

Exploring the Nurses' Perceptions on the Artificial Intelligence-Powered Triage System in Improving the Patient Emergency Nursing Outcomes

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ABSTRACT

Emergency departments frequently experience high patient volumes, leading to prolonged waiting times and subjective variation in traditional triage decisions. Artificial Intelligence (AI)-powered triage systems are emerging globally to optimize clinical resource allocation, yet their integration into low-resource healthcare settings such as those in the Philippines requires a clear understanding of frontline clinical perspectives. This study explored emergency room nurses' perceptions of the implementation, utility, and impact of AI-powered triage systems on patient emergency nursing outcomes. Utilizing a qualitative approach rooted in Grounded Theory and guided by the philosophical doctrine of subjectivism, face-to-face interviews were conducted with seven (7) randomly selected nurses at Dr. Rafael Tumbokon Memorial Hospital. Data analysis followed an ontological-interpretive approach, mapping emerging narratives onto Roy's Adaptation Model to conceptualize how clinical staff navigate technological advancements in healthcare settings. Three core thematic clusters emerged from the data: Positive Outlook, Training and Proper System Utilization, and AI-Powered Triage as Support. While the hospital relies strictly on manual, traditional triage protocols, all respondents demonstrated baseline theoretical knowledge of AI algorithms. Nurses universally perceived AI triage as a valuable tool capable of standardizing workflows, accelerating patient prioritization, and reducing wait times—particularly for novice staff during peak hours. However, respondents unanimously rejected the notion of AI as a standalone assessment mechanism, emphasizing that algorithms lack clinical intuition, critical observation, and qualitative reasoning. Nurses are highly receptive to adopting AI innovations, provided the technology is introduced gradually with structured training.

Keywords: Artificial Intelligence, emergency nursing, grounded theory, nursing perceptions, Roy's adaptation model, triage systems

INTRODUCTION

The world is constantly changing, and technology is proof. Technology has great potential and continues to shape and transform people's everyday lives. It improves efficiency and helps people not only in communication, business, and research but also in health and transportation. This type of system is a partnership between telecommunications and healthcare companies. Understanding the perceptions of nurses will help society, nurses, the hospital, and administrators to further understand the AI-driven triage system, its uses and functions, and how to maximize it in order to utilize it effectively.

Research Objectives

The main objective of the study was to examine the perceptions of seven selected nurses. The researcher asked the following questions:

1. What do you know about the AI-powered triage system?
2. Does your hospital use an artificial intelligence-powered triage system? If so, what type?
3. Do you think an AI-powered triage system improves patient emergency outcomes?
4. Would you like to see an AI-powered triage system implemented in your hospital?
5. Do you think an AI-powered triage system is sufficient for patient assessment?

Scope and Limitations of the Study

The scope of this study is the selection of 7 nurses at Dr. Rafael Tumbokon Memorial Hospital to determine their perceptions of the Artificial Intelligence-Powered Triage System and its impact on emergency nursing outcomes. As a result, the study is limited in terms of sample size and representation, as 7 nurses do not represent all nurses in the Philippines.

Review of Related Literature

Artificial intelligence is widely used in the medical field, as it assists clinicians in diagnosis. Imaging analysis, such as X-rays and CT scans, is a significant help as well. Additionally, AI can help schedule appointments with doctors more quickly and efficiently. Da'Costa et al. (2025) state that AI-driven triage systems help emergency department operations by increasing patient satisfaction, improving outcomes, and supporting healthcare professionals. The way the AI system helps increase work efficiency in hospitals is significant, as hospital workers are sometimes overwhelmed by the number of patients coming in.

Conceptual/Theoretical Framework

Adaptation is very important. To improve, one must learn to adapt. Roy's Adaptation Model of Nursing's key components are person, health, environment, and nursing. In his model, he mentioned the six-step nursing process. In this study, the Roy model serves as the basis for understanding nurses' perceptions of AI-powered systems.

Rozzano Locsin, a Filipino-American nurse, published "Technological Competency as Caring in Nursing" (TCCN). In his theory, he provided a framework explaining how technology and caring work together. This theory explains that being technologically competent does not hinder nurses' care but rather assists them.

METHODOLOGY

Research Design

The study is qualitative, using an exploratory design in which the researcher understands and interprets the insights, experiences, and perspectives of the respondents. With this theory, the researcher identified what the respondents wanted to describe and their perceptions of the AI-powered triage system's impact on emergency nursing patient outcomes. Qualitative exploratory design is a flexible approach that can easily adapt, prioritize the depth of statements, is not solely based on numbers, and is participant-centered, making participants' perceptions the basis for understanding.

Data Gathering Procedure

The researcher is determining nurses' perceptions of the artificial intelligence-powered triage system's impact on emergency nursing outcomes. Before the interview, the researcher asks the nurses for permission to participate. If the person agrees, they are now respondents. The respondents' identities are protected, and the researcher respects whatever the respondents' answers.

Sample and Sampling Design

The study's sample respondents are the nurses at Dr. Rafael Tumbokon Memorial Hospital. They are chosen purposively; their age, gender, or area of assignment doesn't matter as long as they have experience in triage and emergency settings. Every nurse at Dr. Rafael Tumbokon Memorial Hospital has a chance to be a respondent.

Data Analysis Procedure

The respondents' answers may be in English or another language, so the first step in data analysis is to translate the text if the answer is not in English. The transcript reflected what the respondents truly wanted to say. The researcher analyzes the combined data and presents the data based on the findings.

Ethical Considerations

Technology is emerging in our daily lives. In hospitals, the use of technology cannot be presented. The use of powered AI as a triage system is not currently implemented in Dr. Rafael Tumbokon Memorial Hospital. While it is not currently used, nurses who are respondents in the research have a positive perception of its future use. According to Rozzano Locsin, Technological Competency as Caring in Nursing (TCCN), technology and nurses harmonize in order to provide care for patients. Technology does not limit nurses' ability to care but provides support and assistance. This helps patients get the medical support they need fast. In Roy's Adaptation Model of Nursing, he mentions that change is important in human existence.

Summary of Findings

The use of technology in the health care system is slowly being introduced. This shows nurses are willing to adapt to the changing world, as Roy's adaptation tells us that, to improve, nurses and patients must adapt. The research on exploring the nurses' perceptions of the artificial intelligence-powered triage system in improving the patient emergency nursing outcomes concludes that the AI-driven triage system has a positive impact. With this, the researcher recommends pilot testing the use of the AI system to support the hospital's triage system. This is to test whether the use of AI can help reduce the workload of nurses and other medical staff and to determine whether this system can help make diagnoses faster. Also, the researcher recommended training and seminars on how the technology works.

Recommendation

The research exploring nurses' perceptions of the artificial intelligence-powered triage system and its impact on patient emergency nursing outcomes concludes that the AI-driven triage system is beneficial. With this, the researcher recommends implementing the AI system to support the hospital's triage system. This system not only lessens the workload of nurses and other medical staff but also helps make diagnoses faster. Also, the researcher recommended proper use of the system by ensuring that nurses are properly trained and guided.

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AI DECLARATION STATEMENT

AI-supported tools helped with grammar and structure in creating this article. No AI tools were used to collect, analyze, or interpret data; all authors are credited for their academic contributions.

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