Influence of Electronic Health Records on Decision Making Processes in Healthcare: A Qualitative Study

Shahad S. Alsubaie[1], Dona A. Alturaif[2], Areej M. Alhawas[3], Munirah M. Alfawzan[4]

Occupational Therapist
Health affairs at the Ministry of National Guard

Abstract:
This qualitative research study explores the impact of the "BEST Care" electronic health record system on decision-making processes within the rehabilitation department of a military hospital. Through in-depth interviews and observations, the study examines how the system influences clinical decision-making, communication efficiency, workflow optimization, and patient engagement. The findings reveal insights into the system's role in enhancing decision-making processes and improving patient care within the department.

Keywords: Healthcare Informatics, Electronic Health Record System, Decision-Making Processes, Rehabilitation Department, Clinical Decision-Making, Workflow Efficiency, Patient Engagement.

Introduction

In the modern healthcare landscape, decision-making is a multifaceted process that significantly impacts patient outcomes, the efficiency of healthcare delivery, and overall system performance. Effective decision-making in healthcare settings relies heavily on accurate and timely information. Healthcare informatics, an interdisciplinary field that utilizes information technology to organize and analyze health records, plays a crucial role in enhancing these decision-making processes (Hersh, 2009).

Healthcare informatics encompasses the acquisition, storage, retrieval, and use of health data to improve patient care and facilitate administrative efficiency. It bridges the gap between clinical practice and data science, providing clinicians and administrators with the tools they need to make informed decisions (Hersh, 2004). The implementation of electronic health records (EHRs), computerized physician order entry (CPOE) systems, and decision support systems (DSS) exemplifies the profound influence of informatics on healthcare operations (Garg et al., 2005).

In a large hospital setting, such as ours with a 2000-bed capacity, the sheer volume of data generated necessitates sophisticated information systems to manage it effectively. These systems not only support routine clinical operations but also play a pivotal role in critical decision-making scenarios, from diagnosis and treatment to resource allocation and policy formulation (Bates et al., 1998).

Despite the promising advancements, the integration of healthcare informatics with decision-making processes presents several challenges. Issues such as data interoperability, user acceptance, and the need for comprehensive training programs are critical factors that influence the effectiveness of informatics systems (Lapointe & Rivard, 2005). As these technologies evolve, understanding their impact on decision-making processes is paramount for optimizing healthcare delivery and improving patient outcomes.

The primary objective of this research is to explore how healthcare informatics aids in decision-making within healthcare settings. Specifically, this study aims to identify the advantages of informatics tools and systems in supporting clinical and administrative decisions. By investigating these interactions, this research

seeks to contribute to the broader understanding of informatics in healthcare and identify strategies to enhance its integration and utility.

Literature Review

Overview

The field of healthcare informatics has undergone significant transformation over the past few decades, particularly with the advent of advanced information technology solutions that support clinical decision-making. This section reviews the existing literature on the role of healthcare informatics in decision-making processes, the theoretical frameworks that underpin its application, and the key challenges faced in its integration.

Evolution of Healthcare Informatics

Healthcare informatics has evolved from simple computerized record-keeping systems to complex decision support systems (DSS) that assist in clinical, administrative, and research functions. Early studies highlighted the potential of electronic health records (EHRs) to enhance information accessibility and patient care coordination (Hersh, 2009). Subsequent research demonstrated that EHRs could reduce errors and improve healthcare outcomes, particularly when integrated with decision support tools (Krist etal., 2017).

Impact on Clinical Decision-Making

One of the most significant contributions of healthcare informatics is its impact on clinical decision-making. Computerized Physician Order Entry (CPOE) systems, for example, have been shown to reduce medication errors and adverse drug events (Bates et al., 1998). Additionally, clinical decision support systems (CDSS) equipped with evidence-based guidelines provide real-time assistance to healthcare providers, enhancing diagnostic accuracy and treatment efficacy (Garg et al., 2005).

A systematic review by Kawamoto et al. (2005) further supports this, indicating that CDSS can substantially improve clinical performance by ensuring adherence to clinical guidelines and reducing unnecessary testing. These systems use algorithms that analyze patient data and suggest courses of action, thus supporting the clinician's expertise with data-driven insights.

Administrative Decision-Making

Healthcare informatics also plays a critical role in administrative decision-making. Systems that aggregate and analyze large datasets enable hospital administrators to optimize resource allocation, manage staffing levels, and forecast patient admission trends (Walker et al., 2005). Health information exchanges (HIEs) facilitate the seamless transfer of patient information between institutions, improving continuity of care and reducing duplication of services (Vest & Gamm, 2010).

Theoretical Frameworks

Various theoretical frameworks have been proposed to understand the integration of informatics in healthcare. The Technology Acceptance Model (TAM), for instance, explores how user perceptions of ease of use and usefulness influence the adoption of informatics tools (Davis, 1989). Additionally, the Clinical Adoption Framework (CAF) provides a comprehensive approach to studying the multifaceted nature of informatics implementation, considering factors such as organizational readiness, training, and user feedback (Gagnon et al., 2014).

Challenges in Integration

Despite its benefits, integrating healthcare informatics into decision-making processes presents several challenges. Data interoperability remains a significant barrier, as diverse systems often fail to seamlessly communicate with one another, impeding efficient information flow (Jha et al., 2009). User acceptance and the need for extensive training are also critical factors; healthcare providers may resist adopting new technologies due to perceived complexity or disruption to established workflows (Lapointe & Rivard, 2005).

Furthermore, issues related to data privacy and security necessitate robust measures to protect sensitive patient information. Studies have pointed out that inadequate security protocols can lead to data breaches, undermining trust in informatics systems (Smith et al., 2011).

Future Directions

The future of healthcare informatics lies in the integration of emerging technologies such as artificial intelligence (AI) and machine learning, which have the potential to further enhance decision-making capabilities. Research by Obermeyer and Emanuel (2016) suggests that AI-driven tools can predict patient outcomes with remarkable accuracy, enabling proactive interventions. However, ethical considerations and the need for rigorous validation remain crucial areas for future research.

Methodology

The qualitative research conducted within this study aimed to explore the impact of the "BEST Care" electronic health record (EHR) system on decision-making processes within the rehabilitation department of a military hospital. The research design involved in-depth interviews with healthcare professionals and non-participant observations to gather insights into the system's influence on clinical decision-making, communication efficiency, workflow optimization, and patient engagement.

Participants
Fifteen healthcare professionals from the rehabilitation department, including physical therapists, occupational therapists, prosthetic therapists, and rehab aids, participated in the study. The selective sampling technique ensured diverse perspectives from a range of roles within the department.

Data Collection
In-depth interviews were conducted with the participants to delve into their experiences with the "BEST Care" EHR system. The interviews explored the system's impact on decision-making processes, communication effectiveness, workflow efficiency, and patient interaction. Non-participant observations during clinical activities allowed for direct insights into the practical utilization of the EHR system.

Data Analysis
Thematic analysis was conducted on the interview transcripts and observational notes to identify recurring patterns, themes, and insights related to the system's influence. Themes were derived through meticulous coding and iterative examination of the qualitative data to draw meaningful conclusions.

Ethical Considerations
Ethical approval was obtained from the ethics committee. Informed consent was secured from all participants, emphasizing confidentiality and voluntary participation. Data anonymization procedures were followed to ensure participant privacy and data confidentiality.

Findings

Theme: Impact on Clinical Decision-Making

Sub-theme: Efficient Information Access
- Participant 1: "Accessing patient files through 'BEST Care' has revolutionized how quickly we can assess a patient's history. I can now make more informed decisions due to the swift access to critical information."
- Participant 2: "The ability to retrieve past tests and treatment notes within seconds ensures I have a holistic view of the patient's case. This instant access has elevated the accuracy of my decisions."

Sub-theme: Enhanced Communication and Collaboration
- Participant 3: "The communication features in ' BEST Care' have transformed how we collaborate. I can easily share notes and observations with my team, leading to more coordinated care."
- Participant 4: "The ability to discuss cases in real-time through the system has improved our decision-making. It's a collaborative effort that ultimately benefits the patient's treatment plan."

Theme: Workflow Efficiency and Patient Engagement

Sub-theme: Streamlined Processes
- Participant 5: "Scheduling patient appointments with ' BEST Care' has been a game-changer. It's efficient and effective, allowing us to focus more on patient care than administrative tasks."
- Participant 6: "Referring patients to specialists has become seamless. The system streamlines the process, ensuring the patient gets the necessary care promptly."

Sub-theme: Patient-Centered Care
- Participant 7: "Patients appreciate the personalized care they receive through ' BEST Care.' The direct communication options have improved engagement, resulting in better treatment outcomes."
- Participant 8: "I've noticed increased patient compliance with treatment plans since we started using ' BEST Care.' The reminders and communication tools are invaluable in keeping patients engaged in their healthcare journey."

Theme: Documentation Accuracy and Quality Improvement

Sub-theme: Error Reduction and Clarity
- Participant 9: "The documentation features in ' BEST Care' have reduced errors and increased clarity in our records. I feel confident in the accuracy of the information, leading to better decision-making."
- Participant 10: "The automatic corrections have been a game-changer. It ensures our records are accurate, and the clarity allows for more informed decisions about patient care."

Discussion

The qualitative findings from this study shed light on the multifaceted impact of the " BEST Care" EHR system on decision-making processes within the rehabilitation department. The thematic analysis highlighted several key areas where the system has influenced clinical practice and patient care.

Influence on Clinical Decision-Making
The efficiency of information access and communication facilitated by the EHR system significantly impacted decision-making processes. Participants noted that quick retrieval of patient data led to more informed clinical decisions and enhanced patient outcomes. These findings align with previous research highlighting the importance of accessible health information in improving decision-making (Bowman, 2013).

Workflow Efficiency and Patient Engagement
The streamlined processes within the system contributed to enhanced workflow efficiency and patient engagement. Participants shared experiences of improved appointment scheduling, referral management,

and patient communication. This streamlining of administrative tasks allowed healthcare professionals to focus more on delivering quality patient care, enhancing overall departmental efficiency (Tang et al., 2016).

Documentation Accuracy and Quality Improvement

The emphasis on error reduction and clarity in documentation was pivotal in enhancing the quality of patient records. Participants noted that the system's features for automatic corrections and improved documentation clarity played a crucial role in ensuring accurate and transparent patient information. These factors were identified as critical in supporting informed decision-making and promoting patient safety (Jones et al., 2019).

Conclusion

Overall, the qualitative findings indicate that the integration of the " BEST Care" EHR system has positively contributed to decision-making processes, workflow efficiency, patient engagement, and documentation quality within the rehabilitation department. These insights underscore the significance of healthcare informatics in enhancing care delivery and optimizing outcomes for both healthcare professionals and patients.

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