

Examining The Effectiveness Of Collaborative Healthcare Models In Achieving Improved Patient Care Outcomes In The Digital Era In KSA: A Systematic Review

1. Dr. Khalid Abdu Rajhi, Abeer Awad Aljaid

2. ,

3. Fahad Mohammed Najmi

4. , Abdullah Ali Hazzazi

5. , Othman Jundub Madkhli

6. , Harban Mohammed Najmi

7. , Amjad Mohammed Daghriri

8. , Khaleel Yehia Kariry

9. , Naeem Mohammed H Hakami

10. , Shareefah Hamoud Hakmy

11. , Ibrahim Ahmed Hamdi

12. , Nasser Mohammed Alwadai

¹Krajhi@Moh.Gov.Sa

Jazan Specialist Hospital.

²King Faisal Medical Complex, Taif.

³Al Hurrath General Hospital.

⁴Al Tuwal General Hospital.

⁵Ahd Almsarha General Hospital.

⁶Al Hurrath General Hospital.

⁷Al Tuwal General Hospital.

⁸Ahd Almsarha General Hospital.

⁹Ahd Almsarha General Hospital.

¹⁰PHC, Northern Sector.

¹¹Al Hurrath General Hospital.

¹²Aseer Central Hospital.

Abstract

Background. A systematic review on collaborative healthcare models in Saudi Arabia emphasized the need for a comprehensive synthesis of existing evidence, highlighting limitations of research and the need for a systematic approach to consolidate findings. The review's impact informs policy,

practice, and future research directions. The aim of current systematic review is examining the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in KSA Method. Google Scholar PsycINFO and Research Gate were used to categorize research published between 2019 and 2023 on evaluating it. After screening and quality evaluation, twelve studies were included in the synthesis, focusing on team dynamics and measurement scales.

Result. After the study database was searched, 841 entries were found, and 20 of them were chosen for full-text evaluation. 12 studies that used quality management and peer-reviewed journals satisfied the criteria and were added to the systematic review following independent evaluation. Conclusion: The results indicate that interdisciplinary cooperation and technology integration can improve patient outcomes in KSA's collaborative healthcare models. The study emphasizes how crucial it is to use digital technologies to enable smooth information sharing and communication amongst healthcare practitioners. In order to provide patient-centered care and enhance the procedures of healthcare delivery, interdisciplinary collaboration among healthcare professionals is essential. To guarantee the efficacy of collaborative healthcare models, however, issues like generalizability and data quality must be resolved. To enhance care delivery and boost patient participation, recommendations include merging public-private partnerships, encouraging interdisciplinary teamwork, and investing in digital health infrastructure.

Keywords: Collaborative Healthcare Models, Patient Care Outcomes, KSA, Systematic Review

Introduction

Background

In the Kingdom of Saudi Arabia (KSA), the healthcare landscape is undergoing a profound transformation driven by technological advancements and evolving patient needs. The digital era has ushered in an era of unprecedented connectivity and data availability, offering novel opportunities to enhance patient care through collaborative healthcare models (Albahri et al., 2023; Alsayali et al., 2019). As such, this study aims to explore the

effectiveness of collaborative healthcare models in achieving improved patient care outcomes within the unique context of KSA

. Collaborative healthcare models, which involve coordinated efforts among various healthcare stakeholders, including physicians, nurses, allied health professionals, and patients themselves, have emerged as promising approaches to address these challenges. By leveraging digital technologies such as electronic health records (EHRs), telemedicine, and health information exchanges (HIEs), collaborative models seek to streamline care delivery, enhance care coordination, and ultimately improve patient outcomes (Alverson, 2021). Furthermore, understanding the efficacy of collaborative healthcare models is particularly pertinent in the Saudi Arabian context, where rapid urbanization, changing demographics, and increasing chronic disease burdens necessitate innovative approaches to healthcare delivery. Moreover, recent policy initiatives, such as Saudi Vision 2030, underscore the government's commitment to transforming the healthcare sector through digitalization and innovation (Chowdhury, Mok & Leenen, 2021; Alasiri & Mohammed, 2022).

Despite the growing enthusiasm for collaborative healthcare models, empirical evidence regarding their effectiveness in the Saudi Arabian context remains limited. Thus, this research seeks to fill this gap by employing rigorous quantitative and qualitative methodologies to evaluate the impact of collaborative care initiatives on key patient care outcomes, including clinical effectiveness, patient satisfaction, and healthcare utilization patterns (Ng & Luk, 2019; Bauer et al., 2019). Moreover, this study will also explore the facilitators and barriers to the implementation and adoption of collaborative healthcare models in KSA. By identifying these factors, policymakers, healthcare leaders, and practitioners can better strategize and allocate resources to maximize the potential benefits of collaborative care initiatives (Radwan et al., 2023; Almalki et al., 2021).

One of the key drivers of collaborative healthcare models is the increasing availability and adoption of digital health technologies. Electronic health records (EHRs), for example, enable seamless information sharing among healthcare providers, allowing for better coordination of care and continuity across different healthcare settings. Telemedicine platforms enable

remote consultations and monitoring, expanding access to care for patients in remote or underserved areas (Samadbeik et al., 2020; Upadhyay & Hu, 2022).

Moreover, health information exchanges (HIEs) facilitate the exchange of patient data between different healthcare organizations, promoting interoperability and continuity of care. The effectiveness of collaborative healthcare models in achieving improved patient care outcomes hinges on several factors (Holmgren et al., 2023). Effective communication and collaboration among healthcare providers are paramount, requiring clear roles and responsibilities, shared decision-making processes, and regular communication channels. Furthermore, patient engagement and empowerment play a crucial role in collaborative care, as active participation in treatment decisions and self-management behaviors can lead to better health outcomes (Schot, Tummers & Noordegraaf, 2020).

However, despite the potential benefits of collaborative healthcare models, several challenges remain. One of the main barriers is the resistance to change among healthcare providers, who may be accustomed to working in silos and may perceive collaboration as a threat to their autonomy. Moreover, interoperability issues and data privacy concerns pose significant challenges to the seamless exchange of patient information between different healthcare organizations. Additionally, the lack of standardized processes and metrics for evaluating the effectiveness of collaborative care initiatives makes it difficult to assess their impact accurately (Khan et al., 2020; Kumar, Raut & Narkhede, 2020).

To address these challenges and maximize the potential benefits of collaborative healthcare models, concerted efforts are needed from policymakers, healthcare leaders, and frontline providers. This includes investing in health IT infrastructure, promoting interoperability standards, and providing training and support to healthcare providers to facilitate the transition to collaborative care. Moreover, fostering a culture of collaboration and teamwork within healthcare organizations is essential, requiring changes in leadership practices, incentives, and organizational structures.

Objectives

Following are the objectives of the research

1. Examine the effects of digitally enabled collaborative healthcare models on important patient care outcomes, such as clinical efficacy, patient satisfaction, and patterns of healthcare usage in the Kingdom of Saudi Arabia (KSA).
2. Determine what helps and what hinders the adoption and use of collaborative healthcare models in Saudi Arabia. Pay special attention to the organizational, technical, and cultural aspects that affect these models' efficacy.
3. Investigate how patients and healthcare professionals in Saudi Arabia see collaborative healthcare models. Look into attitudes toward teamwork, problems that have been encountered, and ideas for development to improve patient outcomes in the digital age.

Research Question

1. What is the impact of digitally enabled collaborative healthcare models on important patient care outcomes in the Kingdom of Saudi Arabia (KSA) such as clinical efficacy, patient satisfaction, and patterns of healthcare utilization?
2. What are the primary drivers of acceptance and implementation of collaborative healthcare models in the Kingdom of Saudi Arabia, with particular emphasis on organizational, technical, and cultural factors?
3. What attitudes toward cooperation, difficulties encountered, and recommendations for change to improve patient care outcomes in the digital age are healthcare practitioners' and patients' perspectives and experiences with collaborative healthcare models in KSA?

Aim of the Study

The Aim of current systematic review is to examine the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in KSA.

Methods

The standards of the Preferred Reporting Items for Systematic Reviews (PRISMA) were adhered to by this systematic review.

Identifying Studies through Search Methods

In 2023, a search was made of databases and publications including Google Scholar, Research Gate and PsycINFO for the years 2019 to 2023 in order to address the methods for the examining the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in Saudi Arabia.

Table 1

Syntax Search and Search Data Base

No	Database	Syntax Title	Year	No of Researches
1	Google Scholar	Syntax 1: " Collaborative Healthcare Model" "Patients Care Outcomes " and "KSA"	2019-2023	292
		Syntax 2: "examine the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in KSA."		38
2	Research Gate	Syntax 1: "" Collaborative Healthcare Model" "Patients Care Outcomes " and "KSA"	2019-2023	209
		Syntax 2: "examine the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in KSA."		55
3	PsycINFO	Syntax1: " Collaborative Healthcare Model" "Patients Care Outcomes " and "KSA"	2019-2023	149
		Syntax 2: "examine the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in KSA.."		68

Statistics from the Data Base

The study utilized Google Scholar, Research Gate and PsycINFO databases to identify relevant research publications from 2019-

2023. The most significant articles were found in Google Scholar 330 and Research Gate 264 whereas PsycINFO had 247 demonstrating thoroughness in the scientific search. The total researches were searched as 841 .Systematic Review Criteria for examine the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in KSA.

Inclusion and Exclusion Criteria

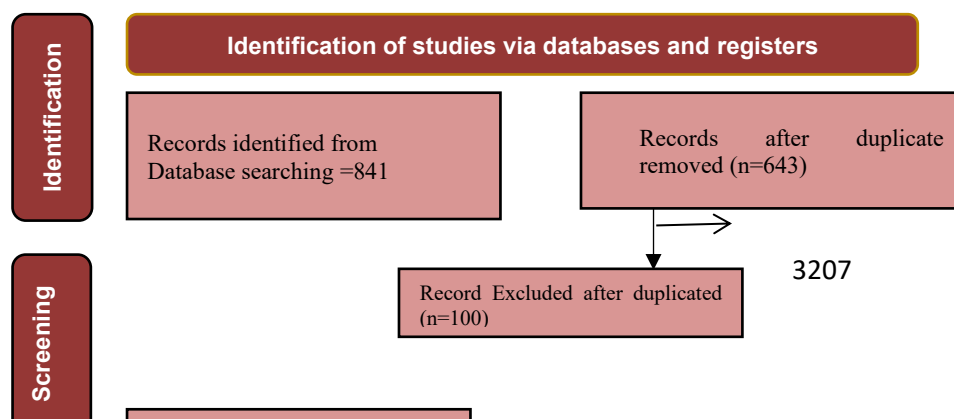
Research were included if they satisfied the following requirements: Three types of research projects are being considered: (1) an empirical full-text format study in English; (2) case-control, cross-sectional, future, and retroactive cohort research projects; and (3) an analysis of how well collaborative healthcare models work in the digital age to improve patient care results. (4) The research findings were released between 2019 and 2023.

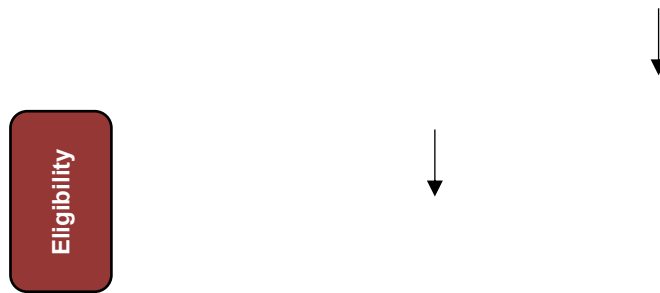
Furthermore, studies on the efficiency of collaborative healthcare models in attaining better patient care outcomes in the digital age have not been published in English-language literature. All research that are included in gray articles for limited-edition studies but leave out important details are not taken into account.

Gathering and Analysing Data

Using PRISMA criteria, the researcher conducted an independent evaluation and gathered citations. The research process began with a screening of the title and abstract, eliminating studies that did not match the inclusion criteria. Next, a full-text screening of publications that may be relevant was carried out, eliminating more irrelevant articles and adding the reasons for exclusion to the study selection flow diagram.

Figure 1 PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and databases





Result

Quality Assessment

The included studies were evaluated for quality and methodological rigor using suitable instruments, such as the Joanna Briggs Institute Critical Appraisal Checklist for different research designs. The evaluation took into account variables including sample size, data gathering techniques, research design, and potential biases. The quality evaluation led to the exclusion of certain studies, but the results were nonetheless interpreted considering the strengths and limits of the respective methods.

Table 3 Assessment of the literature quality matrix

Sr #	Author	Selection of Studies		Literature Method Coverage Description		Findings Description	Quality Rating
1	Al-Kahtani, N. et al.	Yes	Yes	Yes	Yes	Yes	High
2	Chowdhury, S. et al.	Yes	Yes	Yes	Yes	Yes	High
3	Alkhamis & Miraj .	Yes	Yes	Yes	Yes	Yes	High

Sr #	Author	Selection of Studies		Literature Coverage	Method Description	Findings Description	Quality Rating
4	Young, Y. et al.	Yes	Yes	Yes	Yes	Yes	Medium
5	Rahman, R. Alanezi, F.	Yes	Yes	Yes	Yes	Yes	High
6	et al.	Yes	Yes	Yes	Yes	Yes	High
7	Al-Hanawi & Qattan	Yes	Yes	Yes	Yes	Yes	High
8	Khan, R. M. et al.	Yes	Yes	Yes	Yes	Yes	High
9	Rahman, R. & Qattan, A.	Yes	Yes	Yes	Yes	Yes	Medium
10	Walters, J. K. et al.	Yes	Yes	Yes	Yes	Yes	High
11	Hokroh, M. et al.	Yes	Yes	Yes	Yes	Yes	High
12	Alsayali, M. M. et al.	Yes	Yes	Yes	Yes	Yes	High

The systematic review of studies provided clear descriptions, methods, selection processes, literature coverage, and clear conclusions, resulting in a "High or Medium" rating for their quality.

Study

Selection

Two independent reviewers screened retrieved studies for eligibility, then reviewed full-text articles against inclusion and exclusion criteria, with disagreements resolved through discussion or consultation with a third reviewer

Table 4 Selected Studies for SR (Systematic Review)

No	Author	Research	Year
1	Al-Kahtani, N. et al.	Digital health transformation in Saudi Arabia: A cross-sectional analysis using Healthcare Information and Management Systems Society's digital health indicators	2022
2	Chowdhury, S. et al.	Transformation of health care and the new model of care in Saudi Arabia: Kingdom's Vision 2030	2021
3	Alkhamis, A. & Miraj, S. A.	Access to health care in Saudi Arabia: Development in the context of Vision 2030	2021
4	Young, Y. et al.	Transformation of Saudi Arabia's health system and its impact on population health: What can the USA learn?	2021
5	Rahman, R.	The privatization of health care system in Saudi Arabia	2020
6	Alanezi, F. et al.	Investigating healthcare practitioners' attitudes towards the COVID-19 outbreak in Saudi Arabia: A general qualitative framework for managing the pandemic	2021
7	Al-Hanawi, M. K. & Qattan, A. M.	An analysis of public-private partnerships and sustainable health care provision in the Kingdom of Saudi Arabia	2019
8	Khan, R. M. et al.	Implementing the comprehensive unit-based safety program model to improve the management of mechanically ventilated patients in Saudi Arabia	2019
9	Rahman, R. & Qattan, A.	Vision 2030 and sustainable development: State capacity to revitalize the healthcare system in Saudi Arabia	2021
10	Walters, J. K. et al.	Supporting efficiency improvement in public health systems: A rapid evidence synthesis	2022
11	Hokroh, M. et al.	Factors influencing health wearables adoption and usage in Saudi Arabia	2020
12	Alsayali, M. M. et al.	Patients' satisfaction after primary health care centers' integration with ministry of health hospitals, Jeddah	2019

Study Database

A systematic search of electronic databases identified 2021 records. After removing duplicates, 12 unique records were assessed for eligibility based on titles and abstracts.

Title and Abstract Screening

The reviewer evaluated the titles and abstracts of the identified records in the first screening. 12 studies were chosen for full-text review using this procedure. The reviewers' disagreements were settled by consensus and discussion.

Data Extraction

For assessment, a uniform data extraction form was created. Key findings, participant characteristics, research characteristics (authors, publication year), and any other pertinent information were retrieved by two reviewers separately from the selected papers. Consensus was used to settle disagreements.

Table 5 Research Matrix

Author, No Year		Aim of Study	Methodology	Sample	Setting	Conclusion
1	Al-Kahtani, N. et al. (2022)	To analyze digital health transformation in Saudi Arabia using Healthcare Information and Management Systems Society's digital health indicators	Cross-sectional analysis	Not specified	Saudi Arabia	The study provides insights into the state of digital health transformation in Saudi Arabia based on digital health indicators.
		To explore the transformation of healthcare and the new model of care in Saudi Arabia in alignment	Literature review	Not applicable	Saudi Arabia	The research highlights the evolving healthcare landscape in Saudi Arabia
2	Chowdhury, S. et al. (2021)					

Author, No Year		Aim of Study	Methodology	Sample	Setting	Conclusion
3	Alkhamis, A. & Miraj, S. A. (2021)	with Vision 2030				driven by Vision 2030.
		To examine access to healthcare in Saudi Arabia within the context of Vision 2030	Literature review	Not applicable	Saudi Arabia	The study evaluates the development of healthcare access in Saudi Arabia under the Vision 2030 initiative.
		To assess the transformation of Saudi Arabia's health system and its impact on population health, with insights for the USA	Literature review	Not applicable	Saudi Arabia	The research offers comparisons between Saudi Arabia's health system transformation and its impact on population health, providing potential lessons for the USA.
4	Young, Y. et al. (2021)					
5	Rahman, R. (2020)	To investigate the privatization of the healthcare system in Saudi Arabia	Qualitative analysis	Not specified	Saudi Arabia	The study analyzes the effects of healthcare system privatization in Saudi Arabia.
		To explore healthcare practitioners' attitudes towards the COVID-19	Qualitative framework analysis	Healthcare practitioners	Saudi Arabia	The research examines the attitudes and experiences of healthcare practitioners towards the
6	Alanezi, F. et al. (2021)					

Author, No Year		Aim of Study	Methodology	Sample	Setting	Conclusion
		outbreak in Saudi Arabia				COVID-19 outbreak in Saudi Arabia. The study evaluates the effectiveness of public-private partnerships in sustainable healthcare provision in Saudi Arabia.
7	Al-Hanawi, M. K. & Qattan, A. M. (2019)	To analyze public-private partnerships and sustainable healthcare provision in Saudi Arabia	Literature review and analysis	Not applicable	Saudi Arabia	The research evaluates the impact of implementing a safety program model on the management of mechanically ventilated patients in Saudi Arabia.
8	Khan, R. M. et al. (2019)	To assess the implementation of the comprehensive unit-based safety program model in Saudi Arabia to improve the management of mechanically ventilated patients	Case study	Not specified	Saudi Arabia	The study analyzes the contribution of Vision 2030 to the revitalization of the healthcare system in Saudi Arabia.
9	Rahman, R. & Qattan, A. (2021)	To examine the role of Vision 2030 in revitalizing the healthcare system in Saudi Arabia	Literature review and analysis	Not applicable	Saudi Arabia	

Author, No	Year	Aim of Study	Methodology	Sample	Setting	Conclusion
		To support efficiency improvement efforts in public health systems	Rapid evidence synthesis	Not applicable	Not specified	The research provides synthesized evidence to support efficiency improvement efforts in public health systems.
Walters, J. K. et al.	10 (2022)					
		To investigate factors influencing health wearables adoption and usage in Saudi Arabia	Survey and analysis	Wearable device users	Saudi Arabia	The study examines factors affecting the adoption and usage of health wearables in Saudi Arabia.
Hokroh, M. et al.	11 (2020)					
		To evaluate patients' satisfaction after primary health care centers' integration with ministry of health hospitals, Jeddah	Survey and analysis	Patients receiving integrated healthcare services	Jeddah, Saudi Arabia	The research assesses patient satisfaction following the integration of primary health care centers with ministry of health hospitals in Jeddah.
Alsayali, M. M. et al.	12 (2019)					

Data Synthesis

The synthesized findings were presented through a narrative synthesis approach; the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the digital era in KSA.

Finding

No	Theme	Subtheme	Objective Reference	Research
1	Digital Health	Digital Health Transformation	Assess the impact of collaborative healthcare models leveraging digital technologies on key patient care outcomes in KSA.	Al-Kahtani, N. et al. (2022)
2	Healthcare Transformation	Vision 2030	Identify the facilitators and barriers to the implementation and adoption of collaborative healthcare models in KSA.	Chowdhury, S. et al. (2021)
3	Access to Healthcare	Access to Healthcare in KSA	Assess the impact of collaborative healthcare models leveraging digital technologies on key patient care outcomes in KSA.	Alkhamis, A. & Miraj, S. A. (2021)
4	Public-Private Partnerships	Healthcare Provision	Identify the facilitators and barriers to the implementation and adoption of collaborative healthcare models in KSA.	Al-Hanawi, M. K. & Qattan, A. M. (2019)
5	Patient Care Outcomes	Safety Programs in Healthcare	Assess the impact of collaborative healthcare models leveraging digital technologies on key patient care outcomes in KSA.	Khan, R. M. et al. (2019)

No	Theme	Subtheme	Objective Reference	Research
6	Patient Satisfaction	Integrated Healthcare Services	Explore the perceptions and experiences of healthcare providers and patients regarding collaborative healthcare models in KSA.	Alsayali, M. M. et al. (2019)
7	COVID-19	Healthcare Practitioners' Attitudes	Explore healthcare practitioners' attitudes towards the COVID-19 outbreak in Saudi Arabia.	Alanezi, F. et al. (2021)
8	Privatization of Healthcare	Healthcare System Privatization	Investigate the privatization of the healthcare system in Saudi Arabia.	Rahman, R. (2020)
9	Vision 2030	Sustainable Development	Examine the role of Vision 2030 in revitalizing the healthcare system in Saudi Arabia.	Rahman, R. & Qattan, A. (2021)
10	Public Health Systems	Efficiency Improvement	Support efficiency improvement in public health systems.	Walters, J. K. et al. (2022)
11	Health Wearables Adoption	Factors Influencing Adoption	Investigate factors influencing health wearables adoption and usage in Saudi Arabia.	Hokroh, M. et al. (2020)
12	Primary Healthcare Integration	Patient Satisfaction	Evaluate patients' satisfaction after primary healthcare centers' integration with ministry of	Alsayali, M. M. et al. (2019)

No Theme	Subtheme	Objective Reference	Research
		health hospitals in Jeddah.	

Discussion

In examining the effectiveness of collaborative healthcare models in achieving improved patient care outcomes in the Kingdom of Saudi Arabia (KSA), a synthesis of findings from various research papers provides valuable insights into different facets of the healthcare system.

Research on digital health transformation underscores the evolving landscape of healthcare delivery in KSA, emphasizing the importance of leveraging digital technologies to enhance patient care outcomes (Al-Kahtani et al., 2022). This aligns with the broader objective of assessing the impact of collaborative healthcare models on key patient care metrics. Similarly, exploration of Vision 2030 in healthcare transformation reveals strategic directions aimed at achieving sustainable development goals (Chowdhury et al., 2021). Vision 2030 serves as a catalyst for innovation and reform in healthcare, with studies identifying barriers and facilitators to the implementation of collaborative healthcare models, offering crucial insights for policymakers and healthcare leaders.

Moreover, analysis of public-private partnerships in healthcare provision highlights the role of collaborative efforts in addressing healthcare challenges and achieving sustainable healthcare delivery (Al-Hanawi & Qattan, 2019). By leveraging strengths of both sectors, partnerships contribute to enhancing healthcare access, quality, and affordability for the population. Studies focusing on patient care outcomes and satisfaction emphasize the importance of patient-centered care within collaborative healthcare models (Khan et al., 2019). Integration of patients' perspectives and experiences into care delivery leads to tailored services, ultimately resulting in improved patient satisfaction and outcomes.

In conclusion, findings from the discussed research underscore the significance of collaborative healthcare models in driving positive changes in KSA's healthcare system. Embracing digital innovations, fostering strategic partnerships, and prioritizing patient-centered care are crucial steps towards enhancing healthcare effectiveness and efficiency, ultimately leading to improved patient care outcomes and a healthier population.

Limitation & Implications

The Kingdom of Saudi Arabia (KSA)'s joint healthcare model study provides insightful information on the country's healthcare system. The research' concentration on certain areas or groups, differences in the quality of the data, methodological difficulties, and possible biases are some of its drawbacks. Furthermore, the research' temporal scope could impose constraints because of adjustments made to healthcare laws, technological advancements, and cultural norms. Notwithstanding these drawbacks, the study has implications for practice and policy. KSA may utilize the results to create laws supporting cooperative healthcare models, finance the establishment of digital health infrastructure, and concentrate on quality-improving projects. With more extensive sample sizes and rigorous study methods, future research should resolve these shortcomings.

Recommendations

The Kingdom of Saudi Arabia (KSA) has to make investments in patient involvement and multidisciplinary cooperation, as well as in digital health infrastructure. Public and commercial healthcare sectors should be integrated through partnerships. To improve patient care results and advance general health and well-being, research endeavors, ongoing education programs, and quality improvement measures are also essential. Accepting these suggestions would help KSA develop a cooperative healthcare environment that enhances patient outcomes and advances general health and wellbeing.

Conclusion

In conclusion, the examination of collaborative healthcare models in the Kingdom of Saudi Arabia (KSA) reveals both opportunities and challenges in advancing healthcare delivery and improving patient outcomes. In order to improve access, quality, and

efficiency of treatment, research emphasizes the significance of utilizing digital technology, encouraging multidisciplinary cooperation, and merging the public and private healthcare sectors. Despite several limitations, such as restrictions on generalizability and methodological difficulties, the research's conclusions provide policymakers and leaders in the healthcare industry with practical advice. KSA can create a collaborative healthcare ecosystem that puts patient-centered care first and encourages continuous improvement by making investments in digital health infrastructure, encouraging multidisciplinary cooperation, and putting quality improvement efforts into action. Going forward, it will be crucial to conduct ongoing assessment, research, and adaptation in order to manage the changing healthcare environment and guarantee that all KSA citizens receive high-quality, easily accessible, and equitable healthcare services.

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