Usability, benefits, and barriers associated with patient access to EHRs-integrated telehealth in Riyadh's hospitals

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Abstract

Background: The integration of Electronic Health Records (EHRs) with telehealth platforms represents a transformative approach in healthcare, providing critical accessibility and engagement solutions, especially during the COVID-19 pandemic. In Riyadh's hospitals, the adoption of EHR-integrated telehealth has significantly increased and offers enhanced patient care options. However, there is a need to examine its continued relevance, effectiveness, and challenges in a post-pandemic context.

Objective: This research aims to qualitatively investigate the usability, perceived benefits, and barriers of patient access to EHR-integrated telehealth from both patients and healthcare providers (HCPs) in Riyadh's hospitals. Through examining these perspectives, the study identifies key factors affecting the efficiency and limitations of telehealth in fostering healthcare accessibility, service quality, and patient satisfaction.

Methods: A qualitative research design was used, featuring semi-structured interviews with 20 patients and 10 HCPs, selected through purposive sampling for their direct experience with EHR-integrated telehealth services at Sulaiman Al-Habib Hospital in Riyadh. Thematic analysis, supported by NVivo 14 software, was employed to analyze the transcriptions and extract themes related to usability, perceived benefits, and barriers.

Results: Findings indicate that patients generally regard EHR-integrated telehealth positively, appreciating its navigability, convenience, and facilitation of remote healthcare interactions. Reported benefits included reduced physical visits, time savings, and more accessible follow-ups, contributing to greater continuity of care. However, significant barriers were identified, including technical challenges, lack of integration across hospital branches, absence of insurance payment linkages, and limited patient choice among providers. HCPs also expressed concerns over digital literacy gaps, the platform's limitations for specialized and complex care, and technical disruptions impacting care delivery.

Conclusions: EHR-integrated telehealth offers substantial potential to improve healthcare delivery in Riyadh's hospitals by enhancing access, convenience, and patient engagement. However, maximizing these benefits in Saudi Arabia's evolving healthcare landscape requires addressing identified barriers, particularly in platform stability, inter-branch integration, insurance linkages, and patient support resources.

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Results:

Findings indicate that patients generally regard EHR-integrated telehealth positively, appreciating its navigability, convenience, and facilitation of remote healthcare interactions. Reported benefits included reduced physical visits, time savings, and more accessible follow-ups, contributing to greater continuity of care. However, significant barriers were identified, including technical challenges, lack of integration across hospital branches, absence of insurance payment linkages, and limited patient choice among providers. HCPs also expressed concerns over digital literacy gaps, the platform's limitations for specialized and complex care, and technical disruptions impacting care delivery.

Conclusions:

EHR-integrated telehealth offers substantial potential to improve healthcare delivery in Riyadh's hospitals by enhancing access, convenience, and patient engagement. However, maximizing these benefits in Saudi Arabia's evolving healthcare landscape requires addressing identified barriers, particularly in platform stability, inter-branch integration, insurance linkages, and patient support resources.

Keywords

EHR-integrated telehealth; usability; patient engagement; remote healthcare; Riyadh hospitals; healthcare professionals; telehealth barriers; qualitative research

Introduction

Background

The COVID-19 pandemic has fundamentally transformed the landscape of healthcare delivery, prompting rapid adaptations in clinical practices worldwide. As healthcare providers (HCPs) faced unprecedented challenges, many rapidly embraced telehealth as a viable solution to maintain patient care while adhering to social distancing measures. For example, during the COVID-19 pandemic, telehealth usage in the United States surged by 600%, reaching nearly 17,000 visits [1]. For instance,

one healthcare organization in the United States saw only a 15% decrease in clinical volume during the early stages of the COVID-19 pandemic. This was achieved by quickly transitioning from exclusively in-person visits to conducting 87% of appointments through telemedicine within the first three weeks [2]. Furthermore, data from the Centers for Medicare and Medicaid Services indicated a rise in weekly telehealth visits from 13,000 prior to the pandemic to 1.7 million during the week of April 2020 [3]. In comparison to 2019 figures, telehealth visits in October 2020 increased by over 3,000% [4]. A significant proportion of patients utilizing telehealth in the U.S. reported enhanced access to care, while healthcare providers emphasized time efficiency and improved communication as major advantages [5].

Among the innovative approaches that emerged during this period was the integration of Electronic Health Records (EHRs) with telehealth services. EHR-integrated telehealth refers to the use of digital health platforms that combine telehealth services with comprehensive functionalities of EHRs, facilitating remote medical consultations, appointment scheduling, health progress monitoring, and management of healthcare from a distance, bypassing the need for physical visits [6]. The potential advantages of telehealth are substantial for both patients and providers. Along with removing geographical barriers, telehealth offers patients greater convenience, lowers travel-related costs, and enhances continuity of care. For providers, it expands service reach and helps address workforce shortages in rural areas [7,8]. The integration of EHRs with telehealth platforms marks a significant shift in healthcare delivery, enabling remote consultations, streamlined access to patient data, and enhanced patient-provider communication [9].

Prior studies indicated that telehealth programs integrated with a well-suited EHR system improve access to care, elevate patient satisfaction, and lower healthcare costs [10,11]. This integration has gained momentum globally, especially during the COVID-19 pandemic, when in-person visits became limited due to health risks and restrictions. However, as the world transitions into a post-pandemic era, questions arise regarding the long-term sustainability, usability, and efficiency of these services beyond crisis situations [12]. EHR data for patients managing type 2 diabetes with a record of telehealth visits found that they are typically more up-to-date with measurements that were more consistently recorded across visits compared to those without telehealth visit history [9].

Internationally, evidence suggests that EHR-integrated telehealth enhances access to healthcare services, particularly for patients in remote areas, elderly populations, and those with chronic conditions [2,13,14]. Other studies conducted internationally indicated that the integration of telehealth with EHRs improves patient satisfaction, reduces hospital readmission rates, and strengthens care coordination among healthcare providers [12,15]. In Europe, the telehealth

integrated with EHRs significantly reduced waiting times and facilitated better chronic disease management in Germany. There is excellent evidence for the efficacy of telemonitoring for some chronic illnesses, such as high BP [16]. Yet, despite these advantages, challenges persist, such as technology access disparities, patient digital literacy, and concerns over data privacy and security.

In the Saudi Arabian context, the adoption of EHR-integrated telehealth services has been notably accelerated during the pandemic, but research evaluating its continued effectiveness and patient experience in Riyadh's hospitals remains limited [17]. Riyadh, the capital of Saudi Arabia, is home to some of the country's leading healthcare institutions, which have integrated telehealth with their EHR systems [18]. However, no comprehensive studies have addressed perspectives of both patients and HCPs to explore the usability, benefits, and barriers experienced by patients in utilizing these services in Riyadh's hospitals. This research gap is critical, as healthcare infrastructure, cultural factors, and patient demographics in Saudi Arabia may influence the effectiveness and acceptance of EHR-integrated telehealth differently from global patterns.

Objective

This study aims to fill this research gap by qualitatively exploring the experiences of patients access to EHR-integrated telehealth from perspectives of both patients and HCPs in Riyadh. Specifically, it will investigate the usability of these services, the perceived benefits, and the challenges faced by patients. By addressing these aspects, the study seeks to provide insights that will inform the optimization of telehealth services in Riyadh's healthcare institutions and contribute to improving the accessibility and quality of healthcare delivery in the region.

Methods

Study Design

This study employs a qualitative research design to explore the usability, benefits, and challenges associated with patient access to EHR-integrated telehealth services within Riyadh's hospitals. A qualitative approach was chosen for its capacity to provide rich, in-depth insights into the experiences and perceptions of both patients and HCPs concerning EHR-integrated telehealth. Ethics approval was secured from the University of Manchester Research Ethics Committee 2 (UREC 2; Ref: 2024-20964-36807), along with IRB approval from the Sulaiman Al Habib Hospital administration for the procedures, participant recruitment, and interview questions. The first investigator (DA) collected data from November 2024 to February 2025 through semi-structured, in-depth face-to-face interviews, which were conducted inside Sulaiman Al Habib hospital. While electronic interviews via the secure hospital's telehealth platforms were available as part of the study context, all participants preferred in-person interviews, which provided opportunities for real-time

clarification and deeper discussion of emerging themes. Each interview lasted approximately one hour. This study design aimed to facilitate open discussions where participants could describe their experiences and perceptions in detail. The semi-structured format allowed for flexibility in questioning, enabling the researcher to probe further into emerging themes. However, as with any qualitative study, participants' willingness to share their experiences freely was influenced by various factors, including their comfort level, the interview setting, and their trust in the research process.

Recruitment

Participants were recruited from Sulaiman Al-Habib Hospital in Riyadh, which was selected due to its well-established EHR-integrated telehealth services. While telehealth has been implemented in various hospitals across Saudi Arabia, Sulaiman Al-Habib Hospital is recognized for its extensive integration of EHRs with telehealth, making it a suitable setting for this study. A purposive sampling strategy was employed to capture insights from individuals with direct experience using the platform. To ensure a range of perspectives, participants were selected based on their roles and engagement with telehealth services. The study included 10 HCPs from different specialties and departments and 20 patients with varying medical conditions and telehealth usage histories, ensuring the inclusion of individuals who interacted with the system in different capacities to provide a comprehensive understanding of its implementation and impact.

Eligible participants of patients included individuals aged 18 years or older of all genders, medical conditions, and socioeconomic backgrounds, and who have utilized EHRs-integrated telehealth services at least once in the past year, ensuring their relevant experience with these services. Eligible participants of HCPs were selected to represent a range of specialties (general practice, obstetrics/gynecology, ophthalmology, eHealth and telehealth, and dentistry) and roles, including physicians, nurses, and administrative staff involved in telehealth for at least six months to ensure their sufficient experience in using it. The recruitment process involved direct invitations extended to HCPs through department heads and professional networks, while patients were contacted based on hospital telehealth records, as well as through recruitment advertisements or brochures placed in hospital waiting areas. This strategy ensured a diverse and relevant sample of participants with varying levels of interaction with EHR-integrated telehealth, capturing a broad spectrum of experiences regarding its usability and impact. Before the start of any interviews, individual interviews with participants were implemented in the hospital to answer any participant questions and obtain verbal informed consent per guidelines of the UREC 2.

Interview Guide

The interview guide for this study was structured to capture in-depth insights from both patients and

HCPs regarding EHR-integrated telehealth services in Riyadh's hospitals. It included questions across six key areas: (1) Introduction and background information, where patients shared their demographics and medical conditions while HCPs share their specific role-related context; (2) Usability, exploring experiences with platform navigation, appointment scheduling, and communication tools; (3) Perceived benefits, capturing positive impacts on healthcare management, accessibility, and patient engagement; (4) Perceived barriers and challenges, identifying obstacles like technical issues, privacy concerns, and digital literacy limitations; (5) General experience and suggestions, which allowed participants to reflect on their satisfaction and provide recommendations for improvement; and (6) Contextual factors, examining the influence of socio-economic, organizational, and regulatory factors on telehealth access and use. This semi-structured design ensured consistency across interviews while allowing flexibility for follow-up questions, supporting a comprehensive understanding of EHR-integrated telehealth's impact on healthcare delivery in this context. Multimedia appendix 1 shows questions asked to patients and HCPs participants in the interviews. These questions are translated from English to Arabic to be easy to understand for participants and this translation has been approved by an independent specialist translator.

Qualitative Analysis

The qualitative analysis followed a systematic process to identify key themes related to EHR-integrated telehealth through comprehensive coding and thematic content analysis. Interviews were audio-recorded and transcribed verbatim. All transcripts and audio files were translated from Arabic into English and stored without personal identifiers on a secure, password-protected server to ensure participant confidentiality. Data analysis was carried out using Qualitative Research Software (QSR international NVivo software version 14). Two investigators (DA and JA) conducted a thematic content analysis of the interview transcripts to identify emerging patterns. After independently coding the first five interviews, we developed an initial codebook. This preliminary codebook was then used to recode the first five interviews and code all remaining interviews, with regular meetings held between us to discuss and resolve any coding discrepancies and refine the codebook to integrate new emerging themes and ensure consistency. Participants recruitment continued until thematic saturation was achieved [19], where no new themes or codes emerged, indicating that the data set sufficiently captured participants' experiences. Study design and interview analysis were reported using the Consolidated Criteria for Reporting Qualitative Studies 32-item checklist (Multimedia Appendix 2) [20].

Results

Participants

In total, we interviewed 30 participants (20 patients and 10 healthcare professionals, or HCPs). Regarding patient demographics, as shown in Table 1, 40% (8/20) were aged between 20–30 years, 50% (10/20) were aged 31–40 years, and 10% (2/20) were aged 41–50 years. Gender distribution was balanced, with 50% (10/20) males and 50% (10/20) females. In terms of medical conditions, 85% (17/20) of patients reported being in good health with no chronic diseases, while 15% (3/20) reported having chronic conditions such as diabetes or high blood pressure. For the duration of EHR-integrated telehealth usage, 25% (5/20) of patients had used the service for less than a year, 45% (9/20) for 1–2 years, and 30% (6/20) for 3–5 years. In 2023, 35% of patients (7/20) did not use EHR-integrated telehealth services, 45% (9/20) used them 1–4 times, 15% (3/20) used them 5–10 times, and 5% (1/20) used them 11–12 times.

For HCP demographics, participants were distributed across several positions and related roles: 4 (40%) were general practitioners who provided both in-person and remote consultations, managed chronic disease follow-ups, prescribed medications, and coordinated patient testing and treatment plans. Two participants (20%) were consultant obstetricians/gynecologists who specialized in women's health, including diagnosis, treatment, pregnancy follow-up, and conducting childbirth and other gynecological surgeries. One participant (10%) was a consultant ophthalmologist focused on treating eye diseases, while 2 participants (20%) worked in the eHealth and telehealth department, providing remote consultations, managing lab and radiology requests, and coordinating care with multidisciplinary teams. Lastly, 1 participant (10%) was a dentist handling inquiries and providing dental consultations through online services. In terms of their experience with EHR-integrated telehealth with their patients, 1 HCP (10%) had used it for less than a year, 2 (20%) for 1–3 years, and 7 (70%) had been using it for 4 years or more since the COVID-19 pandemic.

Table 1. Participants demographics

Characteristic	Value, n (%)
Patients	**20 (100)**
Age (years)	
20-30	8 (40)
31-40	10 (50)
41-50	2 (10)
Gender	
Male	10 (50)

Female	10 (50)
Medical condition	
Good (i.e. no disease)	17 (85)
Chronic disease (i.e. diabetes, high blood pressure)	3 (15)
Duration of EHRs-integrated telehealth utilization	
<1 years	5 (25)
1-2 years	9 (45)
3-5 years	6 (30)
Times EHRs-integrated telehealth used past year (2023)	
None	7 (35)
1-4 times	9 (45)
5-10 times	3 (15)
11-12 times	1 (5)
HCPs	**10**
Position and role	**(100)**
General Practitioner: Provides in-person and remote consultations, diagnoses medical conditions, manages chronic disease follow-up, prescribes medications, and coordinates tests and treatment plans.	4 (40)
Consultant Obstetrician/Gynecologist: Manages women's health, including diagnosis, treatment, pregnancy follow-up, and performing childbirth and gynecological surgeries.	2 (20)
Consultant Ophthalmologist: Specializes in diagnosing and treating eye diseases and conditions.	1 (10)
Doctor at eHealth and Telehealth department: Delivers remote consultations, diagnoses, prescribes treatments, manages lab and radiology orders, and coordinates with multidisciplinary teams for comprehensive patient care.	2 (20)
Dentist: Handles inquiries and provides dental consultations through online medical services.	1 (10)
Duration of use of EHRs-integrated telehealth with your patients	
<1 years	1 (10)
1-3 years	2 (20)
4 years and above (since Covid-19)	7 (70)

The analysis ultimately organized findings around major four themes, from perspectives of both patients and HCPs, related to EHR-integrated telehealth, including usability, perceived benefits, barriers and challenges, and general experiences and suggestions for improvements. Table 2 provides the frequency of these themes according to both patients and HCPs perspectives. We provide some of the most salient individual examples that emerged from discussion in each of these themes

Table 2. Frequency of identified themes related to access and utilization of EHR-integrated telehealth

Theme	Frequency values [a]	
	Patients	HCPs
Usability	80	42
Perceived benefits	117	80
Barriers and challenges of access and utilization	93	47
General experiences and suggestions for improvements	69	57

[a] Frequency was calculated as the total number of references related to group of codes of each theme by interviewees

Perspectives on usability of EHR-integrated telehealth

In discussion of perspectives of both patients and HCPs about the patients' experiences and usability of telehealth features integrated within the EHRs framework in Sulaiman Al Habib's hospital, interviewees discussed several ways in which this platform could form this usability, including (1) user interaction and experience, and (2) technical performance and communication issues.

Regarding user interaction and experience, the accessibility of the Al Habib app has generally received positive feedback from patients, who appreciate its user-friendly interface. Most patients found the telehealth platform's app easy to access and navigate, appreciating its straightforward layout and compatibility with different devices. One patient described their experience, stating:

> *"The app is easy to access and navigate the platform and past records anytime, anywhere, and from any electronic device "mobile, laptop, pc." [Patient 10].*

Similarly, HCPs generally perceive the Al Habib app as highly accessible for patients. They noted that the app's design is user-friendly and allows patients for easy navigation, even those with limited digital skills, enabling patients to access various services efficiently. This reflects a consensus among HCPs that the app significantly enhances patient accessibility to healthcare services. One HCP stated:

> *"The app is extremely user-friendly, and patients can complete various procedures in just a few steps, which contributes significantly to their comfort"* [HCP 2]

Patients also found scheduling appointments through the Al Habib app to be a seamless experience. Most described the process as simple and efficient, allowing them to book consultations without hassle. This sentiment reflects a common theme among users who value the convenience and

promptness of online appointment scheduling, which has significantly reduced their need to visit the hospital in person. Patient 2 noted:

> *"It is easy in terms of entering the file, then choosing the appointment and the type of clinic that the person needs*" [Patient 2].

Most HCPs generally found that the app made appointment scheduling more efficient for patients, reducing administrative burdens and enhancing the patient experience. However, they noted that high demand could occasionally lead to delays, especially during peak times. One HCP reported that:

> *"The app provides ease in booking appointments and getting medical consultations directly, but at times there has been a long wait due to the high demand for the service. Currently, the waiting time is too short"* [HCP 7].

Regarding overall ease of use, patients appreciated the simplicity of the app, which allowed them to complete tasks like accessing medical records, booking appointments, and communicating with HCPs without difficulties. The overall flexibility of the app made managing healthcare needs less cumbersome. For example, Patient 3 remarked:

> *"Everything is easy. Such as booking appointments, reading previous visits, reading previous medicines, reading vital activities (height, weight)"* [Patient 1].

Similarly, the overall ease of use of the Al Habib app was frequently highlighted by HCPs. They emphasized that patients can complete tasks such as ordering medications and scheduling consultations quickly. They reported that the app's user-friendly interface contributes positively to patient experiences and encourages continued usage. One HCP reported:

> *"The app is very easy to access and use, as patients can easily access it and organize their appointments and medical consultations at the touch of a button. Even older patients who may have difficulties with the technology have found the app simple and effective. The design of the app allows patients to easily navigate various features, such as booking appointments and managing their consultations, and this contributes to making their experience with telehealth positive and seamless"* [HCP 6].

Interestingly, HCPs noted that the EHR-integrated telehealth platform is well-suited for handling minor cases and routine follow-ups, such as medication renewals and monitoring of stable conditions. Many HCPs highlighted that these cases are effectively managed remotely, benefiting both patients and HCPs by saving time and reducing hospital congestion. However, they emphasized the limitations for more complex cases, which often require in-person visits for accurate diagnosis and comprehensive physical examinations. One HCP remarked:

> *"In general, the services available through the Al Habib application meet the needs of patients, especially those who have minor cases or need periodic follow-up. However, there*

> *are some patients who try to use the service to diagnose complex conditions, which may need a physical examination, which is difficult to achieve via remote service. Some patients need specialized matters, which cannot be answered through Life Care app"* [HCP 3].

Another HCP added:

> *"…the medical diagnosis in the women's specialty has not increased its effectiveness or quality, as a clinical examination is needed"* [HCP 4].

Technical performance and communication issues is a critical issue reported by patients and HCPs for usability of EHRs-integrated telehealth. This included evaluation of communication features (video calls). Patients generally found the video call feature in the EHR-integrated telehealth platform beneficial for remote consultations, especially for simple follow-ups and minor health inquiries. Many patients appreciated that video calls allowed them to communicate directly with HCPs, enabling visual assessment in cases where it was essential. One patient mentioned:

> *"Video calls were so great. It has obviated the need to visit the doctor in person, especially since I live far from the hospital. Video calls were the best option for me to receive medical consultations"* [Patient 2].

However, some patients noted limitations in video quality or connectivity, which occasionally hindered communication clarity. Most patients found the feature effective but desired further improvements in call stability and ease of use, particularly for critical consultations. One patient mentioned:

> *"My experience with video calls has been mixed. Sometimes it works well, but other times I've had technical issues like the camera not working properly, forcing the doctor to call me on the phone instead. Almost three out of five times I used a video call, there was a problem. For the chat, I haven't tried it yet"* [Patient 17].

HCPs generally considered video calls an effective communication tool within the EHR-integrated telehealth platform, particularly for initial evaluations and routine follow-ups. Video calls enabled HCPs to visually assess certain conditions, which enhanced the quality of remote consultations when physical examination wasn't essential. However, HCPs noted that many patients preferred phone calls over video for simplicity, and connectivity issues occasionally limited the effectiveness of video consultations. One physician highlighted this preference, explaining:

> *"….Patients often prefer to communicate via regular phone, or use the app with the camera off, especially in non-urgent cases. However, in cases that require a visual inspection, such as skin complaints or eye problems, a camera is necessary"* [HCP 2].

An important issue for usability is technical or integration issues. Patients experienced occasional technical issues and integration challenges when using the telehealth platform, which impacted the smoothness of their consultations and appointments. Common issues included delays in loading information, difficulties accessing

test results across different hospital branches, and occasional app crashes. Some patients also noted connectivity problems, particularly during peak usage times, which affected their ability to book appointments or consult doctors seamlessly. A few patients expressed the need for improved technical support and integration between the app and hospital systems to ensure more consistent access to their medical records. As one patient described:

> *"The main problem was the disconnection of the phone line or the lack of integration between branches"* [Patient 3].

HCPs encountered technical issues and integration challenges with the telehealth platform, which impacted the efficiency and reliability of remote care. They observed that connectivity issues, particularly during high-demand periods, occasionally disrupted appointments or video quality. Additionally, HCPs noted that integration between different hospital systems, including insurance approvals, could delay services for patients and complicate continuity of care across branches. These issues pointed to a need for better technical infrastructure to support seamless EHR-integrated telehealth services. One HCP noted:

> *"Technical problems such as poor internet connection or video quality do occur, though our technical support team resolves them quickly"* [HCP 1].

Perceived benefits

When interviewees were asked about the perceived benefits of EHRs-integrated telehealth for healthcare delivery, patient care, and access to healthcare services, most patients suggested 3 main elements based on thematic analysis: accessibility and convenience, healthcare management and support, and patient satisfaction. Regarding convenience, most patients found the EHR-integrated telehealth platform convenient for managing healthcare needs, particularly for routine check-ups and minor issues. The flexibility to access medical consultations from home or work made healthcare more adaptable to their schedules and daily commitments, providing a convenient alternative to in-person visits, especially for patients with limited mobility or busy schedules, as it eliminated the need to arrange transportation or disrupt daily activities for hospital visits. One patient highlighted this benefit, saying:

> *"Comfort and saving time and effort. I do not need to get out of the house, and everything is comfortable. including the access to medical consultations and prescriptions, and delivering medicines to the patient"* [Patient 11].

On the other side, HCPs noted that the telehealth platform provided significant convenience for patients, particularly for routine consultations, follow-ups, and prescription renewals, allowing them to manage their healthcare needs remotely. The convenience of this service was especially appreciated by those with limited mobility or demanding schedules. One HCP commented:

> *"The app make patients can easily access the service from their workplaces or homes, follow their health condition and conduct consultations from anywhere, which offers great convenience"* [HCP 6].

Regarding ease of access to and speed of getting medical consultation, patients highlighted the speed with which they could obtain medical consultations through the telehealth platform, often reporting that appointments and follow-ups were more readily available than in-person visits. This rapid access to healthcare services allowed them to address health issues promptly, contributing to a more proactive approach to their health. Many patients valued the quick response times and ease of securing consultations when they needed them most. For example, one patient shared:

> *"It greatly facilitated the management of the health condition, shortened the time and made the process more effective in seeking treatment"* [Patient 5].

On the other side, HCPs observed that the telehealth platform notably enhanced patients' ability to access medical consultations promptly, allowing them to address health concerns without the usual wait times associated with in-person visits. This was particularly advantageous for patients in remote areas or those with busy schedules, as they could obtain timely medical advice without delays. One HCP highlighted:

> *"Initially, using the platform was an emergency solution to deal with the COVID-19 pandemic, prompting many patients to adopt it and get the service quickly. Even post pandemic, the telehealth service enabled patients to access consultations quickly and efficiently, providing support when they need it most, even outside hospital normal hour*s*"* [HCP 6].

Among the benefits, a significant number of patients appreciated the ability to reduce in-person visits, which they felt decreased unnecessary exposure to hospital environments and minimized the inconvenience of traveling, especially for non-urgent or follow-up appointments. By utilizing telehealth, patients were able to receive the same level of care for certain conditions remotely, which they found particularly beneficial during challenging weather or for those living farther from the hospital. One patient explained:

> *"The main benefits include saving time and effort, for things like ordering analyses and following up on results without having to go to the hospital"* [Patient 5].

From HCPs perspectives, the platform's capability to minimize the need for in-person visits was widely appreciated by them, as it decreased hospital congestion and allowed patients to avoid

unnecessary travel, especially for non-urgent cases. This feature made healthcare more accessible while reducing physical strain on patients. An HCP observed:

> *"Patients can also have the required examinations and tests before their visit to the doctor, which shortens the number of visits and increases the efficiency of care. Additionally, minor issues for patients can be managed remotely without the need for physical visit"* [HCP 3].

Telehealth saved patients considerable time, effort, and transportation costs, especially for routine follow-ups or prescription renewals. Many patients valued the ability to receive care from home, which eliminated travel expenses and reduced the physical and logistical effort required for hospital visits. A patient highlighted this, saying:

> *"Shortening the time between entering the doctor, then going to the laboratory to conduct tests and radiology, and then returning again to the doctor, all of this was shortened through the life care application of Al Habib. Also reduce transportation costs, and also reduce the effort"* [Patient 3].

Another female patient added:

> *"Saving time and transportation, especially if I am tired and cannot go to the hospital, due to such frequent problems like menstrual pain"* [Patient 6].

When HCPs were asked for this point, they reported that the platform significantly saved patients time, effort, and transportation costs, offering a practical solution for those who live far from healthcare facilities or face mobility issues. This reduced logistical burden, made healthcare access smoother and more affordable. One HCP shared:

> *"I believe that this service is very useful for patients, as it reduces costs and time wasted in commuting and waiting in hospitals. They can obtain remote consultations without needing to travel to the hospital"* [Patient 6].

In addition, HCPs appreciated the flexibility offered by the platform, particularly its ability to link patient histories across different branches. This connectivity streamlined care delivery by ensuring that each HCP had comprehensive access to patient information, enhancing the continuity and quality of care. As one HCP noted:

> *"Having the patient's records accessible across branches is beneficial; it saves time and ensures they don't need to repeat tests"* [HCP 3].

An important benefit reported by patients is that the platform provided valuable support for health

management by giving patients access to their medical records, test results, and treatment history, which helped them stay informed and engaged in their healthcare. Patients found that this access facilitated better self-management of their health conditions over time. One patient noted:

> *"Telehealth has helped me compare old and new medical tests, making it easier to track the progress of my health condition and better manage treatment"* [Patient 16].

Another patient added:

> *"Of course. The ability to communicate easily and continuously with doctors increased my awareness of my health and made me more interested in following up on any changes or updates"* [Patient 17].

When HCPs were asked for that, they reported that the app supported patients in adhering to their treatment plans, as it allowed them to monitor their health and request medication refills easily. HCPs noted that patients were more engaged in managing their conditions due to the convenience of accessing healthcare services from home. One HCP noted:

> *"The service enhanced patients' understanding of their health condition, and increased their commitment to treatment and follow-up. For example, elderly patients or those with chronic diseases who have difficulty coming to the hospital can easily communicate with their doctors over the app, which improves their interaction with health care, increases their adherence to their medications and increases their health awareness of their condition"* [HCP 5].

Telehealth greatly improved patients' access to and interaction with healthcare services, allowing for timely interactions with healthcare providers. Many patients felt more connected to their care providers and appreciated the ease of reaching out to them when needed, which enhanced their healthcare engagement. A patient mentioned:

> *"Yes, through the application I can easily book appointments and get the results of medical tests and reports, as well as request and renew prescriptions and dispensing of medicines"* [Patient 17].

On the other side, HCPs observed that telehealth services significantly improved patients' access to healthcare, particularly for those in remote locations or with mobility challenges. The platform enabled patients to consult with doctors promptly, enhancing the quality of initial medical assessments and reducing delays in care. One HCP noted:

> *"Yes, telehealth services have improved patients' access to healthcare, especially for those living in remote areas. The quality of healthcare has generally improved because patients can get direct consultations without waiting*" [HCP 7].

Another HCP added:

> *"….They can follow up on their appointments, see radiology reports, and get the results of analyzes directly through the application. This enhances their interaction…"* [HCP 2].

The telehealth platform also improved communication with HCPs, enabling patients to interact directly with doctors through various features, which made consultations more convenient and comprehensive. This increased the effectiveness of care and made patients feel more involved in their treatment. As one patient expressed:

> *"Yes, communication has become easier and faster, and I understand my condition more, the doctor tells me the result of my medical condition faster, and I can discuss information about my medical condition and treatment plan clearly before the appointment of the medical visit itself"* [Patient 11].

From HCPs perspectives, the platform facilitated more frequent and effective communication between patients and HCPs, allowing patients to reach out with concerns or follow up on treatments without in-person visits. HCPs remarked on the ease with which patients could engage in consultations, which contributed to a more responsive healthcare experience. One physician stated:

> *"Patients can communicate with doctors quickly, enabling them to get advice and medical support in real time"* [HCP 2].

Addition benefit has been reported from HCPs perspectives is that telehealth improved patient outcomes by enabling timely interventions and follow-ups that may not have occurred otherwise. They highlighted cases where early remote consultations allowed for better management of chronic conditions, ultimately contributing to improved patient health outcomes. An HCP shared:

> *"The service is very beneficial in enhancing patient outcomes, especially by providing quick access to necessary follow-ups, which helps prevent complications"* [HCP 10].

Overall, most patients reported increased satisfaction with healthcare services due to the benefits of telehealth, such as greater convenience, enhanced accessibility, and improved communication with providers. These factors made healthcare feel more personalized and accessible, particularly for those managing ongoing health needs. One patient remarked:

> *"Using telehealth has increased my satisfaction because I feel I have easy access to healthcare whenever I need it. As the data is stored, I can follow the development and the extent of improvement in my health condition."* [Patient 5].

When HCPs were asked about their patient satisfaction, they reported a high level of patient satisfaction with the telehealth services, attributing it to the convenience, accessibility, and reduction in travel required for medical consultations. Patients reportedly appreciated the ability to manage their healthcare needs efficiently from home, which contributed to an overall positive experience with the platform. As one HCP stated:

> *"Patients are very satisfied with the service; it has provided them with comfort and reduced unnecessary hospital visits. This shows up in the reviews they leave and in their interaction across social media"* [HCP 2].

Barriers and challenges

When patients and HCPs interviewees were asked about barriers and challenges in patient access and utilization of EHRs-based telehealth, most interviewees suggested technical and functional barriers, healthcare service delivery issues, integration and coordination problems, prescription, medication, and analyses results challenges, patient privacy and security concerns, and contextual, organizational or regulatory factors.

Regarding technical and functional barriers, patients reported challenges with appointment booking through the telehealth platform, often due to system overload or delays in scheduling slots. These booking issues led to frustration, as some patients found it hard to secure timely appointments, especially during peak hours. One patient shared:

> *"Sometimes it's impossible to get an appointment when I need it, especially during the busy times. In addition, appointments are often transferred from a consultant to a general practitioner, who is available at that time"* [Patient 4].

Similarly, HCPs reported that appointment booking on the telehealth platform was a common area of concern, with high demand often causing delays in patient access to appointments. This issue was particularly prevalent during peak times, making it challenging for HCPs to manage patient flow efficiently. One HCP noted:

> *"Sometimes patients have difficulty in booking appointments due to the great pressure on the system, especially during peak hours or working days, which can be frustrating for patients and difficult for us to manage"* [Patient 2].

Further, many patients experienced difficulties with the video call functionality, particularly related to quality issues such as poor audio and video connectivity. These technical hitches disrupted consultations and affected communication clarity between patients and HCPs, making it challenging to discuss symptoms effectively. One patient remarked:

> *"The video calls often freeze, lose sound, or the camera not working properly. Then, it's hard to explain my symptoms when the connection is bad, forcing the doctor to call me on the phone instead"* [Patient 17].

Highlighting this critical issue, many HCPs highlighted challenges with the video call functionality, pointing out issues like poor audio and video quality that disrupted communication with patients.

These issues hindered their ability to conduct effective consultations, especially for cases requiring visual assessment. One physician mentioned:

> *"The video quality is sometimes too poor to conduct a thorough assessment, which limits our ability to make accurate diagnoses"* [HCP 1].

In addition, some patients expressed frustration over delays and difficulties in accessing test results through the platform. Some noted that their lab results were not always uploaded promptly, which delayed follow-up consultations and hindered timely medical advice. One patient mentioned:

> *"Getting my test results on time is difficult; sometimes they don't appear on the app, and I have to call the clinic to check"* [Patient 3].

Several patients highlighted the lack of reliable technical support, stating that they encountered long wait times when seeking assistance. This inadequate support exacerbated technical difficulties, leaving some issues unresolved and creating dissatisfaction with the telehealth service. As one patient described:

> *"When something goes wrong, it takes forever to reach support, and they don't always fix the problem right away. There is a bad customer service and a lack of good technical support"* [Patient 4].

Patients frequently encountered general technical issues, with some attributing these problems to unstable internet connections. These disruptions often interrupted consultations, forcing patients to reschedule or experience delays in receiving medical advice, or even using the phone for the service rather than the app. One patient reported:

> *"The internet connection sometimes drops in the middle of a call, and it's frustrating to start over or wait for a stable connection"* [Patient 8].

From HCPs perspectives, general technical problems, often exacerbated by internet connectivity issues, were a recurring barrier identified by HCPs. These interruptions disrupted consultations and required HCPs to reschedule or find alternative methods to communicate with patients. An HCP explained:

> *"Some patients may experience connectivity problems due to the poor internet access. This affected the quality of communication and thus the ability of patients to interact with doctors and obtain the necessary care"* [HCP 8].

Some patients felt that the platform required a degree of technical skill, which posed a barrier, particularly for older adults or those less comfortable with digital technology. They mentioned that navigating the platform could be challenging without prior experience or guidance. A patient explained:

> *"Yes, you need basic technical skills to use the app efficiently. People with poor technical skills may have problems or seek help from those around them, especially the elderly"* [Patient 10].

Several HCPs also observed that certain patients required additional technical skills to use the telehealth platform effectively, which sometimes impeded smooth interactions. This issue was more prominent among older patients or those less familiar with digital technology. One HCP remarked:

> *"Patients with limited tech skills struggle to navigate the app, which adds to our workload as we need to guide them through basic steps"* [HCP 4].

Long waiting times on the app and delays in reaching virtual clinics were common complaints when patients were asked about. Patients expressed frustration over these delays, which often led to prolonged waiting for responses from HCPs, affecting their overall experience. One patient said:

> *"There was a problem with the delay in communicating with the doctor and making me waiting for a long time, about half an hour to an hour. The app is not displaying the expected time to wait, and sometimes not adhering to it"* [Patient 2].

HCPs indicated that the waiting time on the app and delays in response from the virtual clinic led to patient dissatisfaction and complicated the consultation process. These delays made it difficult for HCPs to maintain efficient scheduling and deliver timely care. One HCP stated:

> *"One of the main challenges is the long waiting period due to the large number of patients using the app, which reflects poorly on the service we provide"* [HCP 3].

Among barriers and challenges, interviewees highlighted healthcare service delivery issues. Patients reported frustration over the limited availability of doctors on the telehealth platform, particularly during non-peak hours or weekends. This unavailability led to delayed consultations and impacted their ability to access timely care. One patient remarked:

> *"Sometimes there are difficulties with availability of appointments with doctors, not all doctors are always available"* [Patient 16].

HCPs also observed that the telehealth platform's limited doctor availability, especially outside standard working hours, posed a challenge for patients seeking flexible consultation times. This lack of 24/7 availability hindered the platform's accessibility, particularly for urgent, non-emergency concerns. One HCP noted:

> *"Patients frequently report issues with doctor availability, particularly during off-hours, also there are no dedicated doctors available for virtual consultations only, which limits the flexibility we aim to offer through telehealth"* [HCP 8].

Many patients also found that remote consultations were inadequate for certain specialties that require physical examinations or hands-on assessment, such as orthopedics or dermatology. These limitations restricted the platform's utility for these medical needs. A patient noted:

> *"For conditions like skin issues, I feel that in-person visits are necessary; telehealth just doesn't provide enough detail"* [Patient 17].

HCPs highlighted that remote consultations were often inadequate for certain specialties or sensitive medical conditions that required physical assessments, such as gynecology or complex orthopedic cases. This limitation was particularly noted for patients with specific conditions needing hands-on examination. One HCP stated:

> *"Telehealth doesn't suit all specialties; for example, physical assessments in areas like gynecology are hard to examined remotely"* [HCP 2].

Some patients expressed dissatisfaction with the inability to choose specific doctors on the platform, which limited their options for continuity of care or specialist consultations. This lack of choice often forced patients to consult with different doctors at each visit, disrupting the consistency of their care. One patient explained:

> *"I would prefer to consult with the same doctor each time, but the app doesn't give me that choice. Just it's allowed to choose the specialty not a specific doctor, who may have understood my case more, and I follow up with him"* [Patient 5].

Some HCPs reported that the telehealth platform's structure limited patients' ability to select their preferred physicians, resulting in a lack of continuity in care. This lack of choice affected patient satisfaction, as patients often had to consult different doctors for follow-up visits. An HCP commented:

> *"The biggest challenge was the inability to choose a specific doctor by the patient, as sometimes another doctor is dealt with, which impacts their comfort and consistency of care"* [HCP 9].

Patients reported challenges in accessing specialized doctors for particular conditions on the telehealth platform. This absence of specialists and directing patients to general practitioner limited the platform's effectiveness for addressing complex or specialized medical issues. As one patient shared:

> *"There aren't enough specialists available on the app, they directing me to general practitioner, so I still have to go to the hospital for specific needs"* [Patient 4].

HCPs also expressed concern about the platform's limited access to specialists, which restricted its effectiveness for patients with complex medical needs. This absence of specialized professionals made it difficult for patients to receive the comprehensive care they required for certain conditions. One HCP explained:

> *"We simply don't have enough specialists available on the telehealth platform to meet the diverse needs of our patients" [HCP 7].*

Several patients expressed frustration over the inability to obtain official sick leave through the telehealth platform, which they needed for work or school. This unavailability of documentation made telehealth less convenient for managing conditions that required time off. One patient mentioned:

> *"Sometimes I cannot get sick leave documentation via the app even though my medical file shows that I suffer from chronic diseases. such as severe reflux of the esophagus"* [Patient 4].

HCPs noted that the inability to issue official sick leave through the telehealth platform was a frequent point of dissatisfaction among patients. Many patients required documentation for work or school, and without it, they had to visit the hospital in person. One HCP shared:

> *"One of the difficulties for patients was estimating sick leave remotely through the app, which disrupts their experience, lead some patients preferring an in-person visit over a remote consultation"* [HCP 3].

There were some integration and coordination problems that were highlighted from the patients' perspective. Patients frequently expressed frustration over the lack of integration between hospital branches, which created complications in accessing their medical records and results when visiting different locations. This gap in coordination led to delays and disrupted continuity of care, as they often needed to repeat tests or provide additional information at each branch. One patient mentioned:

> *"I had to redo my tests because my records weren't available at the other branch, which wasted my time and delayed my consultation"* [Patient 3].

Many patients noted that the absence of a direct payment link between the telehealth platform and their health insurance created financial obstacles. They often had to make payments out-of-pocket and then handle reimbursements separately, which was time-consuming and inconvenient. One

patient stated:

> *"… only the problem is not linking the payment for the virtual visit to the insurance, to the extent that the patient may refrain from remote consultation completely, and have to go to the hospital"* [Patient 10].

HCPs also reported that the lack of integration between the telehealth platform's payment service and patients' insurance providers limited their healthcare experience. This gap required patients to request additional approvals from insurance before getting the service, which impacted their satisfaction and willingness to use the service. An HCP mentioned:

> *"..health insurance does not cover the virtual consultation, laboratory tests, and basic services without the need to request additional approvals from insurance"* [HCP 1].
>
> Patients also highlighted issues with the lack of integration between doctors' prescriptions on the platform and the pharmacy system, resulting in delays in obtaining medications. Often, patients had to go through additional steps to ensure their prescriptions were processed and available at the pharmacy. As one patient explained:
>
> *"…I have also occasionally had trouble when the doctor writes the prescription but it does not get to the pharmacy properly, forcing me to repeat the operation or visit the hospital in person, which was inconvenient and time-consuming"* [Patient 17].

HCPs noted the absence of an effective triage system within the telehealth platform, which made it challenging to prioritize patients based on urgency or severity. Without this system, patients with non-urgent cases often took up time that could be allocated to those requiring immediate attention. One HCP explained:

> *"One of the main challenges is the lack of an effective triage system to identify patients who need specialized or general consultation, complicating our workflow …"* [HCP 3].

Some HCPs expressed concerns that the platform did not accommodate all age groups, specifically excluding patients under 17. This limitation affected families with young patients who needed pediatric consultations but could not access them through telehealth. One HCP stated:

> *"The application does not serve patients under 17, which may constitute a barrier for some mothers for their young children or infants"* [HCP 7].

Another health-related challenge is that patients frequently reported difficulty in understanding the medical terminology and lab results provided through the telehealth platform. They expressed frustration over the lack of clear explanations, which hindered their ability to make informed decisions about their health. Many patients felt that doctors should take more time to explain these results in simple language to enhance comprehension. One patient stated:

> *"For me, the ability to manage my health condition and treatment plan has not changed significantly. The application helps to access the results of tests and analyzes, but reading and understanding the results requires consulting a doctor"* [Patient 15].

Patients generally expressed confidence in the privacy and security of their medical information when using the app. Most did not report any significant concerns regarding data protection, indicating a level of trust in the system. This sentiment reflects a broader assurance among patients that their sensitive health data is secure while utilizing telehealth services. For example, one patient stated:

> *"No, I don't have any concerns about the privacy or security of my medical information when using the platform. I trusted Al Habib hospital"* [Patient 9].

Healthcare providers also noted that they had not observed any significant concerns among patients regarding the privacy and security of their medical information. One HCP mentioned:

> *"I did not notice any concern among patients about the privacy of their medical information. They are all confident that their data is secure and not being tapped"* [*HCP 2*].

This perspective suggests that both patients and HCPs share a belief in the effectiveness of the app's security measures, contributing to a positive overall experience with telehealth services.

Patients highlighted that their socio-economic circumstances, such as gender, age, income, as well as legal and regulatory factors in the hospital, exception health insurance coverage, did not have an impact on their ability to access and use telehealth services via the Al Habib app.

> *"I think the app is available to everyone and there are no social or economic barriers to its use. For regulatory factors, perhaps medical insurance, as sometimes it requires communication with the insurance provider in the hospital"* [Patient 14].

Thematic analysis provided some other findings related to patients' general experience and their suggestions for improvement as a result of their access and utilization of EHRs-based telehealth. Patients reported a generally positive healthcare experience when using the app for telehealth services. Many appreciated the convenience it offered, allowing them to access medical care from home. Overall satisfaction with telehealth services was notably high among patients. Many expressed gratitude for the quick responses and efficient service provided through the app, contributing to their overall positive experience. However, with satisfaction, some highlighted the service need for improvement to overcome the challenges. Patient 9 remarked:

"I am very satisfied with how quickly I can get my prescriptions and consult with my doctor through the app" [Patient 9].

"Satisfied in principle, but I hope that the service will improve in the future" [Patient 19].

Looking ahead, many patients indicated a strong preference for continuing to use telehealth services in the future. They expressed a desire for ongoing access to the convenience provided by the app. This enthusiasm suggests that patients are likely to embrace telehealth as a permanent option in their healthcare management. Patient 3 shared:

"I would definitely prefer using the app for future appointments; it saves me so much time and facilitates access to health services" [Patient 8].

While patients were largely satisfied with their experiences, they also offered suggestions for improvement. Some mentioned the need for better technical support and clearer instructions on using certain features of the app. This feedback highlights an opportunity for Al Habib Hospital to enhance user experience by providing additional resources and support for patients navigating the telehealth platform. Patient 4 noted:

"The application needs to be improved in technical aspects, such as full support for video calls and chat to include photos to be considered a real clinic. They are only limited to the prescribing service. and that more services such as sick leave are better available" [Patient 6].

"I think better integration between branches would be very helpful." [Patient 3].

"Provide consultants at all times and improve customer service. Since the patient's history is present, patients are not hindered by taking time off work". [Patient 4].

"Integration, for example, by adding devices that can be linked with the application to measure pressure and other vital signs, to provide accurate information to the doctor without the need for the patient to attend" [Patient 10].

On the other hand, HCPs generally found the telehealth platform to be beneficial in delivering care to patients, particularly in terms of accessibility and convenience. However, they noted that certain limitations, such as connectivity issues and the complexity of some medical cases, impacted the effectiveness of remote care. One HCP remarked:

"Telehealth has improved access for patients, but there are limitations in handling complex cases that really need in-person consultations" [HCP 9].

The overall satisfaction among HCPs with the telehealth platform was positive, though mixed. While

they valued the convenience it provided, many felt that enhancements were needed to address the platform's current limitations. One HCP expressed:

> *"Patients are very satisfied with the service. This shows up in the reviews they leave and in their interaction across social media" [HCP 2].*

HCPs suggested several improvements, including better technical support, enhanced communication features, and an effective triage system to prioritize urgent cases. They also recommended additional features to facilitate easier access to patient records across branches. One HCP noted:

> *"Adding a triage system and improving patient record accessibility across branches would make a significant difference"* [HCP 3].

HCPs highlighted the need for more robust organizational support and training for both staff and patients. They felt that targeted educational resources could help patients better navigate the platform and understand their health data. An HCP commented:

> *"Both staff and patients would benefit from additional training to enhance telehealth literacy and platform usability. Establishing a dedicated telehealth team focused solely on app-based patients, which could reduce wait times and improve care quality"* [HCP 6].

Some HCPs expressed concerns regarding the regulatory framework governing telehealth, noting that clearer guidelines could enhance service delivery. They felt that regulatory support was essential to ensure compliance, privacy, and data protection, which would help streamline processes. One HCP stated:

> *"Sensitive news should not be given to the patient via these means without full assurance of the patient 's ability to handle the information. Furthermore, care must be taken against misuse of LifeCare services in situations such as diagnostic requests requiring a clinical examination"* [HCP 4].

> *"It is important to improve policies related to insurance and expand its coverage of remote care services. Regarding sick leave, there must be organizational aspects to this in order to determine whether or not a patient is eligible for service"* [HCP 9].

Discussion

Principal findings

Using a qualitative analysis of semi-structured interviews, this study explored the usability, perceived benefits, barriers, and overall experiences with EHR-integrated telehealth services in Riyadh's hospitals from both patient and HCPs perspectives. The principal findings of the thematic analysis identified four key themes in the study: usability, perceived benefits, barriers and challenges, and general experiences and suggestions for improvement, indicating that while EHR-integrated

telehealth is valuable for enhancing accessibility and convenience in healthcare, challenges in technical functionality, service delivery, integration, and regulatory frameworks persist. The findings contribute new insights into the experience of telehealth within the Saudi Arabian healthcare context, revealing both positive impacts and critical areas for improvement.

The usability of EHR-integrated telehealth emerged as a significant strength, with both patients and HCPs appreciating the platform's user-friendly design and intuitive navigation, which aligns with existing literature emphasizing ease of access as a critical component of telehealth adoption [2]. Patients valued the convenience of accessing their medical records, scheduling appointments, and connecting with HCPs, which are essential features for patient engagement and autonomy in healthcare. HCPs echoed these positive sentiments but noted technical issues and limitations for complex cases. These findings support the Technology Acceptance Model (TAM), which suggests that perceived ease of use positively influences users' attitudes toward technology, thus promoting acceptance and continued use [5]. However, persistent technical issues, such as video call quality and connectivity, present a barrier to fully optimized usability and suggest the need for more robust infrastructure to support EHR-integrated telehealth, especially given Saudi Arabia's growing investment in digital health solutions post-pandemic.

Further, telehealth's perceived benefits were significant, with patients reporting reduced travel time, quick access to care, and flexibility in managing routine healthcare. These findings align with global studies that highlighted telehealth as a convenient alternative for chronic disease management and minor health concerns [21]. HCPs similarly observed enhanced patient engagement, increased adherence to treatment, and improved communication with patients. The study's findings further affirm the Social Support Theory, as telehealth creates an accessible platform for ongoing support and regular interaction, fostering a sense of security and satisfaction among patients. However, disparities were observed in the effectiveness of the platform for specialized or complex medical needs, suggesting a need for selective deployment based on patient and specialty requirements [15].

Barriers to telehealth access and utilization were a recurrent theme, encompassing both technical and healthcare service delivery challenges. Technical barriers, including appointment booking difficulties, internet connectivity issues, and insufficient technical support, align with prior findings on the limitations of digital health technology in areas lacking full digital literacy [7]. Additionally, the lack of integration between hospital branches and payment links with insurance hindered seamless access to care [22]. This points to a need for policy reform and enhanced interoperability between healthcare systems. Service delivery issues also emerged, with limitations in doctor

availability, inappropriateness for certain specialties, and the lack of physician selection being commonly noted barriers. Additionally, both patients and HCPs identified gaps in regulatory support and insurance integration for telehealth consultations, impacting patient satisfaction and willingness to use the service. These findings highlight the necessity for telehealth systems to adapt to various medical needs and accommodate patient preferences, supporting the theory of person-centered care, which advocates tailoring healthcare services to meet individual patient needs.

Our findings align with prior research demonstrating that telehealth enhances healthcare accessibility, particularly in reducing travel time and facilitating routine care [3,10,21,] Similar benefits have been reported in studies from the U.S. and Europe, where telehealth adoption led to improved patient satisfaction and efficiency in healthcare delivery [4]. However, in contrast to Western healthcare systems, where telehealth is more seamlessly integrated with insurance and regulatory frameworks, the Saudi context presents unique obstacles related to policy, physician availability, digital literacy, and interoperability between hospitals [17,25]. Addressing these region-specific challenges is essential for optimizing telehealth's long-term sustainability in Saudi Arabia.

In terms of general experience, both patients and HCPs reported satisfaction with the convenience and accessibility of telehealth, yet identified numerous areas for improvement for ongoing use in the future. They recommended better technical support, integration of specialized services, and clearer communication of results as key areas for enhancement. Additionally, HCPs highlighted the need for organizational support in the form of training and resources to improve patient understanding of medical information [23] as well as better technical and triage support to prioritize patient cases for remote consultation and medication [24]. From both patients and HCPs perspectives, a critical suggestion for improving telehealth insurance coverage by establishing direct regulatory and organizational integration between telehealth platforms and insurance providers, allowing patients to process payments and claims seamlessly within the app. HCPs reported that the current lack of integration limits the healthcare experience by requiring patients to seek additional insurance approvals before accessing services, which reduces their satisfaction and willingness to use telehealth. These recommendations align with the calls for continuous quality improvement in healthcare delivery and suggest that telehealth services should be flexible, adaptive, and regularly updated to meet user expectations [11].

In the Saudi context, the rapid adoption of EHR-integrated telehealth post-pandemic has provided a crucial solution for extending healthcare access across the country. This study's findings emphasize that while telehealth has addressed key accessibility issues, particularly for patients in remote areas

and those with mobility constraints, the platform still faces integration and usability challenges specific to the Saudi healthcare landscape. The lack of insurance integration, for example, has posed a significant barrier, as patients in Saudi Arabia often rely on insurance coverage for healthcare access [25]. Furthermore, the absence of certain specialists on the platform, limited doctor availability, and regulatory gaps restrict telehealth's potential as a substitute for in-person consultations. Post-pandemic, with a healthcare system striving to improve efficiency and patient engagement, addressing these barriers could significantly enhance telehealth's role in Saudi Arabia, making it a sustainable and effective healthcare model.

Strengths and Limitations

This study's primary strength lies in its dual-perspective approach, capturing insights from both patients and HCPs to provide a balanced and comprehensive understanding of EHR-integrated telehealth's usability, benefits, and challenges. Conducted in the post-pandemic period, the study is timely, reflecting the increased reliance on digital healthcare solutions in Saudi Arabia and offering findings highly relevant for shaping future healthcare strategies. Moreover, the study's focus on Saudi Arabia highlights specific regional needs, such as geographic accessibility and system integration, providing actionable insights tailored to the Saudi healthcare landscape and potentially influencing policy developments for digital healthcare services across the region.

However, the study has notable limitations. Its geographic scope is limited to Riyadh, which may reduce the generalizability of findings across Saudi Arabia's diverse regions, where healthcare access and levels of digital adoption can vary. Additionally, the qualitative methodology, while rich in depth, lacks the quantitative data needed to establish statistically significant trends in telehealth usage and satisfaction. Finally, the short-term nature of this study restricts insights into long-term patient engagement and HCP adaptation to telehealth, as well as the sustained effectiveness of proposed improvements. These limitations suggest that further studies with a broader scope, mixed-method approaches, and longitudinal data would strengthen understanding and support the evolution of telehealth in Saudi Arabia.

Conclusion

This study provides a comprehensive examination of EHR-integrated telehealth services in Riyadh's hospitals, highlighting both the benefits and challenges from the perspectives of patients and healthcare professionals. Findings indicate that while telehealth improves accessibility, convenience, and patient engagement, significant barriers remain, including technical difficulties, limited physician availability, lack of insurance integration, and regulatory constraints. The usability of the

platform was well-regarded, particularly for routine follow-ups, appointment scheduling, and remote consultations, aligning with global studies that emphasize telehealth's role in improving healthcare access. However, unique Saudi-specific challenges, such as insurance reimbursement issues, regulatory gaps, and lack of integration across hospital branches, emerged as significant obstacles that require targeted interventions.

Addressing these barriers requires enhanced system integration, policy reforms to support insurance coverage for telehealth consultations, and improved digital literacy initiatives for both patients and HCPs. From an implementation perspective, developing standardized telehealth regulations, expanding telehealth-specialized physician networks, and improving technical infrastructure will be critical to maximizing the platform’s potential. Furthermore, incorporating organizational support through staff training, better triage mechanisms, and clearer patient education on medical results could significantly improve service delivery. Future research should explore hybrid telehealth models that integrate in-person care for specialized needs, assess the long-term effects of telehealth on chronic disease management, and examine cultural factors influencing telehealth acceptance in Saudi Arabia. Additionally, studies on digital literacy programs, insurance integration, and culturally adapted telehealth solutions would enhance accessibility and patient engagement. As Saudi Arabia advances its Vision 2030 digital health initiatives, these insights can guide the development of more accessible, inclusive, patient-centered, and policy-aligned telehealth solutions.

Conflicts of Interest

None declared

Multimedia Appendix 1

Interviews questions

Multimedia Appendix 2

Consolidated Criteria for Reporting Qualitative Studies 32-item checklist

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Abbreviations

EHRs: electronic health records

Supplementary Files

Multimedia Appendixes

Interview Questions.
URL: http://asset.jmir.pub/assets/394b95758ec543cd1fe5b2e36734ac51.docx

Consolidated Criteria for Reporting Qualitative Studies 32-item checklist.
URL: http://asset.jmir.pub/assets/cccbf2d1f863b07b30a47a82ca477c81.pdf