, e.g., decision-making styles, problem-solving approaches, and prioritization. Male nurses may be more inclined to take a direct and solution-oriented approach to challenges, while female nurses may adopt a more collaborative or cautious approach. These factors could result in perceived differences in decision-making skills, depending on the setting and the specific demands of the ICU [58, 59].

Our study revealed that sepsis training was correlated with decision-making skills, and sepsis training was a predictor of decision-making skills, highlighting the importance of systematic educational initiatives and training programs. According to Milano et al. [15] and

Rababa et al. [6], nurses who receive focused training that combines both analytical and intuitive approaches can improve decision-making skills. Nursing programs should incorporate simulation-based learning that mirrors real-life scenarios to balance intuitive and analytical approaches. This will allow nurses to practice and improve both decision-making approaches [35]. Continuous professional development, such as sepsis training, improves clinical competencies, including evidence-based decision-making [5, 6, 49]. Additionally, continuous professional development enhances nurses' attitudes, knowledge, and decision-making skills in assessing and managing sepsis [60, 61].

Strengths and limitations

This study is one of the first studies carried out in Palestine and included a large sample size. Despite that, it has the following limitations. The data were collected using self-reported questionnaires, which may influence responses and the accuracy of findings. Furthermore, the study was carried out in one area in Palestine, which may influence the generalizability of the findings. Therefore, additional studies should include all geographical areas in Palestine. Additionally, future studies are needed to examine the influence of organizational empowerment and policies on implementing evidence-based decision-making skills regarding assessing and managing sepsis.

Implications for practice

Based on the results of this study, policymakers and hospital administrators should develop strategies and interventions that enhance nurses' knowledge and attitudes to promote decision-making skills about sepsis assessment and management. These strategies should be developed based on correlated factors to build comprehensive decision-making skills. Continuous education training programs incorporating sepsis management techniques are essential to ensure all nurses can make appropriate decisions. Additionally, nursing curricula in universities should focus on the main nurses' competencies, such as decision-making skills about sepsis assessment and management.

Future research should incorporate nurses from different settings and locations. Further studies could assess the effectiveness of continuous training programs. Strategic resource allocation and policy reforms are needed to address and reduce specific barriers, such as the high workload in ICUs. Integrating learning opportunities with real-life examples is important to showcase effective sepsis treatment techniques and use the knowledge and skills of experienced nurses to coach and support less experienced staff.

Conclusion

The results of this study provide valuable insights into the knowledge, attitudes, and decision-making skills of ICU nurses in Palestine about sepsis assessment and management. The lack of data in the literature regarding sepsis management and decision-making in Low-Middle-Income countries (LMICs) underscores the significance of this study. Most nurses had a high level of knowledge, moderate attitudes, and high decision-making skills. Moreover, high knowledge, helpful attitudes, and sepsis training were predictors of effective decision-making skills. Therefore, conducting continuous training and educational programs is essential to promote evidence-based decision-making and improve patient outcomes. Additionally, addressing the gaps identified in this research will help refine clinical practices and improve patient care in ICUs.

Abbreviations

ICU Intensive Care Unit

Supplementary Information

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Supplementary Material 1

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Author contributions

H.K. and M.A. designed the study and H.K. and M. F. provided the data. M.M and A.A. conducted data analyses, prepared tables. All authors wrote the main manuscript text and M.A. supervised the study. M.M., A.S. and provided valuable comments during the drafting of the manuscript. M.M. and A.A. edited the manuscript and provided valuable comments. All authors reviewed and approved the manuscript.

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Data availability

The data that support the findings of this study are not openly available due to reasons of sensitivity and are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

Approval was obtained in accordance with the Declaration of Helsinki from the Helsinki Committee in Palestine, and the Institutional Review Board (IRB) at the Palestine Ahliya University with reference NO# CAMS/CCNA/16/124. Participants provided informed written consent. Confidentiality of the data was maintained throughout data collection and analysis.

Consent for publication

Not Applicable.

Competing interests

The authors declare no competing interests.

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