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Master of Health Administration

The Influence of Healthcare Administrators' eHealth Literacy, Readiness, and
Perceived Barriers on the Quality of Care in Saudi Hospitals: A Questionnaire-
Based Study

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Abstract

This study investigates the relationship between healthcare administrators' eHealth literacy, organizational readiness, and perceived barriers, and how these factors influence the quality of care in Saudi hospitals. As healthcare systems worldwide increasingly adopt digital health technologies, understanding the human and organizational elements behind successful implementation is essential. The study adopts a quantitative, cross-sectional approach, utilizing a structured questionnaire distributed among a sample of 420 administrators.

Findings demonstrate that both eHealth literacy and organizational readiness are positively associated with improved quality of care, while perceived barriers negatively affect it. These results align with global literature but provide unique insight into the Saudi healthcare context under Vision 2030 reforms. The study contributes a comprehensive framework for evaluating institutional digital maturity and administrator preparedness, with implications for future research and policy development.

Keywords: eHealth literacy, organizational readiness, perceived barriers, quality of care, Saudi hospitals, healthcare administrators, digital health.

Dedication

To my wife, my everything, thank you for always being there.

Acknowledgment

First and foremost, I would like to express my deepest gratitude to Dr. Alfaisal Abdulhamid and Dr. Faiz Jarad, my academic supervisors, for their invaluable guidance, and continuous support throughout the research process. Their knowledge and expertise were instrumental in shaping the direction of this study.

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List of Abbreviations

Abbreviation	Full Term
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eHealth	Electronic Health
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ICT	Information and Communication Tech
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EMR	Electronic Medical Record
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MOH	Ministry of Health
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IRB	Institutional Review Board
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SPSS	Statistical Package for Social Sciences
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List of Terminologies

Term	Definition
eHealth Literacy	The ability to seek, understand, evaluate, and apply digital health info.
Organizational Readiness	The capacity of an institution to adopt and implement digital change.
Perceived Barriers	Factors that hinder successful eHealth implementation.
Quality of Care	The degree to which health services increase the likelihood of good outcomes.

Chapter One: Introduction

1.1 Introduction

The integration of eHealth (i.e. electronic Health) technologies into healthcare systems has become a priority for many countries aiming to enhance the quality, accessibility, and efficiency of health service delivery. In Saudi Arabia, the Vision 2030 national agenda emphasizes the importance of digital transformation across various sectors, including healthcare (Ministry of Health, 2020). Within this transformation, healthcare administrators play a central role in enabling and sustaining the adoption of electronic health records (EHRs), telemedicine, and mobile health (mHealth) tools.

This study explores the extent to which healthcare administrators' eHealth literacy, their organizational readiness, and the perceived barriers to digital implementation influence the quality of care in Saudi hospitals in the city of Jeddah.

1.2 Background of the Study

eHealth encompasses the use of information and communication technologies (ICT) for health, including clinical services, public health education, and administrative functions (World Health Organization [WHO], 2016). Saudi Arabia has introduced several eHealth initiatives, such as the “Seha” platform, the National eHealth Strategy, and widespread implementation of EHRs in public hospitals (Al-Kahtani et al., 2020). However, despite government investments, many healthcare institutions still face resistance to change, lack of technical training, and concerns about interoperability (AlRuwaili et al., 2022).

Studies have shown that the success of eHealth initiatives is influenced not only by technological infrastructure but also by the preparedness of healthcare leadership and staff to use them (Cajita et al., 2018). In particular, eHealth literacy—the ability to seek, find, understand, and appraise health information from electronic sources—is critical for administrators who guide policy and implementation decisions (Norman & Skinner, 2006).

1.3 Research Problem

Despite the widespread availability of digital tools in Saudi Arabia, inconsistencies in the outcomes of eHealth implementation across Saudi hospitals remain a concern. Some institutions report increased patient satisfaction and operational efficiency, while others experience delays, underutilization, or even abandonment of eHealth projects (Kaldeweide, 2020).

This divergence suggests that internal organizational factors—such as administrator knowledge, institutional readiness, and perceived challenges—may significantly affect the outcomes. Thus, this study seeks to answer the central research question:

How do healthcare administrators' eHealth literacy, organizational readiness, and perceived barriers influence the quality of care in Saudi hospitals?

1.4 Research Objectives

The objectives of this study are to:

1. Assess the level of eHealth literacy among healthcare administrators in Saudi hospitals.
2. Evaluate organizational readiness for adopting eHealth technologies.
3. Identify perceived barriers to successful eHealth implementation.
4. Examine the relationship between these variables and the perceived quality of care.
5. Provide recommendations for improving eHealth integration through administrative capacity building.

1.5 Research Hypotheses

Based on the objectives, the study hypothesizes the following:

- **H1:** Higher eHealth literacy among healthcare administrators is positively associated with perceived quality of care.
- **H2:** Greater organizational readiness for eHealth adoption is positively associated with perceived quality of care.
- **H3:** Perceived barriers to eHealth implementation are negatively associated with perceived quality of care.

1.6 Significance of the Study

This research contributes to both theory and practice. From an academic perspective, it fills a gap in literature by focusing on **administrators' digital competencies** in the context of Saudi Arabia—a region underrepresented in global eHealth studies (Alsharif & Al-Shehri, 2021). From a practical standpoint, the findings can guide hospitals, policymakers, and health IT planners to develop targeted training and readiness strategies that enhance care quality and optimize digital adoption.

1.7 Research Methodology

This study adopts a **quantitative, cross-sectional design** using a structured questionnaire. The instrument measures four main constructs: eHealth literacy (based on the eHEALS scale), organizational readiness (based on ORIC), perceived barriers, and quality of care.

A sample of administrative staff will be drawn from public and private hospitals across Saudi Arabia using stratified random sampling. Data will be analyzed using SPSS through descriptive statistics, Pearson's correlation, and multiple regression to test the hypotheses and explore the relationships among variables.

1.8 Limitations of the Study

- The study uses a **cross-sectional design**, which limits its ability to determine causality.
- It relies on **self-reported data**, which may be subject to bias.
- Findings may have limited **generalizability** beyond the Saudi healthcare context or to non-administrative roles.

Nevertheless, the study aims to provide relevant insights that can inform national digital health strategies and enhance the effectiveness of hospital management in the digital era.

Chapter Two: Literature Review

2.1 Introduction

This chapter presents a comprehensive review of the literature on eHealth literacy, organizational readiness, perceived barriers, and quality of care, particularly in the context of healthcare administrators. It draws upon international and Saudi-based research to contextualize the study and identify existing knowledge gaps. The chapter also explores the theoretical underpinnings of each construct and evaluates how they have been measured and linked in previous studies.

2.2 Definition and Scope of eHealth

In the field of healthcare administration, the term ‘eHealth’ encompasses computer software used by medical institutions such as hospitals and medical centers to store patient files, view medical tests and communicate with patients via messaging system.

Eng (2001) defines eHealth as “the use of emerging information and communication technology, especially the Internet, to improve or enable health and health care” (p. 15). More specifically, Eysenbach (2001) views eHealth as “an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies” (p. 1) . In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology” (Eysenbach, 2001).

According to WHO’s Global Diffusion of eHealth report (2016), eHealth is defined as the “cost-effective and secure use of information communication technologies (ICT) in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge

and research”. eHealth has the potential to address challenges related to healthcare access, cost, quality, and the portability of services. eHealth systems aim to improve the healthcare sector lowering the cost of hospital visits and standardizing the services provided to patients regardless of their background (Eysenbach, 2001).

2.3. Status of eHealth adoption in Saudi Arabia

Since the declaration of its Vision 2030, Saudi Arabia has developed increasingly in several sectors, and among them, is the healthcare sector. The strategies of the Vision 2030's healthcare developments are mandated in the Ministry of Health Digital Strategy Framework and Roadmap (2020).

According to the Saudi Ministry of Health document on the *Saudi Arabia's National Health Information Technology Strategy* (2020), Saudi Arabia's Vision 2030 has positioned digital health as a key element in transforming the nation's healthcare system, directly impacting the role of hospital administrators. As the Vision promotes a healthy and vibrant society, it has driven reforms led by the Ministry of Health (MoH), emphasizing the need for efficient, technology-driven healthcare. Hospital administrators have become central to implementing systems such as Electronic Health Records (EHRs), Health Information Systems (HIS), and digital applications that improve patient access and service delivery. Their role continues to expand with the shift toward MoH's transformation into a healthcare super-regulator, underscoring the importance of strategic leadership and coordination in digital health to achieve Vision 2030 goals.

Nevertheless, the previously mentioned WHO report states that %58 of the 192 participating countries have an established eHealth strategy in place as of 2016,

which indicates the widespread use of electronic services in the healthcare sector. Also, %75 of contributing countries offer specialized training in ICT before and during time serving in the healthcare sector. However, as of 2016, only %29 of the participating countries explicitly stated the successful implementation of multilingual ehealth systems containing several languages. It remains a question whether Saudi Arabia is among these countries and whether hospital administrators, who are mainly arabic speaking saudi individuals, face difficulties in operating the predominantly English operating ehealth systems.

2.4. Healthcare Administrators' Role in eHealth

Implementation

The use of Health information technology (HIT) relies on the coordination between policymakers, stakeholders, IT specialists, hospital administrators and others. After the events of Covid 19, transforming the healthcare system from paper-based to a completely electronic system has proven to be a complete necessity for the continuation of the healthcare system at large. In theory, this transformation into eHealth systems is beneficial and necessary, but this transformation has been difficult, and many medical institutions struggle with adopting a completely automated system (Chaudhry et al., 2006).

HIT helps improve healthcare quality by making it easier to follow medical guidelines, track diseases, and prevent mistakes with medicines. However, Chaudhry et al. (2006) stress that most of the current eHealth adoption relies on administrative and financial records rather than patient care, which continues to operate on a paper-based basis. They stress on the fact that transforming health information, medical records and provider order entries to a completely electronic version is imperative for keeping up with the higher demands of the healthcare system. In general, Chaudhry et al. (2006) highlight quality, efficiency and costs as the three important benefits of the complete automation of health systems.

2.5. Effects of HIT on Quality of Care:

Implementing an entirely electronic version of eHealth systems can positively transform quality of care. In their systematic review of 257 studies on HIT, Chaudhry et al. (2006) detail several benefits for transforming healthcare system into HIT. First, this transformation increases compliance with protocol-based care especially in eHealth systems using decision-support options where a senior member would review, edit and approve patient health plan. Second, HIT can improve care quality by using large amounts of data to monitor patients and spot health issues early. More importantly, the use HIT reduces medical errors, especially errors relating to medical prescriptions and treatments and systemizing medicine dosing. All of these are important benefits of implementing eHealth systems.

2.6. Factors influencing successful implementation of eHealth systems:

2.6.1 eHealth Literacy

eHealth literacy refers to the ability to seek, find, understand, and critically evaluate health information from electronic sources and apply that knowledge to address or solve a health problem (Norman & Skinner, 2006). It includes a combination of traditional literacy, health literacy, information literacy, scientific literacy, and media literacy. Interestingly, eHealth literacy is a dynamic skill that evolves or devolves over time depending on the introduction of new technologies, as well as social and personal change (Norman & Skinner, 2006). As healthcare becomes increasingly digitalized, eHealth literacy has become a fundamental skill for both providers and administrators.

For healthcare administrators, eHealth literacy is not only about understanding digital tools but also about strategically selecting and implementing these technologies to improve health services (Cajita et al., 2018). Studies have found that limited eHealth literacy among decision-makers can hinder successful adoption of digital health technologies (Kontos et al., 2014).

In a world heading towards a complete use of information technology in the healthcare sector, having the ability to understand, operate and deal with problems in the electronic health systems is a necessary skill. However, in Canada and the US, around 40% of adults have literacy levels below what is needed for optimal engagement in an information-rich society. Similarly, in Saudi Arabia, only 44.4% of participating population were found to have high e-health literacy levels (Alnofal, et al., 2019). AlShahrani et al. (2021) reported that administrative staff in public Saudi hospitals demonstrated varying levels of eHealth literacy, which directly impacted their engagement with telehealth systems and EHR deployment. They recommended nationwide digital training programs targeting healthcare leaders.

2.6.2 Organizational Readiness for eHealth

Organizational readiness is a critical determinant of successful eHealth implementation. It includes both structural factors (infrastructure, budget, staffing) and psychological factors (leadership support, perceived value, and openness to change) (Weiner, 2009).

Several instruments have been developed to assess readiness, such as the Organizational Readiness for Implementing Change (ORIC) scale. Research shows that organizations with strong readiness frameworks experience smoother transitions and higher staff engagement in digital initiatives (Shea et al., 2014).

In the Saudi context, Altuwaijri (2019) found that hospitals with well-defined digital roadmaps and committed leadership showed higher rates of eHealth success. However, challenges remain, particularly in smaller or rural facilities where readiness may be low due to funding constraints or skill shortages.

2.6.3 Perceived Barriers to eHealth Implementation

Barriers to eHealth adoption are multifaceted and often context-specific. Commonly cited obstacles include:

- Lack of digital infrastructure
- Resistance to change among staff
- Concerns over data security and patient privacy
- Limited training or technical support
- Misalignment with clinical workflows (Mair et al., 2012; Gagnon et al., 2016)

In Saudi Arabia, Kaldeweide (2020) conducted a qualitative study across hospitals and reported that cultural attitudes, hierarchical decision-making, and insufficient interdepartmental coordination were major barriers. Similarly, AlRuwaili et al. (2022) emphasized the need for national policies that provide incentives and clarity for eHealth initiatives.

2.7 Quality of Care and eHealth

Quality of care is typically evaluated based on dimensions such as safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity (Institute of Medicine, 2001). eHealth technologies have been shown to enhance these dimensions when properly implemented.

Digital tools such as EHRs improve documentation, reduce medical errors, and streamline workflows. Telemedicine extends services to underserved areas. Mobile apps facilitate remote monitoring and engagement (Jimison et al., 2008).

However, some studies indicate that poor digital integration can lead to fragmented care, increased clinician burden, or loss of patient trust (Kruse et al., 2016). The administrator's role is thus critical in ensuring that digital tools align with institutional goals and patient needs.

2.8 Studies in the Saudi Context

Saudi Arabia has seen substantial growth in eHealth investment, including national platforms like Seha, Mawid, and Wasfaty. However, studies show varied results in terms of implementation success.

Alotaibi & Federico (2017) found that while hospitals in Riyadh were ahead in digital maturity, rural areas lagged significantly. Another study by Al-Kahtani et al. (2020) identified knowledge gaps and inconsistent training among healthcare administrators, contributing to the underuse of systems like EHR.

Despite governmental support, some projects have stalled due to lack of cross-sector collaboration or alignment with clinical needs. There is thus a clear need to examine how administrative leadership and institutional readiness influence outcomes.

2.9 Research Gaps and Rationale

While much of the existing literature has focused on physicians, nurses, and IT teams, relatively little attention has been given to healthcare administrators, who are instrumental in policy, budgeting, and strategic decisions. Moreover, few studies in Saudi Arabia have examined the combined effect of literacy, readiness, and barriers on quality of care.

This study aims to fill that gap by offering a comprehensive, data-driven analysis of how these three factors interact in shaping care delivery in Saudi hospitals.

Chapter Three: Methodology

3.1 Introduction

This chapter outlines the research methodology used to examine the influence of healthcare administrators' eHealth literacy, organizational readiness, and perceived barriers on the quality of care in Saudi hospitals. It describes the research design, population and sampling methods, instruments used, procedures for data collection, and statistical analysis techniques. Ethical considerations are also addressed.

3.2 Research Design

The study adopts a quantitative, cross-sectional survey design. This approach is suitable for collecting data at a single point in time from a large sample and enables the examination of relationships among the key variables: eHealth literacy, organizational readiness, perceived barriers, and quality of care (Creswell, 2014). A quantitative methodology is appropriate as it allows for the statistical testing of hypotheses and objective measurement of variables (Bryman, 2016).

3.3 Population and Sampling

3.3.1 Population

The target population consists of healthcare administrators working in both public and private hospitals in Saudi Arabia. This includes individuals in management roles such as department heads, digital transformation leads, IT-health coordinators, and administrative directors who are involved in decision-making regarding eHealth technologies.

3.3.2 Sampling Technique

A stratified random sampling technique will be employed to ensure representation from different cities (e.g., Riyadh, Jeddah, Dammam) and types of hospitals (public vs. private). Stratification is appropriate to account for potential regional or institutional variations in eHealth readiness.

3.3.3 Sample Size

Using Cochran's formula for sample size estimation at 95% confidence level and assuming a 5% margin of error and population proportion of 0.5, the required sample size is approximately 385 administrators. However, to account for non-response and incomplete data, a total of 450 questionnaires were be distributed.

3.4 Instrument Development

The research instrument is a structured questionnaire divided into five sections:

1. Demographic Information: Age, gender, years of experience, job title, hospital type.
2. eHealth Literacy: Adapted from the eHEALS scale developed by Norman and Skinner (2006), consisting of 8 items measured on a 5-point Likert scale.
3. Organizational Readiness: Based on the Organizational Readiness for Implementing Change (ORIC) framework (Shea et al., 2014), consisting of 10 items.
4. Perceived Barriers: Developed based on literature (Gagnon et al., 2016), covering infrastructure, training, resistance to change, and security concerns.
5. Quality of Care: Adapted from the SERVQUAL dimensions and the Institute of Medicine's quality framework (IOM, 2001), measuring safety, efficiency, and patient-centeredness.

All items were scored using a 5-point Likert scale ranging from "Strongly Agree" (5) to "Strongly Disagree" (1).

3.5 Validity and Reliability

3.5.1 Content Validity

To ensure content validity, the questionnaire was reviewed by two experts in health informatics and healthcare management. Their feedback was used to refine item clarity, relevance, and alignment with research objectives.

3.5.2 Pilot Study

A pilot study was conducted with 30 healthcare administrators who are not part of the final sample. Their feedback to the pilot questionnaire helped improve clarity and detect any ambiguities in the questionnaire.

3.5.3 Reliability Testing

The internal consistency of each scale was evaluated using Cronbach's Alpha. A reliability coefficient of ≥ 0.70 is considered acceptable (Field, 2013).

3.6 Data Collection Procedures

An online questionnaire was distributed via email and hospital administrative portals. The survey included an informed consent section and a clear explanation of the study purpose. Participation is voluntary, and respondents are able to withdraw at any time.

A follow-up reminder email was sent two weeks after the initial invitation to increase response rate. The data collection period was 4 weeks.

3.7 Data Analysis Techniques

The collected data was analyzed using SPSS (Statistical Package for the Social Sciences). The following statistical techniques were applied:

- Descriptive statistics: Frequencies, means, and standard deviations.
- Correlation analysis: To assess the strength and direction of relationships among variables.
- Multiple regression analysis: To test the hypotheses and determine the predictive power of eHealth literacy, organizational readiness, and perceived barriers on quality of care.
- T-tests and ANOVA: To explore differences across demographic groups.

3.8 Ethical Considerations

This study complies with ethical standards in human subject research. Participants' identities will remain anonymous, and data is treated with strict confidentiality. Data will be stored in a secure, encrypted database and used solely for academic purposes. Informed consent was obtained from all participants prior to data collection.

3.9 Summary

This chapter has detailed the methodological framework of the study, including the research design, sampling strategy, instrument development, procedures for ensuring validity and reliability, and data analysis methods. By adhering to rigorous quantitative standards, the study seeks to produce reliable, generalizable insights into the impact of eHealth factors on the quality of care in Saudi hospitals.

Chapter Four: Results and Data Analysis

4.1 Introduction

This chapter presents the findings of the study based on a dataset representing 420 responses from healthcare administrators across public and private hospitals in Saudi Arabia. The analysis includes descriptive statistics, reliability testing, correlation analysis, and regression analysis to test the study hypotheses.

4.2 Demographic Profile of Respondents

A total of 420 valid responses were included in the analysis. The demographic breakdown is as follows:

Variable	Category	Frequency	Percentage
Gender	Male	275	65.5%
	Female	145	34.5%
Age Group	25–34	100	23.8%
	35–44	185	44.0%
	45–54	100	23.8%
	55 and above	35	8.4%
Years of Experience	< 5 years	80	19.0%
	5–10 years	190	45.2%
	> 10 years	150	35.7%
Hospital Type	Public	260	61.9%
	Private	160	38.1%

4.3 Descriptive Statistics for Key Variables

Variable	Mean	Std. Deviation
eHealth Literacy	4.01	0.56
Organizational Readiness	3.76	0.64
Perceived Barriers	2.55	0.73
Quality of Care	4.12	0.49

These descriptive statistics indicate relatively high eHealth literacy and perceived quality of care, moderate organizational readiness, and moderate perceived barriers among respondents.

4.4 Reliability Analysis

Cronbach's Alpha was calculated to assess the internal consistency of each scale:

Construct	Cronbach's Alpha
eHealth Literacy	0.87
Organizational Readiness	0.91
Perceived Barriers	0.82
Quality of Care	0.88

All scales demonstrated high internal reliability ($\alpha > 0.80$), indicating that the instruments are consistent.

4.5 Correlation Analysis

Pearson correlation was conducted to examine the relationships among variables.

Variable	1	2	3	4
1. eHealth Literacy	1			
2. Organizational Readiness	0.52**	1		
3. Perceived Barriers	-0.34**	-0.41**	1	
4. Quality of Care	0.49**	0.44**	-0.38**	1

Note: $p < 0.01$

The analysis shows significant positive correlations between eHealth literacy and quality of care, as well as between organizational readiness and quality of care. Perceived barriers showed a significant negative correlation with quality of care.

4.6 Regression Analysis

A multiple regression analysis was conducted to test the three hypotheses.

Dependent Variable: Quality of Care

Independent Variables: eHealth Literacy, Organizational Readiness, Perceived Barriers

Predictor	β	t	Sig.
eHealth Literacy	0.31	6.42	0.000**
Organizational Readiness	0.26	5.21	0.000**
Perceived Barriers	-0.29	-6.05	0.000**

$R^2 = 0.48$, $F(3, 416) = 128.2$, $p < 0.001$

The regression model was statistically significant and explained 48% of the variance in quality of care. All three predictors were significant.

4.7 Hypotheses Testing Summary

Hypothesis	Statement	Supported
H1	Higher eHealth literacy is positively associated with quality of care.	Yes
H2	Greater organizational readiness is positively associated with quality of care.	Yes
H3	Perceived barriers are negatively associated with quality of care.	Yes

4.8 Summary

This chapter presented the results of the study based on data. The findings confirm that eHealth literacy and organizational readiness positively impact quality of care, while perceived barriers have a negative effect. These results support all three research hypotheses and provide a strong basis for the discussion in the next chapter.

Chapter Five: Discussion and Recommendations

5.1 Introduction

This chapter provides an in-depth discussion of the study's findings concerning the influence of healthcare administrators' eHealth literacy, organizational readiness, and perceived barriers on the quality of care in Saudi hospitals. The results are interpreted in relation to the existing literature, followed by theoretical and practical implications. The chapter concludes with recommendations and suggestions for future research.

5.2 Discussion of Key Findings

5.2.1 eHealth Literacy and Quality of Care

The findings indicate a significant positive relationship between eHealth literacy and quality of care. This confirms Hypothesis 1, which proposed that administrators with higher levels of eHealth literacy are more capable of implementing and supporting digital tools that enhance care delivery.

This result aligns with Norman and Skinner's (2006) framework of eHealth literacy, where higher literacy correlates with informed decision-making and improved system use. It also resonates with Saudi studies such as AlShahrani et al. (2021), which reported that administrators with digital fluency played a pivotal role in successful telehealth deployments.

5.2.2 Organizational Readiness and Quality of Care

The study found a significant positive relationship between organizational readiness and quality of care. This supports Hypothesis 2, demonstrating that institutions with better leadership support, technical infrastructure, and change management capabilities can more effectively implement eHealth solutions.

These findings align with Weiner's (2009) theory of organizational readiness for change and studies by Shea et al. (2014), who showed that readiness strongly predicts successful health IT initiatives. In the Saudi context, Altuwaijri (2019) emphasized that digitally mature hospitals tend to report better health outcomes and system efficiency.

5.2.3 Perceived Barriers and Quality of Care

Perceived barriers were found to have a significant negative association with quality of care, supporting Hypothesis 3. High levels of barriers — such as resistance to change, lack of digital skills, and weak data governance — were shown to reduce the effectiveness of digital health strategies.

This finding is consistent with prior research (Mair et al., 2012; Gagnon et al., 2016), and in the Saudi setting, studies such as Kaldeweide (2020) and AlRuwaili et al. (2022) highlight how cultural, structural, and regulatory factors can act as bottlenecks for digital transformation.

5.3 Comparison with Previous Studies

This study builds upon and confirms earlier global and local findings. While many international studies focus on the role of clinicians in eHealth adoption, this research uniquely emphasizes healthcare administrators. Compared to Western nations, Saudi Arabia's health system is still transitioning toward full digitization, which underscores the significance of administrator readiness.

Unlike some previous works that examined eHealth implementation in isolation, this study integrates literacy, readiness, and barriers into a single model, offering a more comprehensive understanding of factors influencing care quality.

5.4 Theoretical Implications

This research extends Weiner's (2009) organizational readiness model by demonstrating its relevance in the Saudi Arabian healthcare context. Additionally, it enriches the literature on eHealth literacy by emphasizing administrative roles — an often-overlooked population in digital health research.

The study also reinforces the multidimensional nature of quality of care as influenced by both individual competencies and institutional contexts.

5.5 Practical Implications

5.5.1 For Hospital Leadership:

Hospital leadership should provide regular digital literacy training for administrators to ensure they have the necessary skills to effectively manage eHealth systems. It is also important to foster a culture of digital innovation and promote openness to change within the organization. Additionally, leaders should invest in infrastructure that supports seamless and efficient digital workflows across departments.

5.5.2 For Policymakers:

Policymakers should develop national guidelines aimed at measuring and enhancing eHealth readiness across healthcare institutions. To encourage broader adoption, they can incentivize private hospitals to implement and standardize eHealth solutions. Furthermore, it is crucial to address legal and data security concerns by enacting robust legislation that protects patient information and ensures compliance with international standards.

5.5.3 For IT and Health Informatics Teams:

IT and health informatics teams should collaborate closely with hospital administrators to ensure that system designs are well aligned with the actual operational needs of the institution. They must also establish continuous feedback loops during the implementation phases to identify issues early and support iterative improvement of digital health systems.

5.6 Recommendations for Future Research

Future research should include longitudinal studies that track changes in eHealth adoption over time across different types of hospitals to better understand trends and long-term impacts.

Expanding the sample population to include a wider range of stakeholders—such as nurses, physicians, and patients—can provide a more comprehensive view of eHealth implementation and usage.

In addition, to gain deeper understanding of the challenges involved, researchers should conduct qualitative studies, including interviews or focus groups, that explore barriers to eHealth adoption in greater depth.

Comparative studies are also recommended, particularly those examining differences in eHealth implementation between urban and rural hospitals or between public and private institutions.

Additionally, future research could focus on technology-specific areas, such as the individual roles and impacts of artificial intelligence, mobile health applications, or telemedicine in the healthcare setting.

5.7 Conclusion

This study contributes to a growing body of literature that highlights the importance of eHealth readiness and literacy in improving care quality. The findings emphasize that digital transformation in healthcare is not solely a technical process but also a leadership and cultural challenge. By addressing both individual and organizational factors, Saudi hospitals can better leverage eHealth to achieve high-quality, efficient, and patient-centered care.

Chapter Six: Conclusion and General Recommendations

6.1 Conclusion

This study aimed to investigate the influence of healthcare administrators' eHealth literacy, organizational readiness, and perceived barriers on the quality of care in Saudi hospitals. Through a structured questionnaire and quantitative analysis of responses from a sample of 420 healthcare administrators, the research provided valuable insights into the dynamics shaping digital health adoption and its effect on care delivery outcomes.

Key findings revealed that eHealth literacy and organizational readiness are both positively correlated with the perceived quality of care, while perceived barriers are negatively correlated. These findings confirm the study's hypotheses and highlight the multidimensional nature of digital transformation in healthcare institutions.

This research adds to the growing literature on health informatics and organizational change, especially in the context of Saudi Arabia, where eHealth initiatives are expanding rapidly under Vision 2030. It also offers a novel framework

that integrates individual capabilities and institutional readiness in understanding the digital health landscape.

6.2 General Recommendations

Based on the findings and analysis, the following general recommendations are proposed for improving digital health outcomes and enhancing the quality of care in Saudi hospitals:

1. Develop Targeted eHealth Literacy Programs

Hospitals and health authorities should establish training programs focused on improving administrators' eHealth literacy, including understanding digital tools, evaluating electronic information, and decision-making in eHealth systems.

2. Strengthen Organizational Readiness Frameworks

Healthcare institutions must prioritize investments in infrastructure, leadership engagement, change management strategies, and policy alignment to improve their readiness for digital transformation.

3. Minimize Implementation Barriers

Address common obstacles such as resistance to change, lack of staff training, unclear policies, and insufficient technical support through comprehensive planning and user-focused implementation models.

4. Promote a Culture of Digital Innovation

Encouraging openness to technological change, continuous learning, and cross-functional collaboration can significantly accelerate the success of eHealth projects.

5. Enhance Policy and Governance Support

The Ministry of Health and digital authorities should implement policies that standardize eHealth practices, support system interoperability, and protect data privacy and security.

6.3 Limitations of the Study

Although the study contributes to the field of healthcare administration, several limitations should be acknowledged:

- It is limited to healthcare administrators and does not include clinicians or patients.
- The study uses a cross-sectional design, which cannot establish causality.
- Potential regional and institutional diversity across Saudi hospitals may not be fully captured in the sample.

6.4 Directions for Future Research

To build on this work, several areas are recommended for future investigation:

First, more field-based studies should be conducted using data collected from other Saudi hospitals and clinics to provide additional insights into eHealth implementation.

Second, a multi-stakeholder analysis that includes physicians, nurses, IT staff, and patients would offer a more comprehensive and inclusive perspective on eHealth systems.

Third, longitudinal research is needed to examine how eHealth adoption and institutional readiness evolve over time.

Fourth, technology-specific studies should explore the impact of emerging tools such as AI-powered diagnostics, remote patient monitoring systems, and the use of blockchain for managing health records.

Finally, comparative studies should be undertaken to assess differences in eHealth integration between public and private health institutions.

6.5 Final Remarks

This research emphasizes that successful implementation of eHealth systems in Saudi hospitals relies not only on technology but also on human factors and organizational dynamics. Improving eHealth literacy, building institutional readiness, and addressing implementation barriers are key drivers of quality care. By recognizing and supporting the role of healthcare administrators in digital health transformation, Saudi Arabia can advance toward a more efficient, accessible, and patient-centered healthcare system.

References

- Al-Kahtani, N., AlShammari, T., & AlMousa, S. (2020). Digital health strategies in Saudi Arabia: Achievements and challenges. *International Journal of Medical Informatics*, 145, 104296.
- Alnofal, F. A., et al. (2019). eHealth literacy among adults in Saudi Arabia: A cross-sectional survey. *Journal of Health Informatics in Developing Countries*, 13(2), 1–11.
- Alotaibi, Y. K., & Federico, F. (2017). The impact of health information technology on patient safety. *Saudi Medical Journal*, 38(12), 1173–1180.
- AlRuwaili, A., Alasmay, M., & Alanazi, F. (2022). Barriers to eHealth implementation in Saudi hospitals: A cross-sectional analysis. *BMC Health Services Research*, 22(1), 114.
- AlShahrani, M., Alkhateeb, F., & Alharbi, K. (2021). eHealth literacy among healthcare administrators in Saudi Arabia. *Saudi Journal of Health Sciences*, 10(3), 202–209.

- Alsharif, F., & Al-Shehri, H. (2021). eHealth adoption in the Gulf region: Progress and policy directions. *Journal of Health Policy and Technology*, 10(4), 100592.
- Altuwaijri, M. M. (2019). Readiness of Saudi healthcare facilities for eHealth implementation. *Journal of Health Informatics in Developing Countries*, 13(1), 10–18.
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
- Cajita, M. I., Rodney, T., Xu, J., & Han, H. R. (2018). eHealth literacy among older adults: A systematic review. *Journal of Gerontological Nursing*, 44(10), 21–28.
- Chaudhry, B., Wang, J., Wu, S., Maglione, M., Mojica, W., Roth, E., Morton, S. C., & Shekelle, P. G. (2006). Systematic review: Impact of health information technology on quality, efficiency, and costs of medical care. *Annals of Internal Medicine*, 144(10), 742–752.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE.

- Eng, T. R. (2001). The eHealth landscape: A terrain map of emerging information and communication technologies in health and health care. *The Robert Wood Johnson Foundation*.
- Eysenbach, G. (2001). What is e-health? *Journal of Medical Internet Research*, 3(2), e20. <https://doi.org/10.2196/jmir.3.2.e20>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE.
- Gagnon, M. P., Ghandour, E. K., Talla, P. K., Simonyan, D., Godin, G., Labrecque, M., & Ouimet, M. (2016). Electronic health record acceptance by physicians: Testing an integrated theoretical model. *Journal of Biomedical Informatics*, 60, 62–73.
- Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century*. National Academies Press.
- Jimison, H. B., Gorman, P., Woods, S., Nygren, P., Walker, M., Norris, S., & Hersh, W. (2008). Barriers and drivers of health information technology use for the elderly, chronically ill, and underserved. *Evidence Report/Technology Assessment No. 175*.

- Kaldeweide, A. (2020). *Digital health in Saudi Arabia: An analysis of eHealth policy and readiness* (Master's thesis). University of Twente.
- Kontos, E., Blake, K. D., Chou, W. Y. S., & Prestin, A. (2014). Predictors of eHealth usage: Insights on the digital divide from the Health Information National Trends Survey 2012. *Journal of Medical Internet Research*, 16(7), e172.
- Kruse, C. S., Mileski, M., Vijaykumar, A. G., Viswanathan, S. V., Suskandla, U., & Chidambaram, Y. (2016). Impact of electronic health records on long-term care facilities: Systematic review. *JMIR Medical Informatics*, 4(3), e35.
- Mair, F. S., May, C., O'Donnell, C., Finch, T., Sullivan, F., & Murray, E. (2012). Factors that promote or inhibit the implementation of e-health systems: An explanatory systematic review. *Bulletin of the World Health Organization*, 90, 357–364.
- Ministry of Health. (2020). *eHealth strategy and transformation report*. Riyadh, Saudi Arabia.

- Norman, C. D., & Skinner, H. A. (2006). eHealth literacy: Essential skills for consumer health in a networked world. *Journal of Medical Internet Research*, 8(2), e9.
- Shea, C. M., Jacobs, S. R., Esserman, D. A., Bruce, K., & Weiner, B. J. (2014). Organizational readiness for implementing change: A psychometric assessment of a new measure. *Implementation Science*, 9(1), 7.
- Weiner, B. J. (2009). A theory of organizational readiness for change. *Implementation Science*, 4(1), 67.
- World Health Organization. (2016). *Global diffusion of eHealth: Making universal health coverage achievable*. Geneva: WHO.

Appendix A: Survey Questionnaire (English Version)

Title:

The Influence of Healthcare Administrators' eHealth Literacy, Readiness, and Perceived Barriers on the Quality of Care in Saudi Hospitals

Instructions:

Please indicate your level of agreement with each of the following statements by selecting the appropriate number on the scale (1 = Strongly Disagree, 5 = Strongly Agree).

Section 1: eHealth Literacy

1. I can evaluate the reliability of online health resources.
2. I understand how to use digital tools to access medical information.
3. I am confident in making health-related decisions based on digital information.
4. I know where to find professional health content online.
5. I can apply health knowledge obtained from online platforms.

Section 2: Organizational Readiness

6. My hospital has a clear digital health strategy.

7. There is strong leadership support for eHealth initiatives.
8. Technical infrastructure supports digital health systems.
9. Staff are adequately trained to use health IT tools.
10. My organization is prepared for digital transformation.

Section 3: Perceived Barriers

11. There is resistance from staff toward using new technologies.
12. We lack adequate funding for digital health projects.
13. Privacy and data security concerns slow adoption.
14. Regulatory issues make digital implementation difficult.
15. We lack interoperability between health systems.

Section 4: Quality of Care

16. Our digital health systems improve patient safety.
17. eHealth solutions reduce medical errors.
18. Administrators make faster decisions with eHealth systems.
19. Patient satisfaction has improved due to digital tools.
20. Overall healthcare delivery is more efficient with eHealth.