

## Assessing the Impact of E-Referral System on Emergency Room Nurses during Hospital Referral

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### ABSTRACT

*The increasing adoption of electronic referral (E-Referral) systems has transformed hospital referral processes by improving communication, coordination, and continuity of patient care. However, the effectiveness of these systems largely depends on the experiences and competencies of emergency room (ER) nurses who serve as primary users during inter-facility referrals. This study aimed to assess the impact of the E-Referral System on ER nurses during hospital referrals. Specifically, it determined the demographic profile of ER nurses; identified the challenges encountered in terms of workload, stress levels, and decision-making; evaluated the impact of the E-Referral System on workflow efficiency in terms of system usability, training adequacy, and interoperability; examined the relationships between demographic profile, challenges encountered, and workflow efficiency; and proposed strategies to improve E-Referral implementation. The study employed a descriptive quantitative-correlational research design involving ER nurses from selected hospitals utilizing an E-Referral System. Data were collected using a validated structured questionnaire and analyzed through descriptive statistics and appropriate inferential tests. Findings are expected to provide evidence on the operational strengths and limitations of the E-Referral System and identify areas requiring enhancement, particularly in user training, system usability, and interoperability. The results will serve as a basis for developing evidence-based recommendations that can strengthen digital referral processes, improve emergency nursing workflow, and support hospital administrators and policymakers in optimizing technology-enabled referral systems for quality patient care.*

**Keywords:** E-Referral System, emergency room nurses, hospital referral, workflow efficiency, system usability, interoperability, training adequacy, workload, digital health, emergency care

### INTRODUCTION

The rapid advancement of digital health technologies has transformed healthcare delivery by improving communication, documentation, and coordination among healthcare facilities. Electronic Referral (E-Referral) Systems have become an essential component of modern healthcare infrastructure, particularly in emergency care settings where timely transfer decisions are critical to patient outcomes. In the Philippines, the Department of Health (DOH) has promoted digital health transformation through initiatives such as the National eHealth Program and the implementation of electronic health information systems to strengthen healthcare accessibility and interoperability (Department of Health [DOH], 2023).

Despite the benefits associated with E-Referral Systems, challenges remain regarding their effectiveness and sustainability in clinical environments. Previous studies have shown that electronic referral platforms can reduce documentation errors, improve communication, and shorten referral processing time; however, successful implementation depends on system usability, interoperability, adequate training, and organizational support (Kelleher et al., 2023). In emergency settings, nurses may experience increased workload, technological stress, and workflow disruptions due to additional documentation requirements, system limitations, and insufficient technical assistance (Alhuwail & Abdulsalam, 2023). Philippine-based studies have similarly reported challenges related to digital health implementation, including inconsistent system use, connectivity issues, limited user training, and difficulties integrating electronic platforms into existing hospital processes (Domingo et al., 2024). Although existing research has examined the technical performance and organizational benefits of digital referral systems, limited evidence is available regarding how these systems influence ER nurses'

workload, stress levels, decision-making, and workflow efficiency during actual hospital referrals, particularly in provincial healthcare settings.

### Statement of the Problem

This study aims to assess the impact of the E-Referral System on emergency room nurses during hospital referral. Specifically, it seeks to answer the following questions:

1. What is the demographic profile of the Emergency Room nurses?
2. What are the challenges and issues ER nurses encounter when using the E-Referral System?
3. How does the E-Referral System impact the workflow efficiency of ER nurses during hospital referrals?
4. Is there a significant relationship between the demographic profile of nurses and the challenges and issues of nurses on the E-Referral System?
5. Is there a significant relationship between the challenges and issues of nurses on the E-Referral System and their workflow efficiency during hospital referrals?
6. Based on the findings, what strategies or training programs can be proposed?

### Theoretical Framework

The study is anchored in the these following theories:

Technological Competency as Caring in Nursing (TCCN) Theory developed by Rozzano Locsin, which emphasizes that technological competency is not merely the ability to operate machines or digital systems but the capacity of nurses to integrate technological knowledge with compassionate and holistic nursing practice (Locsin, 2022).

The Roy Adaptation Model (RAM) developed by Sister Callista Roy, which views individuals as adaptive systems who continuously respond to environmental changes through processes of adaptation.

The Health Promotion Model (HPM) developed by Nola Pender, which focuses on factors that influence individuals' motivation and ability to engage in behaviors that improve health outcomes.

## METHODOLOGY

### Research Design

This study utilized a descriptive quantitative-correlational research design to evaluate the impression of the E-Referral System on emergency room nurses during hospital referrals. A descriptive approach was used to describe the demographic characteristics of ER nurses and to identify the challenges and issues they encounter when using the E-Referral System, particularly in terms of workload, stress levels, and decision-making. Quantitative research allows researchers to measure variables objectively and analyze relationships using statistical techniques.

### Participants and Data Collection

The study was conducted among forty emergency room nurses employed in selected Level I, Level II, and District Hospitals in the Province of Antique utilizing an E-Referral System. Inclusion criteria include: currently assigned in the Emergency Department and uses the E-Referral System for at least six months. Data were gathered using a researcher-developed structured questionnaire.

### Data Analysis

Descriptive statistics (frequency, percentage, weighted mean, and standard deviation) summarized the data. Inferential statistics including Independent t-test, One-Way ANOVA, Chi-square, and Pearson Product-Moment Correlation determined significant relationships at  $\alpha = 0.05$ .

### Ethical Considerations

The study complied with the Data Privacy Act of 2012 and adhered to ethical protocols by obtaining informed consent from all participants, ensuring anonymity and confidentiality, and allowing participants to withdraw at any time.

## RESULTS AND DISCUSSION

### ***SOP 1. What is the demographic profile of the Emergency Room nurses?***

Among the 40 respondents, most were 26–30 years old (35%), female (72%), Bachelor of Science in Nursing graduates (92%), and permanent staff nurses (55%). Most had 6 months to 1 year of work experience (43%), while 68% were employed in Level I or Level II hospitals.

### ***SOP 2. What are the challenges and issues ER nurses encounter when using the E-Referral System?***

The findings indicate that although nurses experience heavy workloads and elevated stress associated with E-Referral activities, they continue to demonstrate strong clinical decision-making capabilities.

### ***SOP 3. How does the E-Referral System impact the workflow efficiency of ER nurses during hospital referrals?***

Interoperability received the highest rating, while training adequacy was identified as the area requiring the greatest improvement.

### ***SOP 4. Is there a significant relationship between the demographic profile of nurses and the challenges and issues of nurses on the E-Referral System?***

No statistically significant relationship existed between demographic characteristics and challenges encountered while using the E-Referral System.

### ***SOP 5. Is there a significant relationship between the challenges and issues of nurses on the E-Referral System and their workflow efficiency during hospital referrals?***

There is no significant relationship between challenges encountered and workflow efficiency, indicating that nurses have maintained workflow performance despite technical and operational challenges.

### ***SOP 6. Based on the findings, what strategies or training programs can be proposed?***

These findings emphasize that improvements should focus on enhancing system functionality and strengthening user competency through structured training rather than targeting specific demographic groups.

## **Synthesis of Findings**

The study demonstrates that ER nurses have successfully integrated the E-Referral System into emergency referral processes despite experiencing considerable workload and stress. Their consistently high decision-making scores suggest that professional competence enables them to adapt to technological challenges while maintaining quality patient care.

The positive ratings for system usability and interoperability indicate that the E-Referral platform effectively supports communication among healthcare facilities. However, the relatively lower score for training adequacy highlights the need for continuous competency development to maximize system utilization.

The absence of significant relationships between demographic variables and system-related challenges suggests that perceptions of the E-Referral System are generally consistent regardless of nurses' age, educational attainment, experience, or workplace. Likewise, workflow efficiency remained stable despite reported technical challenges, reflecting the adaptability and resilience of ER nurses.

## **CONCLUSIONS**

E-Referral System has become an important tool in facilitating efficient hospital referrals and communication among healthcare institutions. Although ER nurses experience high workloads and

stress related to system utilization, they continue to demonstrate strong clinical decision-making and maintain workflow efficiency.

The system was generally perceived as usable with good interoperability; however, training adequacy requires further enhancement. No significant relationships were found between demographic characteristics and system challenges, nor between challenges encountered and workflow efficiency.

The study recommends the implementation of a comprehensive E-Referral Competency Training Program covering system navigation, referral documentation standards, troubleshooting, data privacy, and simulation-based exercises.

## RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are proposed:

1. **Hospital administrators** should strengthen training and capacity-building programs for ER nurses.
2. **Health information technology teams and system developers** should prioritize the simplification of the E-Referral System interface.
3. **Hospital management** should establish continuous technical support mechanisms.
4. **Policymakers and healthcare administrators** should continue investing in interoperability enhancements.
5. **Healthcare institutions** should implement stress management and wellness programs.
6. **Future researchers** are encouraged to conduct similar studies using larger sample sizes, multiple provinces or regions, and mixed-method approaches.

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## AI DECLARATION STATEMENT

AI tools were used only for grammar and formatting support. All data collection, analysis, and interpretation were conducted solely by the authors.

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