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R E V I E W

Factors Influencing Telehealth Adoption in Managing Healthcare in Saudi Arabia: A Systematic Review

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Background: The utilization of telehealth as an effective means to provide quality services is steadily rising across different tiers of the health system. However, advancing telehealth utilization relies on the current healthcare systems' infrastructure, policies, cultural factors, and utilization requirements can influence the utilization of telehealth within Saudi Arabia's healthcare system.

Purpose: This study seeks to systematically review the literature related to examining the factors influencing telehealth adoption and identifying the barriers and determinants of the use of telehealth in Saudi's healthcare system.

Methods: A systematic review methodology was utilized in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The methodology included an exploratory and narrative design, a dual-phase search strategy, eligibility criteria, and analysis. The Joanna Briggs Institute (JBI) tool was employed to assess the quality of the chosen papers.

Results: The search yielded 3197 articles to which eligibility criteria were applied. Thirteen articles were deemed eligible, screened, and utilized for comprehensive analysis in the present study. Numerous articles indicated that the utilization of telehealth has risen in Saudi Arabia, particularly during the COVID-19 pandemic. The investment strategies have aligned with the demand for telehealth systems. The primary challenges were resource limitations and the absence of cultural frameworks conducive to the utilization of telehealth in the country.

Conclusion: Telehealth represents a major technological breakthrough in the healthcare industry. However, there are some drawbacks to its adoption. The limited availability of Telehealth technologies poses a significant challenge. Secondly, relying solely on privatization might not adequately address the issue at hand. Third, there is a lack of knowledge and awareness regarding its associated benefits among healthcare staff. The establishment of telemedicine and telehealth infrastructure necessitates significant financial investment, which serves as a major factor and obstacle to the widespread adoption of telehealth.

Keywords: telemedicine, telecare, health services, clinics, healthcare workers, quality management

Introduction

Telehealth entails the utilization of information and communication technologies to offer remote healthcare services.[1] Broadly defined, "telehealth" refers to the use of electronic and telecommunications technologies to support and promote long-distance clinical health care, patient and professional health-related education, and public health and administration.[2] Telemedicine is a real-time, interactive communication between a physician or practitioner at a remote location and a patient.[2] Another important term is Telerehabilitation, which should be regarded as a telemedicine subfield, which utilizes a system to manage rehabilitation from a distance.[3] Globally, Telehealth services are utilized to enhance access to care, particularly in rural or urban regions where healthcare resources are limited. Although there are potential advantages, health centers have not completely embraced telehealth.[4] In Saudi Arabia, telehealth utilization in healthcare system is a growing area of interest driven by technology advancements and the need for accessible healthcare services. The advancements in technology have focused on investing in inputs towards promoting the quality of healthcare outcomes. Over the years, the national approaches to managing the issues that

would affect the healthcare systems have focused on committing resources and inputs toward healthcare technologies.[5] The realization of better efficiencies, improved monitoring, accessibility and effectiveness are some of the influencers of the utilization of the healthcare technologies in Saudi Arabia. For instance, during COVID-19, the development of telehealth systems enabled the improvement in managing the patients across different locations. Additional telehealth technologies that can be effectively utilized in Saudi Arabia encompass real-time interactions between individuals or between individuals and software, as well as asynchronous communication methods like email.[6]

Despite the opportunities that come with telehealth applications, Saudi Arabia has experienced challenges in the utilization of telehealth.[7] The main problems relate to the full realization of the telehealth systems, which leads to the need to study the determinants and barriers affecting telehealth in the system. The healthcare system has been prioritizing accessibility, which is a factor of concern for the country. The issues of cost of investments and the role of the private sector remain critical in determining the success of telehealth.[7] Investments into healthcare technologies have been slow, attributed to government priorities. The implications of the high input costs go into the cost of accessing telehealth, which would affect the goals of improving accessibility for all.[1] The other gaps come in the lack of policies to support and accelerate the utilization of telehealth, which would affect the opportunities for investments in telehealth.[8] Similar findings have been found in other countries. For instance, in Brazil, the government has substantially invested in telehealth units in urban, rural, and distant basic health institutions to improve its municipality-based primary care system. However, one reported obstacle is the restricting of online consultations to physicians primarily.[6] In Malaysia, significant advancements have been made by declaring a range of telehealth-related laws, launching the "Multi-Media Supercorridor" initiative, and introducing a Lifetime Health Plan.[6] In this study, we aim to systematically search the literature to address the following question: What are the factors and barriers influencing telehealth adoption in Managing Healthcare in Saudi Arabia? The utilization of telehealth offers advantages in realizing remote healthcare management and integrating patient monitoring systems. Examining the factors and obstacles affecting telehealth utilization will aid in identifying effective strategies to ensure that Saudi Arabia and other nations can fully leverage telehealth within their healthcare systems.

Methods
Search Strategy and Data Sources
The search strategy for the systematic review was designed to identify relevant articles regarding the use of telehealth and the factors influencing its adoption in Saudi Arabia. Three primary search engines utilized include PubMed, Google Scholar, and Medline. All three databases acknowledge a broad spectrum of health-related literature We employed pertinent keywords and terms to search for papers that closely correspond with the current research project. These terms involve telehealth utilization, the role of telehealth in healthcare systems, the telehealth systems in Saudi Arabia, and the prevalence of telehealth services.

Study Selection
All pertinent research regarding the use and implementation of telehealth and telemedicine within the healthcare sector has been incorporated. The articles and publications chosen for the systematic review were conducted in the Saudi Arabia. The study encompasses Telehealth, Telemedicine, and their utilization in the Saudi Arabia. To improve the study's reliability, only research conducted within the last five years has been incorporated. The cited study projects have been evaluated as compliant with the original methodology and focus on the utilization of telemedicine and Telehealth within the healthcare sector. The studies incorporated in the research were chosen based on the PRISMA 2020 checklist.

Study Inclusion and Exclusion Criteria
Inclusion Criteria
1. The cross-sectional studies within the healthcare sector of the Kingdom of Saudi Arabia primarily examine the adoption and utilization of telemedicine in the healthcare sector.
2. Studies examining the utilization of telemedicine in healthcare settings.
3. The studies that were published within the time frame of 2018 to 2024, to ensure that the review uses updated information on the use of telehealth in Saudi Arabia.

Exclusion Criteria

1. Studies that do not primarily focus on the adoption of telemedicine in the healthcare sector of the Kingdom of Saudi Arabia.
2. Studies that published in languages other than English in the last 5 years.

The justification for the limited inclusion of studies published in the English language is that it may present additional resource constraints in terms of expertise, time, and costs. Additionally, we included only peer-reviewed studies as non-peer-reviewed research lacks a thorough quality assessment, which may introduce bias and compromise the reliability of the findings. Selection bias may arise from the sole dependence on electronic databases, thereby excluding pertinent yet unpublished studies.

Quality Assessment

In terms of the conduct, design, and analysis, the primary objective of the JBI evaluation is to investigate the methodology and quality of the processes that were utilized in order to determine the likelihood of bias. This is performed to determine whether or not bias was encountered. The JBI evaluation is the primary instrument that was developed to evaluate the efficacy and validity of the research for the purpose of determining whether the research was successful. In terms of the selection of studies, the checklist that incorporates all these methodologies offers significant value because it simplifies the process of evaluating the methodologies that are utilized by the studies.

Results

The findings of the systematic review have been displayed in Tables 1 and 2, which provide an assessment of the factors that influence the utilization of telehealth in the management of healthcare in Saudi Arabia. The PRISMA and JBI assessment tools were utilized to screen the research studies, resulting in the identification of 13 highly relevant studies for inclusion in the systematic review. A comprehensive illustration of the screening, extraction, and outcomes is provided in the PRISMA Flow Diagram (Figure 1)

The search strategy was formulated using the following keywords pertinent to each database search strategy:

("Telehealth" OR "e-health" OR "Telecare" OR "Telehealth" OR "remote monitoring" OR "mHealth" OR "Telemedicine") AND (medical system OR health system OR medical care system OR health care system)

Initially, a comprehensive search resulted in the retrieval of 3197 items from Medline, Google Scholar, and PubMed. The PRISMA diagram illustrates the methods for the selection and inclusion of 13 papers. During the evaluation process, articles considered irrelevant were systematically excluded. The research studies have been assessed based on the inclusion criteria established during the preliminary phase of the investigation.

Quality Assessment and Data Extraction

Table 1 presents the 8 cross-sectional checklists used in the JBI assessment to evaluate the quality of the selected research papers utilized in the systematic review. The results of the JBI assessment revealed that the systematic review exclusively incorporated quantitative studies employing a primary data method. An "unclear" score was assigned if insufficient information was provided to make a judgment after attempting to contact the authors. The available research studies consistently demonstrated compliance with the necessary criteria, with five studies scoring 100% ratings indicating the effectiveness and suitability of these investigations for inclusion in the systematic review. Having perfect quality scores might have a potential risk of bias, however, the evaluation has been conducted by two researchers to ensure the reliability of the quality evaluation findings.

Table 2 illustrates the findings regarding the prevalence of telehealth system utilization and the factors influencing its use in healthcare management in Saudi Arabia. Telehealth is a significant technological advancement in the healthcare sector, as it facilitates preventive care and improves long-term health outcomes for patients. It is important to note that the majority of the included studies did not include effect sizes, which made it challenging to assess the results' applicability.

Table 1 JBI Quality Assessment Checklist Scores of Included Studies

Authors	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Score
Aboalshamat, 2020[9]	Y	Y	Y	Y	Y	Y	Y	Y	100%
Alajwari et al, 2022[1]	N	Y	Y	U	Y	Y	Y	Y	75%
Aldekhyyel et al, 2021[10]	Y	Y	Y	Y	Y	Y	Y	Y	100%
Alghamdi et al, 2020[11]	Y	Y	Y	Y	Y	Y	Y	N	87.5%
Al-Hazmi et al, 2021[12]	N	Y	Y	Y	Y	N	Y	Y	75%
Almubark et al, 2022[13]	Y	Y	NA	Y	U	Y	Y	Y	75%
ALOmari & Jenkins 2021[14]	Y	Y	Y	Y	Y	Y	Y	N	87.5%
Alzahrani et al, 2022[15]	Y	N	Y	U	Y	Y	Y	Y	75%
Amin et al, 2020[7]	N	Y	Y	Y	N	Y	Y	Y	75%
Banjar & Alfaleh, 2021[8]	Y	Y	Y	Y	Y	Y	Y	Y	100%
Eddine & Zedan, 2021[16]	Y	N	Y	Y	U	Y	Y	Y	75%
Moussa et al, 2023[5]	Y	Y	Y	Y	Y	Y	Y	Y	100%
Wali et al, 2023[12]	Y	Y	Y	Y	Y	Y	Y	Y	100%

Abbreviations: Y, Yes; N, No; Unknown: NA, Not applicable.

Table 2 The Prevalence of Telehealth System Utilization and Factors Influencing Usage
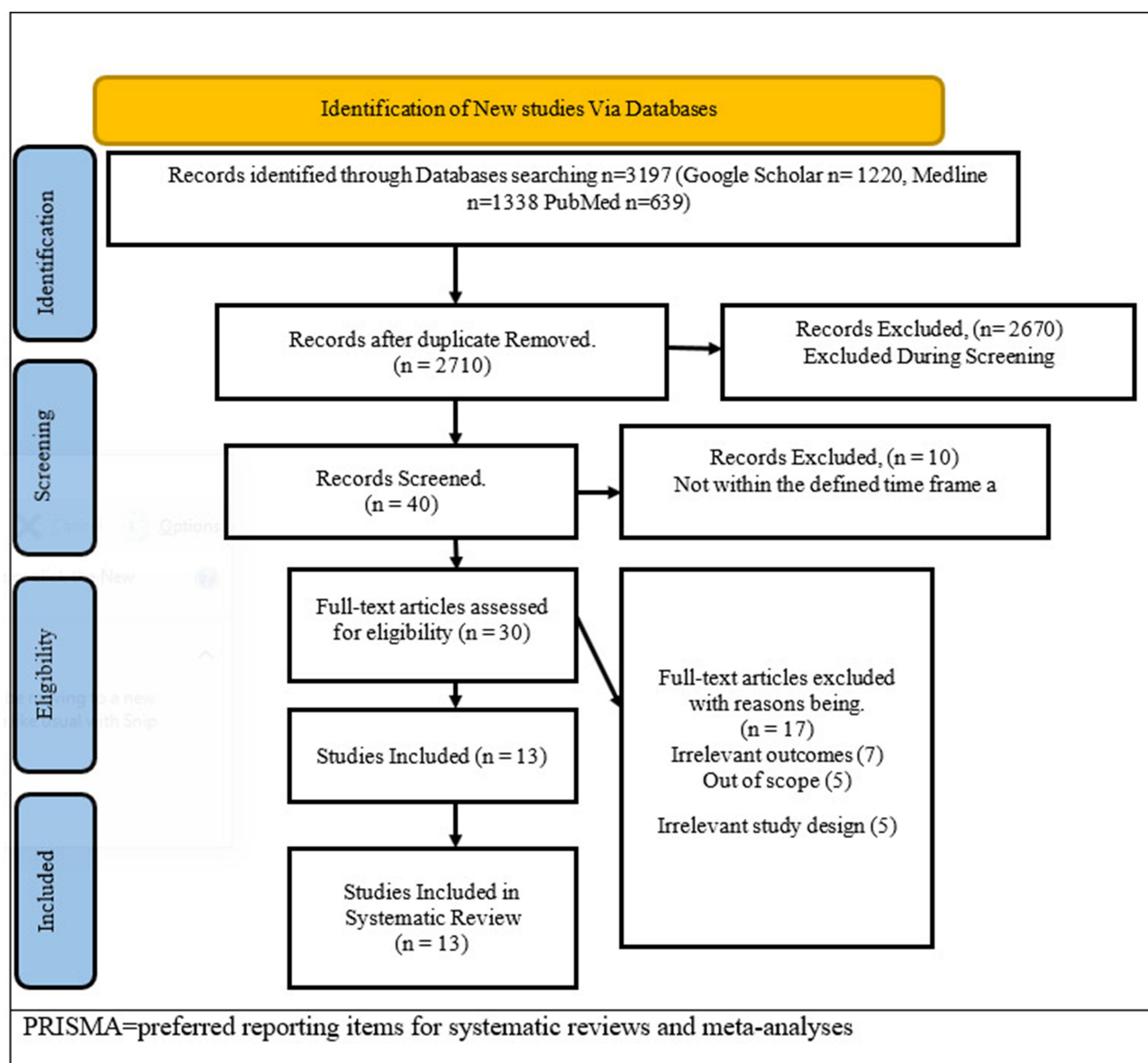
Authors	Title	Study Type	Sample size	Main Findings
Aboalshamat, 2020[9]	Awareness of, beliefs about, practices of, and barriers to teledentistry among dental students and the implications for Saudi Arabia Vision 2030 and the coronavirus pandemic	A thematic analysis methodological approach	250 dental students	This study shows that, despite low awareness of the term "teledentistry" and a lack of knowledge about it, a considerable percentage of future dental professionals are using teledentistry in Saudi Arabia, just not systematically.
Alajwari et al, 2022[1]	Knowledge and attitude of Saudi Arabian citizens towards telemedicine during the COVID-19 pandemic	Quantitative research	400 Saudi citizens	The COVID-19 pandemic increased the use of telehealth and other technologies.
Aldekhyyel et al, 2021[10]	Usability of telemedicine mobile applications during COVID-19 in Saudi Arabia: A heuristic evaluation of patient user interfaces.	Heuristic evaluation	11 patient user interfaces	The mobile applications helped provide information and intervention during the COVID-19 pandemic.
Alghamdi et al, 2020[11]	Current status of telehealth in Saudi Arabia during COVID-19.	Narrative Synthesis	Healthcare system in Saudi Arabia	There has been a significant increase in the use of telemedicine in Saudi Arabia.
Al-Hazmi et al, 2021[12]	Perspectives on telemedicine during the era of COVID-19; What can Saudi Arabia do.	Cross-sectional study in Saudi's healthcare system	Stakeholders in the healthcare sector in Saudi Arabia	The stakeholders had positive perspectives on the benefits that come with telemedicine

(*Continued*)

Table 2 (Continued).

Authors	Title	Study Type	Sample size	Main Findings
Almubark et al, 2022[13]	Telehealth clinical practice guide for occupational therapy, physical therapy, and speech and language pathology: A Saudi and Middle Eastern guide.	Cross-sectional study	100 healthcare providers in Saudi Arabia	The guide focuses on identifying the changes and benefits of the use of telehealth.
ALOmari & Jenkins 2021[14]	Exploring the Attitudes of patients towards using the Seha application (Telehealth) in Saudi Arabia during the Coronavirus epidemic.	Survey	COVID-19 patients in Saudi Arabia	The study indicated the direct benefits that telehealth has in managing healthcare needs in Saudi Arabia.
Alzahrani et al, 2022[15]	Examining Healthcare Professionals' Telehealth Usability before and during COVID-19 in Saudi Arabia.	Cross-sectional study in Saudi Arabia	20 facilities using telehealth systems	The study indicated the presence of benefits from the use of telehealth in managing COVID-19.
Amin et al, 2020[7]	The potential and practice of telemedicine to empower patient-centered healthcare in Saudi Arabia.	Critical Appraisal of Literature	29 Articles on the role of telemedicine in promoting healthcare in Saudi	Telemedicine can help promote patient-centered care
Banjar & Alfaleh, 2021[8]	Saudi Arabia's experience in implementing telemental health during COVID-19 pandemic.	Cross-Sectional	Healthcare providers in Saudi Arabia	The main challenges came in the costs and the opportunities included efficiency and effectiveness.
Eddine & Zedan, 2021[16]	Telehealth role during the COVID-19 pandemic: lessons learned from health care providers in Saudi Arabia	Survey	28 healthcare workers in Saudi Arabia	The perspectives on telehealth depend on the preparedness and readiness to accommodate telehealth.
Moussa et al, 2023[5]	Telehealth readiness of healthcare providers during COVID-19 pandemic in Saudi Arabia.	Cross-Sectional	Healthcare providers in Saudi Arabia	The main issues came from the skills and qualities to work with telehealth technologies.
Wali et al, 2023[12]	Primary Care Physician's Perception and Satisfaction With Telehealth in the National Guard Primary Healthcare Centers in Jeddah, Saudi Arabia in 2022.	Survey	Physicians in primary healthcare systems	The use of telehealth would be an effective strategy for managing the healthcare needs in Saudi Arabia.

The inadequate availability of healthcare services presents a substantial global challenge. In the past four years, Saudi Arabia has undertaken various initiatives to tackle issues related to healthcare accessibility, including the privatization of the healthcare system. However, a thorough assessment of the current academic literature indicates that dependence exclusively on privatization may be insufficient to resolve the issue in question. Consequently, it is imperative to prioritize the exploration of innovative modalities and utilize technological advancements, such as telehealth, to tackle the challenge of healthcare accessibility.[9] Saudi Arabia is currently experiencing substantial transformation through the execution of an extensive reform initiative termed Vision 2030. This roadmap directs the nation's initiatives to initiate a new phase of development across critical sectors such as healthcare, economy, and technology. Saudi Vision 2020 encompasses three themes: a dynamic society, a prosperous economy, and an aspirational nation. The identified themes have been classified into 96 strategic objectives. The investigation of telehealth in Saudi Arabia is crucial, as it may

Records identified through Databases searching n=3197 (Google Scholar n= 1220, Medline n=1338 PubMed n=639)

Identification of New studies Via Databases

Records after duplicate Removed. (n = 2710)

Records Excluded, (n= 2670) Excluded During Screening

Records Screened. (n = 40)

Records Excluded, (n = 10) Not within the defined time frame a

Full-text articles assessed for eligibility (n = 30)

Full-text articles excluded with reasons being. (n = 17) Irrelevant outcomes (7) Out of scope (5) Irrelevant study design (5)

Studies Included (n = 13)

Studies Included in Systematic Review (n = 13)

PRISMA=preferred reporting items for systematic reviews and meta-analyses

Figure 1 PRISMA Flow Diagram.

significantly contribute to the attainment of three strategic objectives delineated in Vision 2030. These objectives encompass the enhancement of healthcare services, the advancement of e-government, and the improvement of service quality provided to citizens.

Alajwari et al assert that the implementation of telehealth services was instrumental in bolstering the healthcare sector during the pandemic and crisis.[1] The prevalence of telemedicine and telehealth significantly increased during this period, with the majority of individuals and healthcare professionals utilizing digital platforms for the provision of medical services. The Ministry of Health in Saudi Arabia launched the Seha app to facilitate information dissemination, self-assessment, and teleconsultations.

The research of Alomari and Jenkins assessed the patients' attitudes about telehealth applications.[14] Simultaneously, the evidence shown by Alghamdi et al suggests that the healthcare sector in the Kingdom is undergoing a transformation through the implementation and integration of telemedicine and telehealth services.[11] This strategic initiative seeks to improve healthcare performance and attain superior patient outcomes. A considerable amount of evidence suggests that

methods such as telephone calls, messages, and analogous forms of communication are effective, feasible, and efficient in improving one's lifestyle.

The principal factor contributing to the reluctance and opposition to employing telemedicine is insufficient knowledge and awareness of its associated benefits. A considerable number of physicians demonstrate reluctance to adopt telemedicine owing to their insufficient exposure to professional development opportunities in healthcare technology. Telemedicine has been proven to significantly decrease treatment expenses and enhance time efficiency for both patients and healthcare providers. Consequently, it is integral to the improvement of the entire healthcare system.[15]

The establishment of telemedicine and telehealth infrastructure requires considerable financial investment, which constitutes a major factor and obstacle to the extensive adoption of telehealth. It is essential to investigate various themes, including confidentiality, privacy, transparency, data access, and ICT structural issues, to effectively attain the telemedicine objectives established by the Ministry of Health.[8] Moreover, the implementation of telemedicine systems not only diminishes waiting times and guarantees that healthcare providers attend to the appropriate patients but also enhances the satisfaction levels of both patients and physicians.

The effective utilization of telemedicine and telehealth services may be affected by the overall level of preparedness. The relatively low average level of preparedness may be attributed to the lack of specialized telehealth or telemedicine courses available to healthcare providers. Monetary contributions are essential for the effective execution of telehealth initiatives. Evaluating the costs and benefits of telehealth is crucial for its sustained viability. Healthcare practitioners must have a thorough understanding of the costs and benefits related to the utilization of telehealth to make informed decisions.[5]

Discussion
The Prevalence of Use of Telehealth Systems in Saudi Arabia's Healthcare System

Overall, we found that telehealth signifies a significant advancement in the healthcare sector. Nonetheless, certain disadvantages exist regarding its implementation. The restricted access to Telehealth technologies presents a notable obstacle. Secondly, depending exclusively on privatization may not sufficiently tackle the issue at hand. Third, healthcare staff exhibit a deficiency in knowledge and awareness concerning the associated benefits. The creation of telemedicine and telehealth infrastructure requires substantial financial investment, which acts as a key factor and barrier to the broad acceptance of telehealth.

Telemedicine offers distinctive and creative solutions to meet the demands of healthcare services, presenting numerous benefits, particularly in routine care and scenarios where direct physician-patient interaction is not necessary, like medical consultations. This approach aids in lowering costs and improving access to healthcare.[17] In Saudi Arabia, the use of the telehealth system has been subject to the levels of advancements.[10] Over the years Saudi Arabia has been investing in systems that would promote the realization of effectiveness, including in healthcare delivery. With the management needs increasing due to population demands, the role of telehealth has been recognized as important in addressing healthcare management needs. The development of remote healthcare processes has been part of the influencing factors, especially when dealing with the creation of access points for health.[16] The investments made in the healthcare systems have therefore enabled the increasing utilization of healthcare systems as part of improving access to care. The access to care also incorporates factors such as infrastructure costs, access to healthcare, and the quality of care used. Recent advancements in telehealth utilization have been observed in both India and the People's Republic of China, with anticipated ongoing expansion over the next decade.[6]

One of the influencing factors identified in the increasing use of telehealth systems is the COVID-19 pandemic. During the pandemic, Saudi Arabia experienced an increasing demand for healthcare services, which created a strain on the system and its actualization of healthcare quality.[1] The government-initiated efforts to have strategic procedures that would help sustain the quality of care that the patients access. The pandemic created the need for home-based care, which came with the demand for the use of telehealth systems. Through telehealth, the findings indicated access to information, healthcare services, and the ability to work with the systems to meet emergency needs.[18] The creation of strategic processes for managing the quality of access has remained an important baseline for actualizing the quality of care for the

healthcare system. The telehealth systems deployed promoted better patient management, through monitoring and access to the healthcare needs.

The prevalence of the use of the telehealth system considers the stakeholder aspects that would define the approaches and procedures involved in managing access to care.[19] The findings indicated the role of the cultures and perspectives on the use of telehealth as an important factor when evaluating the approaches that would deliver the intended outcomes. The culture of using technology has been increasing in Saudi Arabia, which has created opportunities for delivering the use of telehealth systems. With the management of the various healthcare conditions, the prevalence has also considered the role of privatization in Saudi's healthcare systems. Privatization has enabled the development of new facilities and measures that would help actualize the quality of care.[10] Such strategies have led to an increase in access to funding and inputs that help support the management of the healthcare delivery systems within the healthcare organization. The use of telehealth capitalizes on the technological investments and their implications in managing the use of telehealth in the healthcare system.

Determinants of Utilizing the Telehealth Systems in Saudi Arabia's Healthcare System

The use of the various health applications within Saudi's healthcare systems has been subject to the government policy and the regulations set by the health ministry. The country vests on the mandates that the ministry has in ensuring an effective approach to managing the healthcare management process.[10] The need to have a strategic approach that can help accommodate the trends in healthcare depends on the commitments made and the investments made. In Saudi Arabia, the aim has been to work with the respective policies to help actualize the goals of actualizing access to healthcare. The use of technologies has been regulated based on the impacts and the requirements while focusing on the aspects that would define the realization of reliable healthcare systems.[19] The commitments to address the growth in demand have incorporated the factors and procedures that would generate the intended processes for working with the upcoming technologies, including telehealth.

The determinants of the use of telehealth also consider the societal and economic aspects that would influence the specific aspects for influencing the use of telehealth.[1] In Saudi Arabia, the healthcare system incorporates the role of cultures and societal processes. In such a case, the use of technology has depended on the societal perspectives. The economic factors have included the costs of access and the perceptions of quality. The cost of quality is a critical factor, especially when considering the need to actualize access to various healthcare services.[19] It would be important to work with specific measures and concepts that can help provide the intended effectiveness for managing the healthcare system. The cost of developing and using telehealth systems has been linked to the slow uptake at the facility levels.[12] The complexity factor also remains a challenge affecting the social approaches toward the use of telehealth systems.

The other determinants come in the determination of the benefits that telehealth creates within the healthcare system. The stakeholder perspectives integrate the need to appreciate the role of the investments in meeting specific expectations.[11] In such cases, it would be important to work with the specific stakeholder concepts in addressing the various needs and procedures in managing the healthcare concepts. The improvement in healthcare access is one of the considerations in Saudi's healthcare system. Factors such as the long-term costs and the implications on healthcare outcomes have also been identified as important determinants. Investors in the private healthcare sector have considered such benefits, including the development of patient care and the ability to overcome geographical challenges in promoting quality access to care.[13] The patients also integrated the critical role that telehealth would play in assuring access to the quality of care expected for the healthcare processes.

Barriers to Utilizing the Telehealth Systems in Saudi Arabia's Healthcare System

Below are list of the identified barriers:

1. Insufficient knowledge, skills, and qualities among healthcare staff to effectively utilize telehealth technologies.
2. Inadequate support and involvement from stakeholders for the use of telehealth technology.
3. Inadequate patient participation and confidence in utilizing telehealth technologies.
4. Concerns regarding the expenses, efficiency, and efficacy of utilizing telehealth.
5. Insufficient infrastructure and inadequate preparedness to facilitate telehealth adoption.

In Saudi's healthcare system, one of the baselines developed is the need to promote affordability in the access to care. In such a case, the country's universal healthcare systems have focused on eliminating the costs of access to healthcare.[18] When it comes to the implications on the organizations, the focus has been on the mandates that the system plays in investments in technologies. The focus has been on increasing the facilities in the country, which overlooks the opportunities that come with telehealth.[18] Telehealth development comes with the need for initial investments in the technological infrastructure and the related concepts for building healthcare quality. In such cases, the lack of consistency in building such infrastructure is limited to the priorities that the government has.[20] The prioritizations have focused on ease of access and investments in access facilities, all which limit investments in telehealth systems.

The people factor is always an important baseline when assessing the procedures that can help in managing the healthcare processes while investing in the criteria for actualizing the intended healthcare procedures. The need to appreciate the factors and measures that would influence the commitments towards the healthcare processes comes with the different stakeholder needs.[10] With the management of specific healthcare procedures, it is necessary to consider the factors and measures that would come with the effective management of healthcare technologies. The telehealth system therefore creates opportunities to work with the respective concepts and measures for influencing better access, although it would have implications for the existing procedures. The change of cultures and perspectives to accommodate the technologies remains a challenge for most healthcare systems.[13] In Saudi Arabia, such issues have remained crucial in addressing the roles and mandates of building capacities and measures toward an effective system that can actualize quality of care. Additionally, several cultural and societal barriers may impact telemedicine use: religious and social limitations, reluctance to change, traditional views, literacy level, and language differentiation.[17] It is possible that healthcare workers, particularly women, may resist being videotaped or recorded. Fear of sharing material with other clinical staff or data loss, theft, leak, or unauthorized viewing may exist. Cultural barriers included medical and patient resistance to change. The literature also addressed why healthcare professionals oppose change: a lack of rules and policies that encourage transformation.[17]

Contemporary issues in healthcare systems have always been a factor of concern, especially when it comes to quality assurances. The use of technologies in Saudi's healthcare systems has had to work with the intended quality of care and the elimination of risks.[14] In such a case, the need to work with the commitments and measures that would govern the management of healthcare needs comes with the ability to actualize the intended goals. The use of technology has been linked to risks such as cyber security and unethical practices. Even in the use of telehealth systems, such risks pose practical barriers to the integration of the telehealth systems in the healthcare system. With Saudi Arabia committing to improving the quality of outcomes in Vision 2030, the gradual commitment towards systematic development remains an important factor for incorporating telehealth.[10] The slow uptake of technologies due to regulations remains a challenge, even in the actualization of healthcare development in Vision 2030. This delayed telehealth uptake might have a detrimental effect on access to healthcare services and raise infrastructure costs; Nonetheless, more funds have been allocated recently to promote the use of telehealth.[21] Research investigating telehealth obstacles in different countries identified many impediments. Technology acceptability and user adoption were the predominant obstacles to the use of telehealth systems in China, Ireland, and Spain.[22–24] The authors proposed programs, efforts, and policies to mitigate obstacles related to time constraints, workflow integration, workload, technological challenges, limited internet use, technological apprehension, sensory impairments, and health literacy.[25] In our reviewed papers, workload and time barriers were not explicitly explored; thus, future research might undertake qualitative and quantitative studies to explore healthcare personnel opinions on these barriers. Additionally, the lack of thorough cost-benefit analyses in the studies examined restricts the understanding of the economic viability of telehealth.

Limitations

The research findings of this study are only limited to the assessment of the factors that influence the utilization of telehealth in the management of healthcare in Saudi Arabia, and it is limited for the current period of time. The need to contextualize telehealth use to Saudi Arabia has therefore been an important factor that is lacking in most of the studies, the study would therefore help appreciate the barriers and opportunities in telehealth use in Saudi Arabia.

The current study followed the systematic review, while future researchers can conduct this research with a quantitative approach since Excluding qualitative research constrains the understanding of patient perspectives about telehealth. Additionally, there is a need for longitudinal studies to evaluate the enduring effects of telemedicine on

healthcare outcomes. In our search strategy, we relied on three significant databases: Medline, Google Scholar, and PubMed. The extensive selection of health-related documents is one of the benefits of these databases. Nevertheless, the review's comprehensiveness may be compromised by the exclusion of additional databases. Additionally, we only limited our search to published in Arabic language and grey literature and unpublished data which might introduce some publication bias in our results.

Conclusions

The use of telehealth in Saudi's healthcare system has been increasing, due to the increasing development and use of healthcare technologies. The prevalence has been related to the demand for effective access to healthcare services. The access has depended on the factors and measures that would define the telehealth system, as a factor to influence the management of the healthcare needs. At the organizational level, the development of the telehealth systems would depend on the procedures that would develop the expected healthcare development system. The realization of the intended goals would help in promoting the criteria for boosting the procedures that would influence quality care. The COVID-19 pandemic created the approaches and demands for utilizing telehealth systems. The need for patient monitoring, management of healthcare needs, and the development of the required healthcare interventions have determined the utilization of telehealth systems.

The determinants of utilization of telehealth systems come with the identification of the systems that can derive the intended roles and inputs for improving access to quality of care. In Saudi Arabia, the policies have been instrumental in regulating the use of technologies in healthcare, The other determinants are the cultures of using technologies, which would influence the acceptance of the various technologies that would influence the development of the effectiveness of healthcare. The other determinant came in the role of Vision 2030 in influencing the achievements of healthcare technologies, which can help sustain the use of telehealth within the systems.

The barriers to the utilization of telehealth systems have also been a significant consideration in Saudi's healthcare system. With the management of the healthcare system prioritizing the development of the intended quality and accessibility, the gaps in sustaining and addressing the telehealth systems have been influential. The country has also experienced challenges in accessing the infrastructural needs that would help sustain the use of the telehealth system. The other challenge comes in the cost factors, which have affected the ability to develop and actualize the intended goals that come with the management of healthcare quality needs. The gaps in the skills available also affect the ability to realize the benefits that would come from the use of telehealth systems in the country.

Recommendations

- Developing regulations that would influence the use of telehealth, especially when it comes to improving the role of healthcare technologies.
- Creating regulations to encourage the role of privatization in managing and influencing healthcare developments and success in the organization, the focus would be to improve the resources that can help improve access to telehealth systems.
- For future research, the focus would be on the healthcare models that would focus on and depend on the telehealth system. The aim would be to capitalize on telehealth to improve access to quality care for the population.
- A mixed-methods strategy for future study is recommended to overcome the difficulties in fully capturing the complexities of telehealth adoption.

Governments should provide financial subsidies for telehealth infrastructure or incentives for private sector involvement.

Disclosure

The authors report no conflicts of interest in this work.

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