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Evolving Role of Emergency Nurses in AI-Supported Care: Experience from the Royal Medical Services

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Royal Medical Services

Abstract

The emergency departments are noisy, crowded, and unpredictable environments. Amidst this pressure, often the first to see the patient, to judge the level of urgency, and to start the care pathway is the emergency nurse. Recently, artificial intelligence tools have begun to appear in this environment, promising quicker triage, better risk prediction, and decision-making support. For nurses, this can feel helpful and worrying at the same time.

International evidence suggests that AI-based triage and decision-support systems can improve prioritization, shorten waiting times, and facilitate the identification of high-risk patients earlier. BioMed Central+3PubMed+3PubMed+3 Meanwhile, nurses' studies describe mixed feelings: interest and hope but also concern regarding autonomy, accountability, and the future of the profession. Frontiers+3Nature+3Egyptian Journal of Health Care+3

The proposed mixed-method study investigates how AI is shifting roles for Jordan's RMS emergency nurses, specifically in large centers like King Hussein Medical City. Wikipedia+2jrms.jaf.mil.jo+2 A survey measuring AI literacy, attitudes, and perceived change in roles would be complemented by in-depth interviews, exposing lived experiences, ethical concerns, and pragmatic suggestions from nurses themselves. The expected outcome is a set of recommendations, informed by the nurses, to guide safe, ethical, and realistic AI implementation in RMS emergency departments where technology supports rather than supplants human judgment.

Keywords: emergency nursing, artificial intelligence, triage, decision support, Royal Medical Services, Jordan.

Introduction

EDs incorporate three elements that few people relish: uncertainty, time pressure, and life-or-death decision-making. Emergency nurses are the front door to this system: they triage, stabilize, monitor, and coordinate care-often for multiple patients at a time. Even highly skilled nurses may feel stretched to the breaking point when departments are crowded and resources limited.

AI is being promoted globally as one way to ease this pressure. AI-driven algorithms can process large amounts of data fast, predict risk, and provide support for decisions in triage and beyond. riped-online.com+3turkjemergmed.com+3PubMed+3 In emergency care, AI models have already been tested for various applications such as predicting intensive care unit admission, early detection of critical illness, and optimization of patient flow. aior+3PubMed+3Nature+3

But AI does not enter an empty space; it enters real teams, with real people and real hierarchies. When an AI system suggests one triage level and a nurse's experience suggests another, someone has to decide which to trust, and who is responsible if something goes wrong. That "someone" is usually still the human clinician.

The RMS provides care to a large part of Jordan's population, including military personnel and their families, as well as civilians, through a network of hospitals that includes King Hussein Medical City in Amman. Wikipedia+1 The emergency departments also face high volumes and complex cases, and have been at the epicenter of various regional humanitarian responses. reliefweb.int+1 It is now essential, especially as AI tools begin to penetrate into such systems, to understand not only the technology, but how nurses working in these EDs experience it.

The focus of this study is the changing role of the emergency nurse in RMS as AI-supported care becomes part of everyday work.

Background and Literature Review

Emergency nursing in high-pressure settings

ED overcrowding, long waiting times, and rising patient expectations are global issues. AI-based reviews have continuously indicated that delays in triage and treatment are related to poor patient outcomes and increased staff stress. PubMed+2turkjemergmed.com+2 Research from King Hussein Medical Center itself has shown that factors like triage, staff attitude, and waiting time strongly influence patient satisfaction in the emergency department. rmsjournal.org

In these settings, nurses carry a large part of the emotional and organizational burden. Any "innovation" that does not consider that reality is likely to fail.

AI in emergency triage and decision support

Several systematic reviews regarding AI in ED triage have been performed recently. In general, these agree on three points:

1. AI- and machine learning-based predictive models can estimate severity, ICU admission, or the urgency for care with good accuracy, at times outperforming traditional triage scales. BioMed Central+3PubMed+3PubMed+3

2. AI-powered triage can decrease waiting time and improve prioritizing of patients in either simulated or early implementation studies. PubMed+2cureus.com+2

3. Most are still in limited real-world implementation, and many questions remain about safety, bias, technical reliability, and integration with human workflows. PubMed+2riped-online.com+2

Examples from trauma care show how AI and clinicians can "cross-check" each other: in one study of a hemorrhagic shock prediction tool, doctors and AI each missed different patients,

showing that the best outcome comes when human and machine work together rather than compete. Le Monde.fr

Nurses' Attitudes towards AI

Recent high-quality studies in nursing and digital health show that most nurses are not blindly against AI. They tend more to be cautiously positive when they understand the technology and feel supported. Frontiers+3Nature+3Egyptian Journal of Health Care+3

Key findings across multiple surveys and reviews:

• Knowledge of and attitudes towards AI are usually positively correlated; that is, the more nurses know about AI, the more likely they will perceive its benefits. Nature+2Egyptian Journal of Health Care+2

• AI literacy and reduced AI-related anxiety are strong predictors of positive attitude and readiness to adopt AI. Frontiers+3BioMed Central+3PMC+3

• Nursing students and younger nurses tend to be more enthusiastic, yet even these note concerns about job security and the future of the profession. PMC+2ScienceDirect+2

At the same time, reports from practice highlight darker sides: AI being used to increase workload, monitor productivity, or push nurses into gig-style “Uber for nursing” platforms that undermine working conditions and patient safety. The Guardian+1

AI and the Nursing Profession

The wider nursing literature continues to position AI as an opportunity and a threat. It has the potential to reduce routine tasks, support clinical reasoning, and create new advanced roles but also risks deskilling, over-standardization, and ethical challenges. Nature+2Frontiers+2

Recent articles specifically call for:

• Clear governance structures with nurse representation

• Integration of AI ethics into nursing education

• Ongoing monitoring of effects on nurse well-being and quality of patient care

Nature+2Frontiers+2

Royal Medical Services (RMS) context

RMS is one of the major providers of acute and emergency care in Jordan, with large military–civilian complexes including King Hussein Medical City, hosting several hospitals and a very busy Emergency Department. Wikipedia+2jrms.jaf.mil.jo+2RMS has also participated in international efforts to enhance emergency and remote health capacity, hence it provides a very realistic setting in which to test digital and AI solutions. reliefweb.int+1

There is, however, virtually no published work that focuses on the experiences of RMS emergency nurses themselves with AI. This research seeks to fill in part of that gap.

Aim and Research Questions

Aim

To explore how the role of emergency nurses is evolving in AI-supported care within the Royal Medical Services in Jordan, focusing on experiences, attitudes, and role changes perceived by them.

Research Questions

1. What are RMS emergency nurses' perceptions of the usefulness and safety of, and the impact on patient care, of AI tools?

2. How do nurses feel AI is changing their tasks, responsibilities, and professional identity in the ED?

3. What personal, educational, and organizational factors facilitate or hinder a nurse's use of AI with confidence and safety?

4. What are some practical nurse-led recommendations to help guide the integration of AI in RMS emergency departments?

Method

Design

A convergent mixed-methods design will be utilized:

• Quantitative component: cross-sectional survey of emergency nurses to describe AI literacy, attitudes, anxiety, and perceived role changes.

• Qualitative component: semi-structured interviews among a purposive subsample of nurses to explore experiences and concerns in depth.

Both strands will run parallel and be integrated at the point of analysis.

Setting

The study will be conducted in emergency departments of selected RMS hospitals, including King Hussein Medical City in Amman and at least one other RMS hospital representing another region or level of care. Wikipedia+1

Participants

Inclusion criteria

• RNs working in the ED for ≥6 months

• Direct patient care: triaging, assessing, monitoring, and coordinating

• Employed by RMS and able to provide informed consent

Exclusion criteria

• Nurses on purely administrative or managerial posts

• Temporary or agency nurses with < 6 months ED experience

Sample

• Survey: A sample target of 150–200 nurses will allow for robust descriptive and inferential statistics.

• Interviews: 15-20 nurses selected using a purposeful sampling method, ensuring variability in age, gender, experience, hospital, and AI exposure, are interviewed to achieve thematic saturation.

Instruments

1. Questionnaire from survey

Sections:

• DEMOGRAPHIC AND PROFESSIONAL DATA: age, sex, education, years of experience, current position, hospital.

• AI exposure: types of AI tools used, such as triage support, early warning scores, and documentation assistants, among others; frequency of use; training received.

• AI literacy scale: Adapted from validated instruments that assess understanding of AI concepts, perceived competence in using them, and interpreting AI outputs. BioMed Central+1

AI attitude & anxiety scales: adapted from recent nursing studies measuring perceived usefulness, ethical concerns, job impact, and AI-related anxiety. Nature+3Egyptian Journal of Health Care+3PMC+3

• Perceived role change: Likert-type items on autonomy, decision-making, workload, communication with physicians, and the nurse-patient relationship before vs. after the introduction of AI.

The survey will be piloted for clarity and reliability with 10–15 nurses, and Cronbach's alpha will be calculated for major scales.

2. Interview guide

Interviews will utilize open questions such as:

• “Tell me about a shift where you used an AI tool in the ED.”

• “In which moments do you feel AI really helps you? In which moments does it cause problems?

• “Has AI changed how you see your professional role as an emergency nurse?

• “What happens when your own judgment disagrees with the AI recommendation?”

• “What type of training, policies, or technical support would make AI safer and more useful in your work?”

Interviews will be conducted in either Arabic or English, depending on preference, and will be audio-recorded with permission, transcribed, and translated if necessary.

Data collection

Information sheets and consent forms will be distributed at nurse managers and staff meetings after RMS and ethics approvals. The surveys may be completed on paper during quieter parts of the shift or online via a secure link, e.g., hospital intranet.

The interviews will be scheduled outside peak hours, in a quiet room in the hospital, and will last approximately 30–45 minutes to respect workload.

Data analysis

Quantitative

- Descriptive statistics (frequencies, percentages, means, SDs).

• Bivariate analyses (t-tests, ANOVA, correlations) to explore relationships between attitudes, literacy, anxiety, and demographics. BioMed Central+1

• Multiple regression models that determine the predictors of positive attitudes toward AI and perceived role enhancement include AI literacy, training, and perceived organizational support.

Qualitative

Thematic analysis:

1. Familiarization with transcripts

2. Initial coding of meaningful statements, e.g. ("AI as safety net", "feeling monitored", "AI as another colleague", "protecting the human side").

3. Clustering codes into themes and subthemes

4. Constant comparison between participants and sites

5. Selecting illustrative anonymized quotes

Integration

Results from both components will be triangulated:

Where numbers and narratives converge

• Where they conflict (divergence), pointing to hidden tensions

• Where one adds depth to the other (complementarity)

Ethical Considerations

• Approval will be sought from the RMS Institutional Review Board and relevant military ethics bodies.

• Participation will be voluntary with written informed consent.

• Confidentiality will be strictly protected; no names or identifiable data will be reported.

• Given the hierarchical military context, recruitment will stress that participation or refusal will not affect employment or evaluation.

• Audio files and transcripts will be stored in a secure environment and accessed solely by the researchers.

Expected Outcomes and Practical Implications

The study is thus expected to:

1. Map the current use of AI in RMS EDs, including: which tools are in use; how often nurses interact with them; and for what tasks - triage, risk alerts, documentation etc. turkjemergmed.com+2PubMed+2

2. Describe how emergency nurses experience role changes, including both empowerment-support, safety, learning-and pressure-monitoring, loss of control, extra tasks. Nature+2Frontiers+2

3. Identify barriers and facilitators, such as quality of AI training, system usability, clarity of responsibility, staffing levels, and organizational culture. Nature+3BioMed Central+3PMC+3

4. Formulate nurse-driven recommendations for RMS, such as

o Structured AI literacy programs for ED nurses

o Appropriate policies on accountability when AI and human judgment differ

o Formal channels for nurse feedback about AI tools

Safeguards to ensure AI reduces, not increases, the burden of documentation

Ultimately, the aim is to ensure that AI becomes a tool in the nurse's hands, not a silent boss over the shoulder of the nurse.

Conclusion

AI is no longer a remote dream in emergency care; it already enters triaging systems, decision support tools, and hospital workflows. Evidence suggests that it can improve accuracy and efficacy, but only if it is implemented in a way that respects the realities of clinical work and the limits of algorithms. riped-online.com+3PubMed+3PubMed+3

For emergency nurses in the Royal Medical Services, AI is arriving in an already demanding environment. Listening carefully to their experiences is essential in order not to fall into the usual

pattern of "technology first, people later." This study offers a structured way to bring nurses' voices into AI planning and policy so that, in the future, emergency care in the RMS will be both technologically advanced and deeply human.

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