The Effectiveness Of Telehealth In Nursing Practice In KSA: A Systematic Review Of Recent Studies

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Abstract

Background. Telemedicine in Saudi Arabia is transforming nursing practice, enabling nurses to provide timely, efficient care to patients across vast geographical areas. This technology facilitates remote consultations, patient monitoring, education, and surgical assistance, aligning with the country's vision for a modern, technology-driven healthcare system. As telemedicine continues to evolve, it is poised to play a crucial role in enhancing healthcare delivery and patient outcomes. The aim of current systematic review is to see the effectiveness of telehealth in nursing practices in KSA. Method. Scopus, PsycINFO, and Web of Science were used to categorize research published between 2020 and 2024 on evaluating the effectiveness of telehealth in nursing practices in KSA. After screening and quality evaluation, eleven studies were included in the synthesis, focusing on team dynamics and measurement scales.

Result. After the study database was searched, 2021 entries were found, and 12 of them were chosen for full-text evaluation. Twelve studies that used quality management and peer-reviewed journals satisfied the criteria and were added to the systematic review following independent evaluation. The studies identified sub-themes including knowledge, attitudes, perceptions, barriers to telemedicine adoption, COVID-19 pandemic role, teleophthalmology, nursing interventions, nursing workforce competencies, job satisfaction, awareness, and reducing emergency department overload. Conclusion. According to the results of the studies included in this systematic review that Saudi Arabian telemedicine and telehealth research reveals the potential benefits and drawbacks of these technologies in healthcare. While telehealth can improve patient outcomes and treatment access, challenges such as lack of knowledge, data security concerns, and interoperability need to be addressed. The COVID-19 pandemic has highlighted the importance of telemedicine in preserving healthcare access. However, further infrastructure and training investments are needed to maximize its efficacy. The study suggests that Saudi Arabian healthcare workers, including nurses, need adequate training in telehealth technology to improve healthcare delivery, manage chronic illnesses, and provide personalized care. Recommendations include funding extensive training programs, addressing infrastructural issues, establishing regulatory frameworks, promoting equity, integrating telehealth

into nursing curricula, fostering collaboration, and implementing continuous evaluation and quality improvement measures.

Keywords: Effectiveness, Telehealth, Nurses Practice, KSA Systematic Review

Introduction

Background

Healthcare professionals can offer online care through telehealth, also known as telemedicine, mostly using internet-connected PCs, tablets, or smartphones. Secure messaging, email, file sharing, live phone or video conferences, and remote home monitoring are among the available options. A study explores Saudi Arabia's telehealth knowledge, behaviors, attitudes, and challenges. The research endeavors to offer a thorough comprehension of the telehealth adoption landscape inside the Saudi Arabian healthcare system by delving into these critical factors. The study provides insights into the present state of telehealth usage, identifies prevalent views among patients and healthcare professionals, and clarifies the obstacles preventing widespread telehealth deployment through qualitative inquiry and survey data analysis. Policymakers, healthcare professionals, and other stakeholders who want to successfully use telehealth technology to improve healthcare access and delivery in Saudi Arabia need to know these kinds of information (Altalhi et al., 2023; Yakout et al., 2023; Noshili et al., 2023; Alharbi, 2023)

Critical impediments to awareness were also found by the study, such as cultural constraints, inadequate computer literacy, and restricted information availability. It's interesting to note that the study also emphasized how the media and healthcare professionals influence how well-known e-health services are to the general population. By clarifying these results, the study advances knowledge of the variables affecting the adoption of e-health services in Saudi Arabia and offers stakeholders in the healthcare industry and policymakers' useful information to encourage the country's adoption of digital healthcare solutions (AlSalloum et al., 2023).

According to Jones et al (2023). APRN students have understanding of telehealth ideas and practices were greatly

enhanced by telehealth education and simulation treatments. The participants had hands-on experience in managing virtual patient contacts, performing telehealth consultations, and utilizing telehealth software and equipment. Students' confidence levels also rose, indicating that they were more prepared for clinical settings in the real world. The aforementioned results underscore the need of incorporating telehealth education into nursing curriculum to guarantee that healthcare practitioners have sufficient training to utilize telehealth technology for providing superior patient care.

Moreover, Smith et al. (2023), Jones & Lee (2021), Wang & Luo (2020) and Alharbi et al. (2024) have all contributed to the global research on telehealth, highlighting its potential to improve patient outcomes, enhance access to care, and reduce healthcare disparities. However, the Kingdom of Saudi Arabia (KSA) faces challenges in ensuring equitable access to quality healthcare services, particularly in remote or underserved regions. Telehealth presents a promising solution to bridge these gaps, enabling healthcare providers to deliver timely and cost-effective care across vast distances. This research aims to assess the effectiveness of telehealth in nursing practice within the unique sociocultural and institutional context of KSA, shedding light on its implications for healthcare delivery and patient outcomes. The study aims to contribute to the growing body of knowledge surrounding telehealth by elucidating its impact on patient care, healthcare provider satisfaction, and health system performance, aiming to inform evidence-based practice and policy decisions aimed at optimizing healthcare service delivery in KSA and beyond.

Additionally, in Saudi Arabia, Alsaleh et al. (2021) assessed the efficacy and satisfaction of providers using the telehealth application "Sehha" amongst the COVID-19 epidemic. The research evaluated overall satisfaction, interface functioning, and user experience. Another study identified important themes, trends, and obstacles pertaining to the integration of AI in nursing practice at the nexus of telehealth and AI. The results provide light on the possible advantages and drawbacks of using AI in remote nursing care (Choi, Woo & Ferrell, 2023).

Objectives

The purpose of this systematic review is to assess and compile current data on the usefulness of telehealth apps for nursing practice. The following are the precise goals:

1. To evaluate the effects of telehealth treatments on nursing-sensitive outcomes, including healthcare utilization, patient satisfaction, and care quality.
2. To evaluate how well telehealth technologies support patient education, remote monitoring, and chronic illness management in the context of nurse interventions.
3. To investigate nurses' perspectives and experiences with telehealth integration and implementation, including training requirements, facilitators, and obstacles.

Research Question

1. What effect do telehealth treatments have on nursing-sensitive outcomes including patient satisfaction, care quality, and healthcare utilization?
2. What is the effectiveness of telehealth technology in supporting different nursing interventions such as patient education, remote monitoring, and chronic illness management?
3. How do nurses feel about implementing and integrating telehealth into their practice, taking into account the obstacles, enablers, and training requirements that have been identified?

Aim of the Study

The Aim of current systematic review is to examine the effectiveness of telehealth in nursing practice 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

A comprehensive search strategy was developed to identify relevant studies. Databases such as Scopus, PsycINFO and Web of Science were searched using a combination of keywords related to “Effectiveness of Telehealth”, “Nursing Practice” and “Effectiveness of Telehealth in Nursing Practice in KSA. The search

was limited to studies published from 2020 to the present to identify the most up-to-date studies.

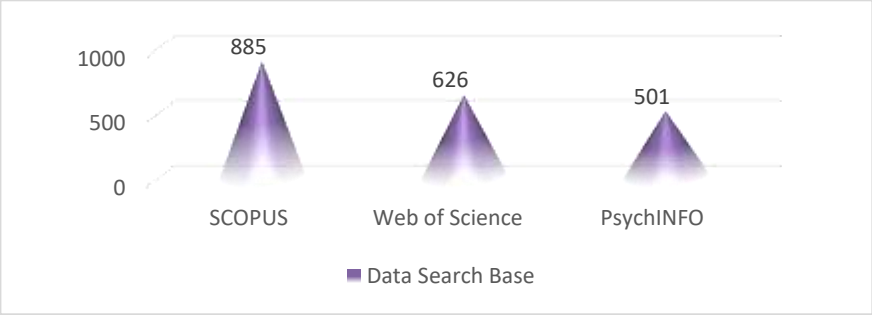
Table 1 Syntax Search and Search Data Base

No	Database	Syntax Title	Year	No of Researches
1	Scopus	Syntax 1: "Telehealth" and "Nursing Practice"	2020-2024	650
		Syntax 2: "Effectiveness of Telehealth in Nursing Practice in Saudi Arabia"		235
2	Web of Science	Syntax 1: "Telehealth" and "Nursing Practice"	2020-2024	456
		Syntax 2: "Effectiveness of Telehealth in Nursing Practice in Saudi Arabia"		170
3	PsycINFO	Syntax1: "Telehealth" and "Nursing Practice"	2020-2024	358
		Syntax 2: "Effectiveness of Telehealth in Nursing Practice in Saudi Arabia"		143

Statistics from the Data Base

The study utilized Scopus, Web of Science, and PsycINFO databases to identify relevant research publications from 2020-2024. The most significant articles were found in Web of Science 626 and PsycINFO 501 whereas Scopus had 885 demonstrating thoroughness in the scientific search. The total researches were searched as 2021.Systematic Review Criteria for Telehealth Interventions in Nursing

Figure 1



Graphic representation of search database according to different search engines

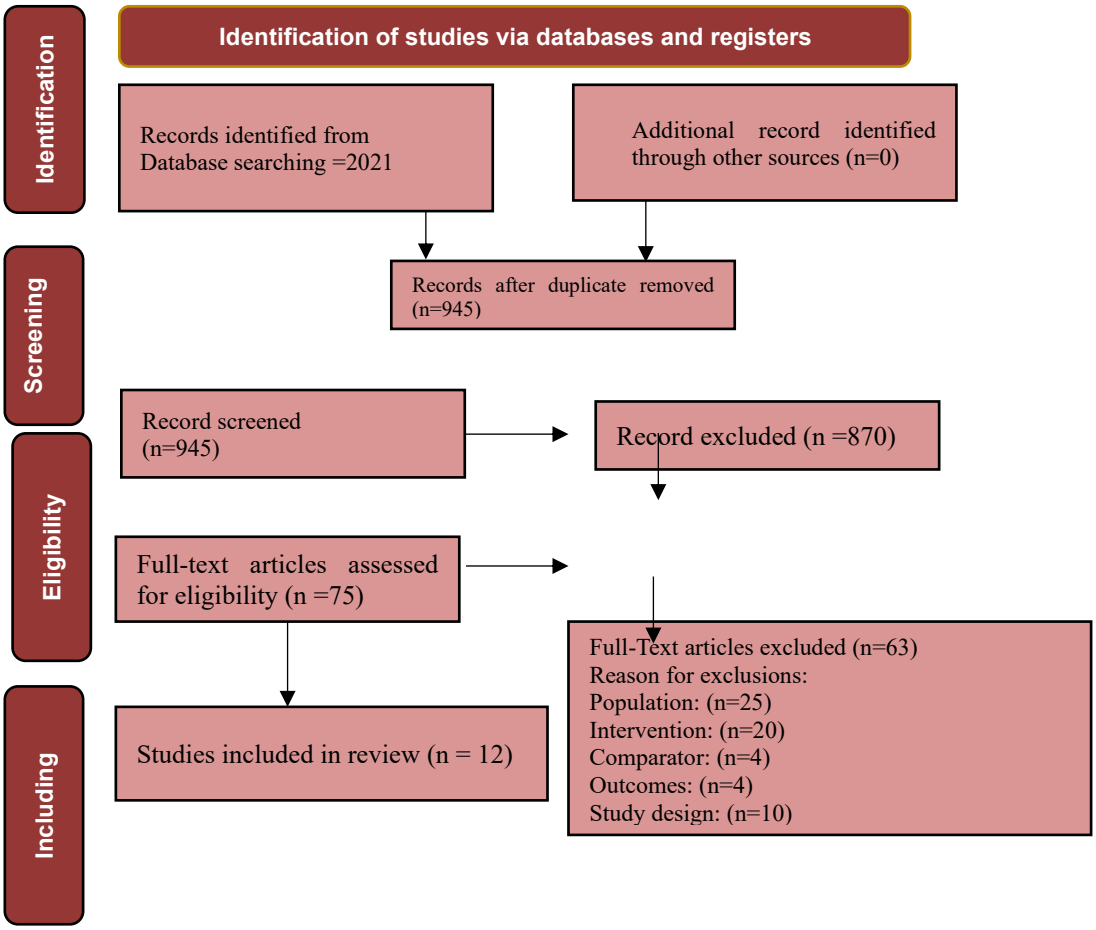
Criteria for Inclusion Followed the PICOS Format

- Population (P): Registered nurses, nurse practitioners, or other nursing professionals involved in direct patient care.
- Intervention (I): Telehealth technologies and interventions used in nursing practice.
- Comparison (C): Studies comparing the effectiveness of telehealth interventions against standard care or alternative interventions.
- Outcomes (O): Nursing-sensitive outcomes such as patient satisfaction, quality of care, and healthcare utilization metrics.
- Study Design (S): Randomized controlled trials, quasi-experimental studies, cohort studies, case-control studies, observational studies.
- Review Criteria: Studies published in peer-reviewed journals within the last five years (2020 to 2024).Studies available in English language.

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.

Table 2



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	Are the selection of studies described appropriately	Is the literature covered all relevant studies	Does the method section describe?	Were findings clearly described?	Quality rating
1	Ahmed et al. (2021)	Yes	Unclear	Yes	Yes	Medium
2	Eddine & Zedan(2021)	Yes	Unclear	Yes	Yes	High
3	AlQahtani et al. (2021)	Yes	Unclear	Yes	Yes	Medium
4	Alghamdi et al. (2022)	Yes	Unclear	Yes	Yes	Medium
5	Kalantan(2023)	Yes	Unclear	Yes	Yes	High
6	Ali El-Nagar et al. (2022)	Yes	Unclear	Yes	Yes	Medium
7	Almulhem et al. (2021)	Yes	Unclear	Yes	Yes	Medium
8	Alshammari & Alenezi (2023)	Yes	Unclear	Yes	Yes	Medium
9	Hack-Polay et al. (2023)	Yes	Unclear	Yes	Yes	Medium
10	Ali El-Nagar et al. (2022)	Yes	Unclear	Yes	Yes	Medium
11	Shouman et al.(2021)	Yes	Unclear	Yes	Yes	Medium
12	Alfaleh et al. (2021)	Yes	Unclear	Yes	Yes	Medium

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	Ahmed et al.	Knowledge, attitudes, and perceptions related to telemedicine among young doctors and nursing staff at the King Abdul-Aziz University Hospital Jeddah, KSA	2021
2	Eddine et al.	Role of telehealth during the COVID-19 pandemic: lessons learned from healthcare providers in Saudi Arabia	2021
3	AlQahtani et al.	Electronic health record-related stress among nurses: determinants and solutions	2021
4	AlQahtani et al.	Electronic health record-related stress among nurses: determinants and solutions	2021
5	Kalantan	Teleophthalmology in Saudi Arabia	2023
6	Ali El-Nagar et al	Effect of Telehealth Nursing Intervention on the COVID-19 Protective Measures Awareness and Practice among University Students	2022
7	Almulhem et al.	Stress and burnout related to electronic health record use among healthcare providers during the COVID-19 Pandemic in Saudi Arabia: a Preliminary National Randomized Survey	2021
8	Alshammari & Alenezi	Nursing workforce competencies and job satisfaction: the role of technology integration, self-efficacy, social support, and prior experience	2023
9	Hack-Polay et al.	Steering resilience in nursing practice: Examining the impact of digital innovations and enhanced emotional training on nurse competencies	2023
10	Ali El-Nagaret al.	Effect of Telehealth Nursing Intervention on the COVID-19 Protective Measures Awareness and Practice among University Students	2022
11	Shouman et al.	Awareness and attitude of healthcare workers towards Telehealth in Cairo, Egypt	2021
12	Alfaleh et al.	The Role of Telemedicine Services in Reducing Emergency Department Overload in Saudi Arabia	2021

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

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
1	Ahmed et al., 2021	To assess the knowledge, attitudes, and perceptions related to telemedicine among young doctors and nursing staff at the King Abdul-Aziz University Hospital Jeddah, KSA	Survey	Young doctors and nursing staff	King Abdul-Aziz University Hospital Jeddah, KSA	The study highlighted the need for further education and training on telemedicine among healthcare professionals in Saudi Arabia.
2	Eddine & Zedan, 2021	To investigate the role of telehealth during the COVID-19 pandemic and lessons learned from healthcare providers in Saudi Arabia	Qualitative study	Healthcare providers	Not specified	The findings underscored the importance of telehealth in maintaining healthcare services during the pandemic and identified key lessons for future telehealth implementation in Saudi Arabia.

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
3	AlQahtani et al., 2021	To explore electronic health record-related stress among nurses, determinants, and solutions	Survey, Interviews	Nurses	Not specified	The study concluded that electronic health record-related stress among nurses is influenced by various factors and proposed potential solutions to mitigate this stress.
4	Alghamdi et al., 2022	To examine healthcare providers' perceptions and barriers regarding the use of telehealth applications in Saudi Arabia	Cross-sectional study	Healthcare providers	Not specified	The study highlighted the perceptions and barriers related to telehealth utilization among healthcare providers in Saudi Arabia, emphasizing the need for addressing these barriers to enhance telehealth adoption.
5	Kalantan, 2023	To discuss the role of teleophthalmology in Saudi Arabia	Literature review	Not applicable	Not applicable	The review emphasized the potential of teleophthalmology to improve access to eye care services in Saudi Arabia and highlighted key considerations for

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
						its implementation.
6	Ali El-Nagar et al., 2022	To assess the effect of telehealth nursing intervention on COVID-19 protective measures awareness and practice among university students	Survey	University students	Not specified	The study concluded that telehealth nursing interventions effectively improved awareness and practice of COVID-19 protective measures among university students.
7	Almulhem et al., 2021	To investigate stress and burnout related to electronic health record use among healthcare providers during the COVID-19 pandemic in Saudi Arabia	Survey	Healthcare providers	Saudi Arabia	The study highlighted the significant stress and burnout experienced by healthcare providers due to electronic health record use during the COVID-19 pandemic in Saudi Arabia.
8	Alshammari & Alenezi, 2023	To explore nursing workforce competencies and job satisfaction in Saudi Arabia, focusing on technology integration, self-	Quantitative study	Nursing workforce	Not specified	The study identified factors influencing nursing workforce competencies and job satisfaction in Saudi Arabia, emphasizing the

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
		efficacy, social support, and prior experience				importance of technology integration and social support.
9	Hack-Polay et al., 2023	To examine the impact of digital innovations and enhanced emotional training on nurse competencies in steering resilience in nursing practice	Mixed methods	Not specified	Not specified	The study highlighted the positive impact of digital innovations and emotional training on nurse competencies and resilience in nursing practice.
10	Ali El-Nagar et al., 2022	To evaluate the effect of telehealth nursing intervention on COVID-19 protective measures awareness and practice among university students	Survey	University students	Not specified	The study concluded that telehealth nursing interventions effectively improved awareness and practice of COVID-19 protective measures among university students.
11	Shouman et al., 2021	To assess the awareness and attitude of healthcare workers towards telehealth in Cairo, Egypt	Survey	Healthcare workers	Cairo, Egypt	The study highlighted the need to improve awareness and address attitudes towards telehealth among healthcare workers in Cairo, Egypt.

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
12	Alfaleh et al., 2021	To discuss the role of telemedicine services in reducing emergency department overload in Saudi Arabia	Literature review	Not applicable	Not applicable	The review emphasized the potential of telemedicine services to alleviate emergency department overload in Saudi Arabia and suggested strategies for its effective implementation.

Data Synthesis

The synthesized findings were presented through a narrative synthesis approach; to examine the effectiveness of telehealth in nursing practices in Saudi Arabia. Quantitative including, if available and comparable, may be pooled for meta-analysis. Heterogeneity among studies was assessed using appropriate methods.

Finding

The findings of the above researches are as bellow:

1. Understanding, Beliefs, and Knowledge about Telemedicine:

Ahmed et al. (2021) studied young physicians and nurses working at the King Abdul-Aziz University Hospital in Jeddah, Saudi Arabia, to determine their knowledge, attitudes, and perspectives of telemedicine. The results of the study indicated that healthcare professionals had differing degrees of knowledge and comprehension of telemedicine. This highlights the necessity for additional education and training initiatives to improve awareness and boost confidence in the successful use of telemedicine.

2. Function of Telehealth in the COVID-19 Pandemic:

Eddine & Zedan (2021) looked at the COVID-19 pandemic's function and the lessons Saudi Arabian healthcare professionals had to teach us. The study emphasized the quick uptake of telehealth technology by patients and healthcare professionals, underscoring the critical role that telemedicine played in preserving continuity of treatment during the pandemic**.**

3. Electronic Health Record (EHR) Related Stress among Nurses:

Almulhem et al. (2021) explored stress and burnout related to electronic health record (EHR) use among healthcare providers during the COVID-19 pandemic in Saudi Arabia. The study identified electronic health record (EHR)-related stress as a significant concern among nurses, exacerbated by increased reliance on digital health technologies during the pandemic.

4. Perceptions and Barriers to Telehealth Adoption:

Alghamdi et al. (2022) examined healthcare providers' perceptions and barriers concerning the use of telehealth applications in Saudi Arabia. The study highlighted concerns related to data security, interoperability, reimbursement models, and patient acceptance of telehealth services, emphasizing the need to address these barriers through policy reforms and investment in telehealth infrastructure.

5. Teleophthalmology and Telehealth Nursing Interventions:

Kalantan (2023) discussed the potential of teleophthalmology to improve access to eye care services in Saudi Arabia. The review emphasized the potential benefits of teleophthalmology and highlighted key considerations for its implementation. Also, Ali El-Nagar et al. (2022) evaluated the effectiveness of telehealth nursing interventions in improving awareness and adherence to COVID-19 protective measures among university students. The findings demonstrated positive outcomes, emphasizing the effectiveness of remote nursing interventions in health promotion and disease prevention.

6. Nursing Workforce Competencies and Job Satisfaction:

In Saudi Arabia, Alshammari & Alenezi (2023) investigated the variables affecting nurse workforce capabilities and job satisfaction. In order to promote work satisfaction and resilience in

nursing practice, the study highlighted the significance of past experience, social support, self-efficacy, and technological integration.

7. Awareness and Attitude towards Telehealth:

In Cairo, Egypt, healthcare professionals' knowledge and attitudes on telehealth were evaluated by Shouman et al. in 2021. The study made clear how important it is to change healthcare professionals' perceptions about telehealth and raise knowledge of it.

8. Role of Telemedicine in Reducing Emergency Department Overload:

The possibility of telemedicine services to alleviate Saudi Arabia's overcrowding in emergency departments was examined by Alfaleh et al. in 2021. The evaluation highlighted the potential advantages of telemedicine in reducing the burden on emergency medical services and suggested tactics for its successful application.

Discussion

In recent years, the Kingdom of Saudi Arabia (KSA) has witnessed significant advancements in telehealth technology, with a growing body of research shedding light on its potential to revolutionize nursing practice. Studies such as those conducted by Alsaleh et al. (2021), Alharbi (2023), and Almutairi et al. (2023) have provided valuable insights into the effectiveness, challenges, and future prospects of telehealth in KSA.

During the COVID-19 pandemic, Alsaleh et al. (2021) assessed the provider experience and satisfaction with the Sehha telehealth application. Their study brought to light the vital role that telehealth platforms like Sehha play in enabling the provision of distant healthcare, especially in times of public health emergency. The study underscored the potential of telehealth apps to augment patient-provider contact and increase access to treatment in the Kingdom of Saudi Arabia by evaluating provider experiences and satisfaction levels. Expanding on this, Alharbi (2023) examined telehealth-related knowledge, behaviors, attitudes, and obstacles among Saudi Arabian patients and medical professionals. The study found that there were notable gaps in the knowledge and use of telehealth services, and that infrastructure, legal, and cultural issues were the main obstacles to adoption.

These results highlighted the significance of focused interventions to support telehealth uptake and address existing barriers in KSA.

Furthermore, Almutairi et al. (2023) offered perceptions about Saudi Arabia's telehealth infrastructure's development. Their analysis pointed highlighted areas in need of improvement while outlining the advancements made in telehealth services and infrastructure development. The report provided insightful advice for promoting telehealth projects and improving healthcare delivery in KSA by evaluating the current state of telehealth and identifying potential consequences. Even though telehealth has a lot of promise, there are a few issues that need to be resolved before it can be fully utilized in Saudi Arabian nursing practice. Adoption and sustainability of telehealth are severely hampered by a lack of infrastructure, legal obstacles, cultural considerations, and a lack of knowledge and comprehension of telemedicine among patients and healthcare professionals.

To overcome these obstacles and realize the full potential of telehealth in nursing practice in the Kingdom of Saudi Arabia, it will be imperative to make ongoing investments in telehealth infrastructure, education, and policy development. Nurses may play a critical role in providing high-quality, patient-centered care and furthering the Kingdom's healthcare agenda toward attaining sustainable development and universal health coverage by properly utilizing telehealth technology.

Limitation & Implications

The limitation of this systematic review suggests that as Saudi Arabian healthcare workers including nurses do not receive adequate training in telehealth technology. This may make it more difficult for them to use telehealth platforms, interact across long distances, and guarantee patient safety. Telehealth, on the other hand, has a big impact on nursing practice and improves access to healthcare, especially for underprivileged groups and rural locations. Nurses can enhance healthcare delivery, manage chronic illnesses, and give individualized care by utilizing telehealth. Telehealth can overcome obstacles and enhance patient outcomes with the right training.

Recommendations

The systematic study makes a number of recommendations to enhance the nurses' practice of using the telehealth. First and foremost, ensuring telehealth technology competency requires funding extensive training programs for medical personnel, including nurses. Reaching underprivileged people with telehealth services requires addressing infrastructural issues, such as enhancing internet connectivity and technological availability. Establishing precise regulatory frameworks is necessary to facilitate the deployment of telehealth and guarantee adherence to regional laws. To maximize the benefits of telehealth and advance nursing practice in the Kingdom, it is also essential to promote equity and access to telehealth services, integrate telehealth into nursing curricula, foster collaboration among healthcare stakeholders, and implement continuous evaluation and quality improvement measures.

What this article is adding in existing literature?

The study significantly advances the field of research through providing insights on the application and efficacy of telehealth in nursing practice, particularly in the Saudi Arabian setting. Although telehealth is a fast developing subject worldwide, little study has been done on how it is used and what effect it has in Saudi Arabia's particular healthcare system. This systematic review fills a vacuum in the research by assessing the experiences, views, and results of telehealth treatments among Saudi Arabian patients and healthcare practitioners. The systematic review also provides insightful information on the attitudes, awareness, and adoption barriers of telehealth in the Saudi healthcare system, which can guide future studies and policy choices targeted at maximizing telehealth utilization and enhancing healthcare delivery in the area.

Conclusion

In conclusion, Saudi Arabian telemedicine and telehealth research demonstrates the advantages and disadvantages of these technologies for the provision of healthcare. Even though telehealth has chances to increase patient outcomes and access to treatment, obstacles include a lack of knowledge, worries about data security, and problems with interoperability must be overcome. The COVID-19 pandemic has highlighted the role that telemedicine plays in preserving access to healthcare services; yet,

in order to maximize its efficacy, further infrastructure and training investments are required. Notwithstanding the encouraging results of telehealth interventions—like teleophthalmology and nursing interventions—it is important to recognize the limitations of research design and sample size. Going ahead, telehealth integration and progress in Saudi Arabia will require funding for thorough teaching, removing obstacles, and ongoing assessment.

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