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NURSES PERSPECTIVE ON THE ROLE OF ARTIFICIAL INTELLIGENCE IN INTENSIVE CARE UNIT (ICU) PATIENT MONITORING

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Abstract

Background: *The integration of artificial intelligence (AI) into healthcare is advancing rapidly, yet little is known about how ICU nurses perceive this shift, particularly in low-resource settings.*
Objectives: *This study aimed to examine ICU nurses' perceived concerns regarding AI adoption, focusing on awareness, prior experience, and levels of worry related to AI integration.*
Methods: *A cross-sectional survey was conducted among 235 ICU nurses from nine hospitals in the West Bank. Data were collected using the Worries of Applying Artificial Intelligence in Healthcare Questionnaire (WAAI-HCQ). Descriptive statistics and regression analyses were performed using SPSS.*
Results: *Nurses demonstrated moderate AI awareness (M = 2.6, SD = 0.5) and limited prior experience (mean = 2.3, SD = 0.5). The overall worry regarding AI was moderate (M = 3.2, SD = 0.9), with the greatest concerns centered on its impact on healthcare providers (M = 3.3, SD = 1.0) and the least on regulatory and ethical issues (M = 2.9, SD = 0.7). Regression analysis revealed that AI awareness significantly predicted higher worry levels (B = 2.007, p < .001), while prior experience with AI predicted reduced worry (B = −0.952, p < .001). The findings suggest that greater AI awareness without practical experience may lead to increased apprehension, while hands-on exposure reduces anxiety and builds confidence.*
Conclusions: *While ICU nurses recognized the potential benefits of AI, concerns about job displacement, depersonalization of care, and workflow disruption were prevalent. These findings underscore the need for targeted AI education, practical training, and*

supportive policies that address ethical and workforce-related implications. Context-specific strategies are essential to enhance nurses' readiness and confidence in adopting AI technologies in critical care settings.

1. INTRODUCTION

1.1 Background:

Artificial intelligence (AI) technology has fundamentally transformed healthcare delivery worldwide, with significant implications for nursing practice .

In healthcare settings, AI encompasses machine learning algorithms, natural language processing, clinical decision support systems, and robotic technologies that can assist in patient monitoring, diagnosis, treatment planning, and care coordination (Catalina et al., 2023; Swed et al., 2022).

The integration of AI into healthcare holds transformative potential for improving both accessibility and quality of services, particularly in intensive care units where complex decision-making and continuous monitoring are critical (Castagno & Khalifa, 2020).

In nursing practice, AI can enhance care quality by supporting clinical documentation, streamlining workflows, aiding in decision-making, and reducing occupational stress (Watson et al., 2020).

AI-driven tools are designed to augment nurses' capabilities, enabling them to focus on their core role in delivering human-cantered care (Laukka et al., 2022; McGrow, 2019). Despite these potential benefits, the adoption of AI in healthcare raises significant concerns that warrant empirical investigation. "Worry" in the context of AI adoption refers to the emotional and cognitive concerns that healthcare professionals experience regarding the integration of AI technologies into their practice environment (Alsaedi et al.,2024

In this study, "worry" encompasses cognitive-emotional concerns about AI's impact on professional identity, job security, and patient care depersonalization, reflecting the multifaceted nature of healthcare professionals' apprehensions toward technological integration (Ronquillo et al., 2021).

These worries encompass fears about job displacement, concerns about technology reliability, ethical implications, and the potential depersonalization of patient care (Ronquillo et al., 2021).

Understanding these concerns is crucial for successful AI implementation, as unaddressed worries can lead to resistance, reduced adoption rates, and suboptimal utilization of AI technologies. Healthcare providers globally have expressed mixed reactions to AI integration, ranging from optimism about improved efficiency to apprehensions about job displacement and the depersonalization of care. The Technology Acceptance Model (TAM) suggests that perceived usefulness and ease of use are key determinants of technology adoption, while concerns about job security and professional identity can create significant barriers (Amin et al., 2025).

In the context of nursing, these concerns are particularly relevant given the profession's emphasis on human connection and holistic care delivery. DHQ healthcare context presents unique challenges that may influence nurses' perceptions of AI adoption. The healthcare system in DHQ faces ongoing challenges including limited access to advanced technologies, resource constraints, underinvestment in digital health infrastructure, and political instability (Aqtam et al., 2023).

These factors create a complex environment where technological innovation must be balanced against immediate healthcare needs and limited resources. Furthermore, the lack of established AI governance frameworks and limited exposure to AI technologies in clinical practice may contribute to heightened concerns among healthcare professionals.

The specific role of nurses in AI-driven healthcare environments remains inadequately defined, particularly in low-resource settings like Palestine (McGrow, 2019; von Gerich et al., 2022). Existing literature reveals a significant gap in understanding how Palestinian nurses perceive and respond to the integration of AI in clinical settings, especially in intensive care units where technology adoption can have immediate patient care implications. Thus, this study aims to assess ICU nurses' perceived worries regarding the adoption of AI technologies in clinical practice DHQ hospital Vehari,

In response to these challenges, Artificial Intelligence (AI) has emerged as a promising solution in healthcare, particularly in critical care settings (*Johnson* et al., 2021).

AI refers to computer-based systems capable of performing tasks that typically require human intelligence, such as learning from data, recognizing patterns, making predictions, and supporting decision-making (Shurtleff et al., 2019).

In recent years, AI technologies have been increasingly integrated into healthcare systems to enhance efficiency, accuracy, and patient safety. The growing reliance on AI in healthcare also reflects broader systemic pressures, including aging populations, rising healthcare costs, and global shortages of skilled healthcare professionals. In this context, AI is viewed as a strategic solution to improve efficiency while maintaining or improving quality of care. In critical care environments, where delays or errors can have life-threatening consequences, the potential value of AI-supported systems is particularly significant.

Artificial Intelligence in healthcare has evolved rapidly from rule-based systems to advanced machine learning and deep learning models (Esteva et al., 2019).

1.2 Significance of the Study:

The Significance of This study extends across academic, clinical, organizational, and technological domains. From an academic perspective, the research contributes to the expanding literature Artificial Intelligence in nursing by focusing specifically on ICU nurses' perspectives a viewpoint that remains underrepresented in existing research. By exploring nurses' experiences and perceptions, the study adds depth to theoretical discussions on technology adoption and human–technology interaction in healthcare.

From a clinical perspective, the findings have the potential to enhance patient safety and quality of care. Understanding how nurses interact with AI-based monitoring systems can inform strategies to optimize system design, alert management, and workflow integration. Improved alignment between AI tools and nursing practice may lead to earlier detection of patient deterioration and more timely interventions.

At the organizational level, the study can guide hospital administrators and policymakers in developing supportive implementation strategies. Insights into nurses' training needs, concerns, and expectations can inform targeted education programs, change management initiatives, and policy development. For technology developers, the findings provide valuable feedback on user-centered design considerations that can improve system usability and acceptance.

1.3 Statement of the Problem:

Although AI-based patient monitoring systems are increasingly introduced into ICUs, there is limited empirical evidence regarding how ICU nurses perceive these technologies. Much of the existing literature focuses on technical performance, predictive accuracy, and clinical outcomes, while the human dimension particularly nurses' experiences and attitudes remain underexplored.

The lack of insight into nurses' perspectives may hinder effective implementation of AI systems, leading to underutilization, resistance, or unintended negative impacts on workflow and patient care. Therefore, there is a critical need to explore ICU nurses' perspectives of AI in patient monitoring to inform successful integration and sustainable use

3. Methods and Materials

3.1.1 Study Design

This study was following a quantitative research approach using a Descriptive Cross-sectional study research design. This design was used to assess knowledge and practice regarding management of ICU DHQ hospital Vehari.

3.1.2 Study Variable

The mean score for AI awareness was 2.6 (SD = 0.5), indicating a moderate level of awareness among participants. AI previous experience had a lower mean score of 2.3 (SD = 0.5), suggesting limited prior exposure to AI technologies. Among the different categories of AI-related worries, worries related to healthcare providers were the highest (M = 3.3, SD = 1.0) while regulatory and ethical worries had the lowest mean score of 2.9 (SD = 0.7). The overall mean score for total AI-related worries was 3.2

(SD = 0.9), indicating a generally moderate level of worries among participants regarding AI's implications in healthcare settings.

Variable	M	SD
Artificial intelligence awareness	2.6	.5
Artificial intelligence previous experience	2.3	.5
Total worries	3.2	.9
Profession and practice worries	3.1	.9
Healthcare providers worries	3.3	1.0
Data management worries	3.2	1.1
Regulatory/Ethics worries	2.9	.7

Note. WAAI-HCQ = Worries of Applying Artificial Intelligence in Healthcare Questionnaire. Scores range from 1 to 5 for awareness and experience variables, and 0 to 5 for worry variables, with higher scores indicating greater awareness, experience, or worry levels respectively.

3.1.3 Operational Definition

Practice is operationally defined as the total score obtained by ICU nurses on the 8-item
Practice Checklist regarding use of Al machines in ICU. Each 'Always Done' = 2, 'Sometimes' = 1, 'Never' = 0. Total score ranges from 0-16.
Score: 12-16 = Good Practice, 6-11 = Average, 0-5 = Poor Practice

3.1.4 Attitude

Attitude is operationally defined as the total score obtained by ICU nurses on the 20-item WAAI-HCQ Likert scale. Responses range from 1-Strongly Disagree to 5-Strongly Agree. Total score ranges from 20-100.
Score: 76-100 = Positive Attitude, 48-75 =
Neutral, 20-47 = Negative Attitude

3.1.5 Knowledge

Is operationally defined as the total score obtained by ICU nurses on the 10-item knowledge questionnaire regarding AI in ICU. Each correct answer = 1 mark, incorrect = 0. Total score ranges from 0-10. Score 8-10=good, 5-7 = average, 0-4=poor.

3.1.6 Study Setting:

This study was conducted in DHQ hospital Vehari.

3.1.7 Population and Sampling

The target population for this study comprised all DHQ ICU nurses. The sample size was calculated using Rao soft software based on a population of 500 ICU nurses, yielding a target sample size of 218 with a 95% confidence level. To account for potential non-responses, a convenience sample of 250 nurses was initially selected. Of these, 235 nurses returned complete questionnaires, resulting in a 94.0% response rate.

3.1.8 Inclusion and Exclusion Criteria

Inclusion criteria for the study included all nurses who consented to participate, worked full-time in the ICU, and had more than one year of experience in these units. Full-time ICU nurses were specifically targeted to ensure participants had sufficient exposure to intensive care environments and could provide informed perspectives on AI integration in critical care settings. Exclusion criteria included all

nurses who did not consent to participate, worked part-time in the ICU, had less than one year of experience in these units, and nurses who were unavailable or on leave.

3.1.9 Validity and Reliability

A self-administered questionnaire was completed by participants divided into two sections, which included demographic and professional characteristics and worries of applying AI in healthcare questionnaire (WAAI-HCQ) (Alsaedi et al., 2024).

3.2 Demographic and Professional Characteristics:

This is the first section of the instrument that collected demographic and professional information, which included age, gender, and educational level, work experience in the ICU, AI education, and AI use.

Worries of Applying AI in Healthcare Questionnaire (WAAI-HCQ):

The Worries of Applying AI in Healthcare Questionnaire (WAAI-HCQ) was developed by (Alsaedi et al. (2024) and was used in this study to assess nurses' concerns regarding the implementation of AI. The instrument consists of 33 items rated on a 5-point Likert-type scale and is divided into two main parts. The first part measures AI awareness and previous experience through 13 items: 8 items assess awareness, rated from 1 ("strongly disagree") to 5 ("strongly agree"), while 5 items evaluate prior experience, rated from 1 ("never") to 5 ("always"). The second part examines AI-related worries using 20 items rated from 0 ("strongly disagree") to 5 ("strongly agree"). These items are categorized into four subscales: profession and practice, healthcare providers, data management, and regulatory/ethical concerns, each comprising five items. Higher mean scores indicate greater concern about AI adoption (Alsaedi et al., 2024). Sample items from each subscale are provided. The tool is culturally acceptable, as it was developed in Saudi Arabia, a country that shares many cultural, linguistic, and professional similarities with Palestine. The original instrument demonstrated good reliability, with Cronbach's alpha values ranging from 0.731 to 0.889 and an overall reliability score of 0.882 (Alsaedi et al., 2024). In the present study, the WAAI-HCQ also showed strong internal consistency, with Cronbach's alpha values ranging from 0.82 to 0.94 and a total score of 0.90.

3.2.1 Sample Selection

Two-hundred and thirty-five nurses out of 250 completed the questionnaires, with a response rate of 94.0%. The mean age of participants was 32.0 years (SD = 9.1). The majority of participants 174 (74.0%) were males. This high proportion of male nurses is representative of the nursing profession in Palestine, where cultural factors and economic considerations have led to increased male participation in nursing careers, particularly in intensive care settings. Additionally, 116 (49.4%) held a bachelor's degree. The mean work experience in the ICU was 10.1 years (SD = 8.9). Regarding AI education, only 35 (14.9%) reported having received AI-related education. Furthermore, 76 (32.3%) of participants reported using AI in their practice.

Characteristics	Category	N (%)	*M (SD)*
Age			*32.0 (9.1)*
Gender	Male	174 (74.0)	
	Female	60 (25.5)	
Educational level	Diploma degree	83 (35.3)	
	Bachelor's degree	116 (49.4)	
	Master's degree and above	36 (15.3)	

Characteristics	Category	N (%)	*M (SD)*
Work experience in the intensive care unit			*10.1 (8.9)*
Artificial intelligence education	Yes	35 (14.9)	
	No	200 (85.1)	
Artificial intelligence use	Yes	76 (32.3)	
	No	159 (67.7)	

3.2.2 Data Collection

After obtaining permission to use the data collection tool from its original developers, ethical approval was obtained from Mustafa Kamal nursing college: Vehari, along with authorization to collect data from governmental hospital by the DHQ hospital Vehari. Subsequently, meetings were held with head nurses in the selected hospitals to explain the study objectives, obtain lists of eligible ICU nurses, and secure permission to access the ICU units. Eligible nurses were invited to participate in the study, provided with a clear explanation of the research purpose, and asked to sign an informed consent form prior to completing the questionnaire. Each participant received a sealed envelope in which to place the completed questionnaire and was allowed as much time as needed to complete it. Questionnaires were completed paper-based in English. Given the professional educational background of ICU nurses in Palestine, who typically receive English-language medical training, adequate English comprehension was assumed. However, participants were encouraged to seek clarification on any items they found unclear to ensure accurate responses, and research assistants were available to provide translation support when needed. While this approach may have introduced some language-related limitations, the high response rate and internal consistency of responses suggest that comprehension barriers were minimal.

3.2.3 Ethical Considerations

The rules and regulations set by the ethical committee was followed while conducting the research and the rights of the research participants were respected. Written informed consent attached will be taken from all the participants. All information and data collection will be kept confidential. Participants will be remained anonymous throughout the study. The subjects will be informed that there are no disadvantages or risk on the procedure of the study.

3.2.4 Data Analysis:

The collected data were analysed using IBM SPSS Statistics, Version 26.0. Prior to analysis, all questionnaires were reviewed for completeness. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize participants' demographic characteristics and their perceptions of AI-related worries. To examine the relationships between AI worry perceptions and demographic and professional characteristics, Pearson correlation coefficients were calculated. Furthermore, multiple linear regression analysis was conducted to identify significant predictors of perceived AI worries. A p-value of less than .05 was considered statistically significant for all analyses.

3.2.5 Gantt Chart:

Activity			
	Feb 2026	March 2026	April 2026
Proposal completion			
Data collection			
Data analysis and interpretation			
Research compilation			

Research presentation and Final submission			

Results and Discussion:

Results:

The analysis revealed that age, gender, work experience in ICU, AI education, and AI use did not show significant associations with AI worries ($p > .05$). However, education exhibited a weak but significant negative correlation with AI worries ($r = -.184$, $p = .005$), indicating that individuals with higher education levels had slightly lower AI-related worries. In contrast, AI awareness ($r = .831$, $p < .001$) and AI previous experience ($r = 0.286$, $p < .001$) demonstrated significant positive correlations, suggesting that participants with greater awareness and experience of AI reported higher levels of AI-related worries. The Relationship between Perception of Artificial Intelligence Worries and Demographic and Professional Characteristics of the Study (N = 235).

Variable	**Perception of Artificial Intelligence Worries r(p-Value)**
Age	.051 (0.435)
Gender	.094 (0.152)
Education level	−.184** (0.005)
Work experience in the intensive care unit	.086 (0.191)
Artificial intelligence education	−. 002 (0.980)
Artificial intelligence use	.044 (0.501)
Artificial intelligence awareness	.831** (0.000)
Artificial intelligence previous experience	.286** (0.000) Note. *p < .05, **p < .01.

A multiple linear regression analysis was conducted to identify predictors of perception of AI worries among nurses. The overall model was statistically significant ($p < .001$, $R^2 = .852$, adjusted $R^2 = .805$), meaning that 85.2% of the variance in perception of AI worries was explained by these variables. AI awareness was the strongest positive predictor of AI worries ($B = 2.007$, $p < .001$), suggesting that participants with greater awareness of AI tend to report significantly higher worries. In contrast, AI previous experience was a strong negative predictor ($B = -0.952$, $p < .001$), indicating that nurses with more experience using AI had significantly lower AI-related worries. These relationships align with TAM's emphasis on perceived usefulness and ease of use, where practical experience enhances both perceptions while theoretical awareness alone may increase perceived complex.

Predictors of Perception of Artificial Intelligence Worries: Multiple Linear Regression.

Model					**95.0% Confidence Interval**	
	B	**Beta**	**T**	**p-Value**	**Lower Bound**	**Upper Bound**
Education level	.040	.031	1.192	.235	−.026	.106
Artificial intelligence awareness	2.007	1.225	34.031	.000	1.891	2.123
Artificial intelligence previous experience	−.952	−.561	−15.879	.000	−1.070	−.834

AI Worry Dimensions among ICU Nurses

Significant variations were observed across different dimensions of AI-related worries among ICU nurses (F values not reported in current analysis) illustrates the distribution of worry levels across four key domains, revealing that healthcare provider-related concerns (M = 3.3, SD = 1.0) represented the highest source of anxiety, followed closely by data management worries (M = 3.2, SD = 1.1) and profession and practice concerns (M = 3.1, SD = 0.9). Notably, regulatory and ethical worries scored lowest (M = 2.9, SD = 0.7), suggesting that while nurses acknowledge these issues, their primary concerns centre on more immediate professional and operational impacts of AI integration.

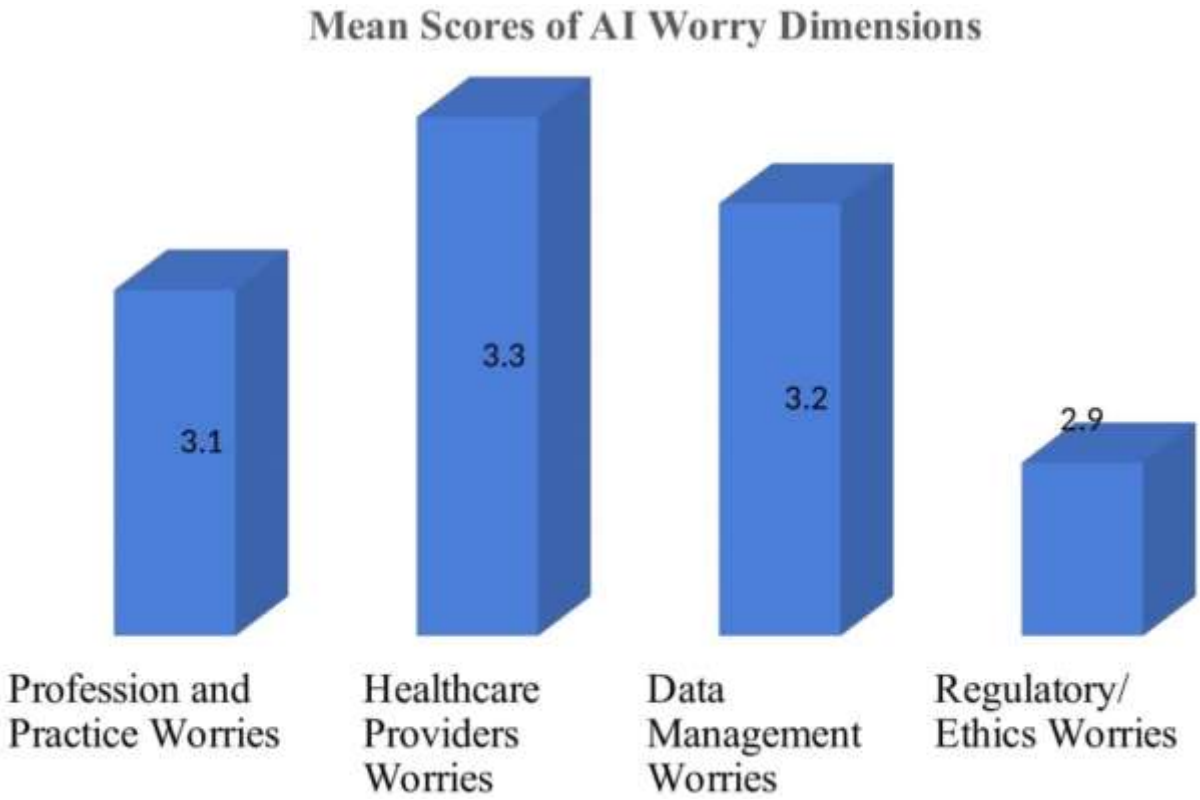


Figure 1. Mean Scores of AI Worry Dimensions Among ICU Nurses.

The pattern demonstrates that ICU nurses DHQ are particularly concerned about AI's direct impact on their professional roles and patient care relationships, while showing relatively less anxiety about regulatory frameworks, possibly reflecting limited awareness of AI governance structures rather than reduced concern about these fundamental issues.

4.2 Discussion

The current study reveals important insights into ICU nurses' perceptions of AI adoption in DHQ, contributing to the limited literature on this topic in low-resource settings. The moderate level of AI awareness (M = 2.6) among DHQ ICU nurses contrasts with findings from (Hamd *et al. (2023)*, who reported high awareness levels among health professionals in the Vehari. This disparity reflects the differential access to AI technologies and training opportunities between these regional contexts.

The finding that ICU nurses in DHQ report moderate levels of AI-related worry (M = 3.2) aligns with recent international research. *Maras et al. (2024)* found that both intern students and surgical nurses exhibited moderate levels of anxiety regarding AI integration in healthcare. Similarly, research in DHQ revealed that nurses possessed moderate awareness about AI technology while harbouring concerns about its implications (*Alruwaili et al., 2024*). This consistency across different healthcare contexts suggests that moderate levels of AI-related concern may be a universal phenomenon during the early stages of AI adoption. The limited AI experience among DHQ ICU nurses, despite their moderate awareness levels, can be understood within the broader socio-political and economic context of DHQ.

The healthcare system faces ongoing challenges including limited access to advanced technologies, resource constraints, underinvestment in digital health infrastructure, and fewer opportunities for specialized training (*Aqtam et al., 2023*). The ongoing political instability and economic restrictions further hinder technological advancement and innovation in healthcare institutions, thereby impacting nurses' familiarity and confidence with emerging technologies such as AI. The study's most significant finding is the seemingly contradictory relationship between AI awareness, experience, and worry levels. While both awareness and experience showed positive correlations with worry in bivariate analysis, the regression analysis revealed that awareness increases worry while experience reduces it. This apparent contradiction can be explained by understanding that awareness without practical experience may lead to anxiety based on theoretical knowledge of potential risks, while hands-on experience provides practical understanding that reduces unfounded concerns.

This finding suggests that awareness of AI without practical experience may reflect a form of critical consciousness rather than simple anxiety. Nurses who are more aware of AI capabilities and limitations may be more cognizant of potential risks, ethical implications, and professional challenges. Conversely, nurses with practical AI experience have had opportunities to observe AI's actual performance, understand its limitations, and develop strategies for effective human-AI collaboration. These findings align with the TAM, which posits that perceived usefulness and ease of use are key determinants of technology adoption. Our results suggest that AI awareness without experience may heighten perceptions of complexity and reduce perceived ease of use, leading to increased worry. Conversely, practical experience with AI tools allows nurses to develop realistic assessments of both usefulness and ease of use, thereby reducing anxiety and building confidence in the technology.

The finding that healthcare provider-related worries scored highest (M = 3.3) indicates that nurses are particularly concerned about AI's impact on their professional roles, job security, and the quality of patient care. This aligns with findings from *Ramadan et al. (2024)*, who identified fears of job displacement and deskilling as major barriers to AI adoption among nurses in Saudi Arabia. The lower scores for regulatory and ethical concerns (M = 2.9) may reflect limited awareness of AI governance frameworks rather than reduced concern about these issues.

The negative correlation between education level and AI worries suggests that higher education may provide better preparation for understanding and adapting to technological changes. This finding supports the importance of educational interventions in reducing AI-related anxiety and building confidence in technology adoption.

5. Conclusion, Limitation and Recommendations

5.1 Limitations of the Study

A key strength of this study lies in its focus on a relatively unexplored population, ICU nurses in DHQ, providing valuable insights into their perceptions and concerns regarding AI adoption in healthcare. The use of a validated instrument (WAAI-HCQ) with strong reliability further enhances the credibility of the findings. Additionally, the inclusion of nurses from both governmental and non-governmental hospitals across multiple regions ensures a diverse and representative sample. The high response rate (94.0%) and strong internal consistency of the instrument (Cronbach's $\alpha = 0.90$) further strengthen the study's methodological rigor. The exceptionally high response rate (94.0%) can be attributed to several factors: direct face-to-face recruitment by the research team, the relevance of the topic to participants' professional interests, strong institutional support from hospital administrations, and the voluntary nature of participation being clearly communicated through informed consent processes. Additionally, the relatively small and close-knit nursing community in DHQ hospitals may have contributed to higher participation rates.

However, the study has several limitations. The cross-sectional design restricts the ability to establish causality between variables, and the use of self-reported data may introduce response bias. Self-reported data may be influenced by social desirability bias, particularly when participants respond to questions about their professional competence and attitudes toward new technologies. The convenience sampling method introduces potential selection bias, which should be acknowledged when interpreting findings. The administration of the questionnaire in English, despite participants' professional background, may

have created comprehension barriers for some participants. Additionally, the study lacks cross-cultural validation of the instrument in the Palestinian context, which may affect the generalizability of findings. Social desirability effects may have influenced responses, particularly regarding professional competence and technology acceptance. Finally, the study's focus on one geographic region limits the generalizability of findings to other low-resource settings or different cultural contexts.

5.2 Recommendations

The findings of this study indicate that AI adoption in DHQ ICU settings requires a comprehensive, evidence-based approach that addresses both technical and human factors. The following specific recommendations are proposed.

Implementation strategies should follow a phased approach that supports gradual integration and continuous learning. Initial deployment should focus on small-scale pilots, allowing nurses to build familiarity and competence with AI tools before expanding to wider use. Priority should be given to AI applications that clearly support and enhance nursing tasks rather than replace them, reinforcing nurses' roles in clinical decision-making. Technical support must be readily available to address issues promptly and reduce disruptions in patient care. In parallel, feedback mechanisms should be established to enable nurses to report concerns, share insights, and recommend adjustments, ensuring that AI systems evolve in alignment with frontline needs and practical realities.

5.3 Conclusion

This study provides important insights into the perceptions of ICU nurses in DHQ hospitals regarding the adoption of AI in healthcare. The findings revealed that while nurses demonstrated moderate AI awareness, their actual experience with AI tools remained limited. Most significantly, the study identified a complex relationship between AI awareness, experience, and worry levels: AI awareness emerged as the strongest positive predictor of AI-related worries, while previous experience with AI was a strong negative predictor. This suggests that awareness without practical experience may lead to heightened concerns, while hands-on exposure to AI technologies reduces anxiety and builds confidence.

These results have important implications for AI implementation strategies in healthcare settings. Rather than simply increasing awareness through theoretical education, successful AI adoption requires structured experiential learning opportunities that allow nurses to develop practical familiarity with AI tools. This approach can help bridge the gap between theoretical knowledge and practical confidence, ultimately supporting more effective and sustainable AI integration in clinical practice. The study underscores the critical need for comprehensive strategies that address both educational and experiential components of AI adoption. Context-specific interventions that consider the unique challenges of low-resource healthcare settings, including limited infrastructure, resource constraints, and political instability, are essential for successful AI implementation. Furthermore, the development of supportive policies, ethical frameworks, and professional development programs is crucial for addressing nurses' concerns and building confidence in AI technologies. Prioritize hands-on AI training over theoretical instruction, involve nurses actively in the selection and evaluation of AI tools, and provide ongoing support throughout the adoption process. By addressing both the technical and human factors involved in AI adoption, healthcare organizations can better prepare nurses for the evolving landscape of AI-enhanced healthcare delivery. This study represents the first comprehensive examination of AI-related concerns among ICU nurses in Palestine, providing crucial baseline data for healthcare organizations and policymakers in similar low-resource settings. The paradoxical relationship between AI awareness and worry, mediated by practical experience, offers a roadmap for evidence-based AI implementation strategies that prioritize experiential learning over theoretical education.

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