

Enhancing Patient Care Through Technology: The Role of Nurses in Digital Healthcare System

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ABSTRACT

This study examined nurses' use of digital health technologies and its association with patient care outcomes in a private hospital in Quezon City. It investigated the level of technology integration and use in healthcare, including electronic health records (EHRs), telemedicine, digital tools, and health applications, and assessed their relationships with patient outcomes, patient satisfaction, and service efficiency. Data were collected from nurses using a structured survey questionnaire and analyzed through quantitative descriptive statistics, correlation analysis, and tests of difference. The research also examines nurses' attitudes towards digital health applications, the difficulties they face during adoption, and the determinants of their effectiveness. Three interconnected theories are adopted to build a conceptual framework. Technology Competency of Caring in Nursing Theory by Locsin, the Science of Caring Theory by Jean Watson, and the Role Adaptation Mode. These theories support the study of how digital health applications help nurses improve patient care outcomes. The findings revealed that the respondents generally demonstrated a high level of technology utilization in healthcare settings. The study shows that the use and integration of digital health technologies are highly correlated with improved quality of care in a private hospital in Quezon City. The respondents showed a high degree of acceptance and use of various forms of digital health technologies such as electronic health records, telehealth platforms, digital devices, and health apps. The study has identified a significant effect of nurses' use of digital health applications on patient improvement, patient satisfaction, and service efficiency. The study is limited to a specific time frame and geographical area, which may limit the generalizability of the results to other healthcare settings with varying technological infrastructure or policies. In spite of these limitations, the research offers significant insights into the role of nurses in utilizing digital health applications to enhance patient care and efficiency of the healthcare system. It is highly recommended that any future research on the use of digital technologies in healthcare address other variables, such as organizational culture, leadership support, technological readiness, and nurses' attitudes towards digital innovation. This study aims to provide empirical evidence to support improvements in nursing practice, digital health integration, healthcare policies, and patient care delivery in healthcare institutions.

Keywords: *Digital Health Applications, Nursing Practice, Patient Care Outcomes, Telemedicine, Electronic Health Records, Patient satisfaction, Service, Efficiency, Nurses*

INTRODUCTION

Digital health applications' (DHAs') quick development has significantly impacted the healthcare industry by providing creative ways to improve patient care, expedite clinical procedures, and boost health outcomes. These technologies, which range from wearable health monitors and artificial intelligence (AI)-driven diagnostic tools to telemedicine platforms and

mobile health (mHealth) apps, have become indispensable in contemporary healthcare systems. The use of digital health applications in patient care has become a vital field of research as healthcare professionals increasingly depend on technology to support healthcare delivery.

Statement of the Problem

1. What is the demographic profile of the respondents in terms of:
 - 1.1 Age
 - 1.2 Gender
 - 1.3 Years in Profession
 - 1.4 Highest Educational Attainment
2. What is the level of integration and use of technology in healthcare in terms of:
 - 2.1 Electronic Health Record (EHR)
 - 2.2 Telemedicine
 - 2.3 Digital Tools
 - 2.4 Health Applications
3. What is the level of patient care outcomes in terms of:
 - 3.1 Patient Improvement
 - 3.2 Patient Satisfaction
 - 3.3 Service Efficiency
4. Is there a significant relationship between the integration and use of technology in healthcare and patient care outcomes?
5. Is there a significant difference in the integration and use of technology in healthcare when grouped according to respondents' demographic profile?

Scope and Delimitations

The research focuses on nurses' contribution to using digital health technologies to improve patient care, specifically artificial intelligence (AI), electronic health records (EHR), telehealth, and other cutting-edge healthcare technologies. It examines how these technologies affect nursing workflows, decision-making, patient engagement, and overall healthcare efficiency. The research is confined to a particular time frame and geographical area, which may limit the generalizability of the results to other healthcare settings with varying technological infrastructure or policies.

Review of Related Literature

Digital health solutions have demonstrated a significant impact in the management of cardiovascular diseases, with mobile applications and remote monitoring technologies improving both patient engagement and clinical outcomes (Roberts et al., 2023). To conclude, while these solutions show promise in enhancing disease management, ensuring data accuracy and integrating these technologies into healthcare workflows remain key challenges (Clark & Zhang, 2024).

Theoretical Framework

Three interconnected theories are adopted to build a conceptual framework. Technology Competency of Caring in Nursing Theory by Locsin, the Science of Caring Theory

<https://epublications.myeduheart.com/index.php/ijnhha/index>

by Jean Watson, and the Role Adaptation Model. Together, these theories provide a solid theoretical background for investigating the relationship between digital health applications and nurses' role in achieving better care outcomes for patients within healthcare institutions. By using all three theories mentioned in this study, it will be possible to present a holistic picture of the phenomena discussed. Technological proficiency, caring science, and role adaptation are the guiding principles in evaluating the effective integration of digital health technology by nurses while ensuring quality patient care in a private hospital environment in Quezon City

Conceptual Framework

The conceptual framework for this study builds upon the Health Outcomes Improvement Theory (HOIT), which integrates the impact of Technological Advancements, Patient-Centered Care, and Social Determinants of Health (SDOH) on improving health outcomes. HOIT emphasizes the dynamic interplay between these elements and illustrates how their combined influence leads to better patient outcomes. This framework is a useful manual for enhancing health outcomes by examining the whole picture: the interplay between social issues, technology, and individualized care. It emphasizes the importance of a comprehensive strategy that fosters creativity while ensuring no one is left behind due to social or economic barriers.

METHODOLOGY

Research Design

The study's respondents will be nurses working at the chosen private hospital in Quezon City. In all, 101 respondents will take part in the study. The sample size will be calculated through Slovin's Formula using an error margin of 0.05. The study population will comprise licensed nurses who currently use digital health applications in their work and patient care duties.

Research Steps

The instrument is considered in five parts: A personal demographics sheet, assessing the role of technological advancement in nursing, measuring the impact of the evolving nursing role on patient care outcomes, evaluating future training needs for nurses in response to changing healthcare trends, and the influence of policy changes on nursing practice and healthcare delivery. The methods used to collect data for the present study shall be well thought out to ensure validity, reliability, and integrity throughout the research process. The first step in data collection shall include an extensive review of the relevant literature to obtain credible information needed to construct the study's framework.

Data Collection and Sample Selection

The research instrument is self-formulated and self-structured, and will undergo content validation. Pilot testing will also be conducted to assess the content's reliability for the geographical location; it will then be submitted for analysis to determine its reliability and consistency. Expert validation is required for researchers to address obstacles that impede performance or the ability to complete tasks and to develop workable solutions to these issues.

Data Analysis Methods

Statistical analysis of all data collected in the study will be conducted using appropriate statistical procedures. The collected data will be collated, tabulated, analyzed, and interpreted using SPSS and Microsoft Excel. Frequency and percentage distributions will be used to present and analyze the numerical data on the demographic profile of the respondents. As noted by Paul J. Lavrakas, frequency and percentage are widely used in discussing the presence or occurrence of data. Frequency, percentage, weighted mean, and standard deviation will be used to interpret and analyze the data collected from the respondents.

Research Hypotheses and Validation

The questionnaire shall be validated by experts knowledgeable about nursing research, health informatics, and statistics. The reliability of the questionnaire will also be tested through pilot testing utilizing proper statistical tools. Validation and reliability testing will ensure that only validated and reliable tools are used during the study.

Study Limitations and Ethical Considerations

The research is confined to a particular time frame and geographical area, which can influence the generalizability of results to other healthcare environments with varying technological infrastructure or policies. The researcher included the basic moral standards of ethics, which are the following: social value, informed consent, vulnerability of research respondents, risk, benefits and safety, privacy and confidentiality information, justice, and transparency.

RESULTS AND DISCUSSION

SOP 1. What is the demographic profile of the respondents?

The data reveal a sample composed primarily of early- to mid-career professionals with balanced gender representation and a high level of educational attainment, factors that are relevant in understanding their perspectives on technology use in healthcare.

SOP2. What is the level of integration and use of technology in healthcare?

Overall positive perceptions towards the integration of healthcare technology suggest that participants believe that the use of such digital innovations in healthcare delivery is beneficial and acceptable.

SOP3. What is the level of patient care outcomes?

The obtained findings show that the application of healthcare technologies significantly contributes to making healthcare more efficient and effective.

SOP4. Is there a significant relationship between the integration and use of technology in healthcare and patient care outcomes?

There is an evident correlation between the level of healthcare technology integration and the quality of patient care outcomes. The findings confirm the assumptions put forth by the theory that states that healthcare quality, efficiency, and patient satisfaction increase with the implementation of integrated technological systems (HOIT). Overall,

the adoption of healthcare technologies plays a pivotal role in improving patient care outcomes.

SOP5. Is there a significant difference in the integration and use of technology in healthcare when grouped by respondents' demographic profiles?

The findings highlight that age is a significant factor influencing the integration and use of technology in healthcare, while educational attainment, sex, and years in profession do not significantly affect technology utilization. Strategies to different age groups to maximize adoption and effectiveness.

SUMMARY

The quantitative research design conducted in a private institution in Quezon City findings suggest that the integration of technology in healthcare is widely accepted and significantly contributes to improved patient outcomes, with age being a key factor influencing its utilization.

CONCLUSIONS

The results of the study show that the use and integration of digital health technologies are highly correlated with improved quality of care in a private hospital in Quezon City. In general, the respondents showed a high degree of acceptance and use of various forms of digital health technologies such as electronic health records, telehealth platforms, digital devices, and health apps.

RECOMMENDATIONS

The recommendations, based on the results of the investigation and conclusions drawn from the literature, include several ways to improve the use and effectiveness of digital health technologies in improving patient care through nursing practice. To improve nursing practice, digital health technologies should be integrated into nurses' work processes to enhance efficiency and communication among nurses, patients, and other professionals during monitoring and documentation. It is highly recommended that any future research on the use of digital technologies in healthcare address additional variables, such as organizational culture, leadership support, technological readiness, and nurses' attitudes towards digital innovation.

ACKNOWLEDGMENTS

I would like to express my deepest gratitude to everyone who supported and guided me throughout the publication of this research. I could not have overcome these challenges without the support, guidance, and encouragement of my adviser, panel members, and my institution for their invaluable contributions. Also, I am thankful to my family and friends for their support. I dedicate all my achievements to you.

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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