RESEARCH ARTICLE

Awareness, practices, attitudes, and barriers of telehealth in Saudi Arabia

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Abstract

Objective: To assess awareness level, practices, attitudes and barriers regarding telehealth among healthcare providers (HCPs) in Saudi Arabia.

Method: This cross-sectional study was approved by institutional review board (IRB) at King Fahad Medical City, Riyadh, Saudi Arabia, from June 28 to September 18, 2022, and comprised HCPs at different hospitals across the country. Data was collected using an online questionnaire exploring the awareness level, practices, attitudes and barriers regarding telehealth. Data was analysed using Statistical Analysis System 9.4.

Results: Of the 607 HCPs, 525(86.5%) were Saudi HCPs; 301(57.33%) males and 224(42.66%) females, with the largest age group being 31-40 years 218(41.52%). The remaining 82(13.5%) HCPs were non-Saudi HCPs; 43(52.43%) males and 39(47.56%) females, with the largest age group being 31-40 years 35(42.68%). Overall, there were 305(50.24%) health practitioners and most of the HCPs belonged to the Riyadh region 194(31.96%). 549(90.44%) of HCPs were aware of telehealth, while 360(59.30%) were actually practicing it. Also, 488(80.39%) of HCPs believed that telehealth is a valid technology, while 443(72.98%) believed telehealth is a reliable technology.

Conclusion: Awareness regarding telehealth was high among HCPs meaning telehealth are progressively growing and spreading among HCPs and medical facilities in Saudi Arabia, who also found it valid and reliable.

Key Words: Telehealth, Public health, Healthcare, Medical services, Health Informatics.

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Introduction

Telehealth refers to the utilisation of health services and data by telecommunication technology, including any possible electronic devices such as computers, mobile phones, etc., to set up and deliver healthcare remotely. It might be a technology that one uses at home or one that a physician employs to enhance or supplement medical services.[1-4] Telemedicine is considered a subset of telehealth with limitations regarding some clinical services involving consultation, diagnosis and monitoring called teleconsultation, telediagnosis and telemonitoring.[5,6]

There are four major types of telehealth, including: synchronous telehealth, which is technology-based healthcare service, store and forward telemedicine, which is asynchronous telehealth, remote patient monitoring (RPM) which is about sharing healthcare data and providing assistance remotely, and mobile health (mHealth).[7-9] These types are known as the domains of the delivery of telehealth services.[7-10] However, in short, there are many different categories of telehealth, including telemedicine, telenursing, telepharmacy, teledentistry, teleradiology, telerehabilitation, telenutrition, telesurgery, etc.[11-18]

Telehealth is believed to have been discovered in the 1950s and 1960s when the National Aeronautics and Space Administration (NASA) needed to observe physiological signs of astronauts during a space mission.[19,20] Also, in the 1950s, some hospitals used telehealth when they started sending medical information and images by systems.[21] In the 1960s, telehealth was developed by the United States military and aerospace.[20,21] Also, during that time, the Nebraska Psychiatric Institute used television links with Norfolk State Hospital.[20] In the 1970s, NASA began trial on telemedicine, and the Department of Health, Education and Welfare (HEW) supported 7 telemedicine projects.[20,22] Finally, from 1980s to the present era, especially since the advent of internet and information and communications technology (ICT), the development of telehealth became huge, and the world gave electronic health more attention, especially after the coronavirus disease-2019 (COVID-19) pandemic.[20-24]

According to the Harvard Medical School (HMS), there are different categories of advantages of telehealth, including administrative, financial and medical advantages.[25] Administrative advantages include recording files of measurements, notes and alerts, as well as comfortable and fast medical appointments and visits. Financial

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advantages include cost savings on healthcare services and transportation. Medical advantages include saved records of medical history, easy connection with healthcare providers, and easy to get medical results online.[25]

In contrast, a few disadvantages of telehealth were also identified, including concerns of security and privacy, health insurance coverage of some services through telehealth, and the possibility of all services being available only online.[25]

Internationally, telehealth became necessary and the development of it is continuous. However, telehealth varies from country to country, depending on those countries' readiness and standards.[24] In the United States, 76% of hospitals were using telehealth in 2020 to connect healthcare providers with patients.[25] According to an Australian study done in 2020, there were over 40 million consultations through telehealth and there are more than 83,500 healthcare providers providing services through telehealth.[26] According to a Chinese study, more than 90% of tertiary hospitals have telemedicine services.[27]

In the Kingdom of Saudi Arabia (KSA), the Ministry of Health (MOH) is making huge efforts to develop telehealth.[28] It created plans, rules and regulations for the provision of telehealth services in KSA.[29] There are several studies investigating some categories of telehealth in KSA, especially during the COVID-19 pandemic.[28,30-33] However, there is a need for further investigations on telehealth, especially related to the healthcare providers (HCPs). The current study was planned to fill the gap by assessing the level of awareness, practices, attitudes and barriers regarding telehealth among healthcare providers.

Subjects and Methods

This cross-sectional study was approved by institutional review board (IRB) at King Fahad Medical City (KFMC), Riyadh, Saudi Arabia, from June 28 to September 18, 2022. After approval from the institutional ethics review board, the sample size was calculated using the level of precision formula.[34] The sample was raised using complete enumeration random method from among healthcare providers (HCPs) at different hospitals across KSA having Medical Saudi Licence (MSL) and provided informed consent to participate. Visiting HCPs, internship students, and other trainee doctors and those without MSL were excluded.

Data was collected using an online questionnaire which was distributed in stages by categorising regions and health occupations. The questionnaire items were developed and pre-tested for validity and reliability with 20 participants. The questionnaire was then modified in the light of the feedback. The final questionnaire had two sections. Section I was about general information, including demographic and occupational information, while section II assessed the level of awareness, practices, attitudes and barriers regarding telehealth.

Data was analysed using Statistical Analysis System (SAS) 9.4. Data was expressed as frequencies and percentages. Chi-square tests and regression analysis were used as appropriate. $P<0.05$ was considered statistically significant.

Results

Of the 607 HCPs, 525(86.5%) were Saudi HCPs; 301(57.33%) males and 224(42.66%) females, with the largest age group being 31-40 years 218(41.52%). The remaining 82(13.5%) HCPs were non-Saudi HCPs; 43(52.43%) males and 39(47.56%) females, with the largest age group being 31-45 years 35(42.68%) (Figure 1). Overall, there were 305(50.24%) health practitioners and most of the HCPs belonged to the Riyadh region 194(31.96%) (Figure 2).

The study showed that awareness of telehealth was positively high among HCPs; 477(90.86%) of Saudi HCPs were aware compared to 72(87.80%) of non-Saudis. However, when it came to practice of telehealth, 316(60.19%) of Saudi HCPs and 44(53.66%) of non-Saudis said telehealth is available at their hospitals. Also, 207(39.43%) of Saudi HCPs and 28(34.15%) of non-Saudis confirmed using different types of telehealth (Figure 3). In addition, 194(36.95%) of Saudi HCPs and 29(35.37%) of non-Saudis said the places of telehealth are well-prepared

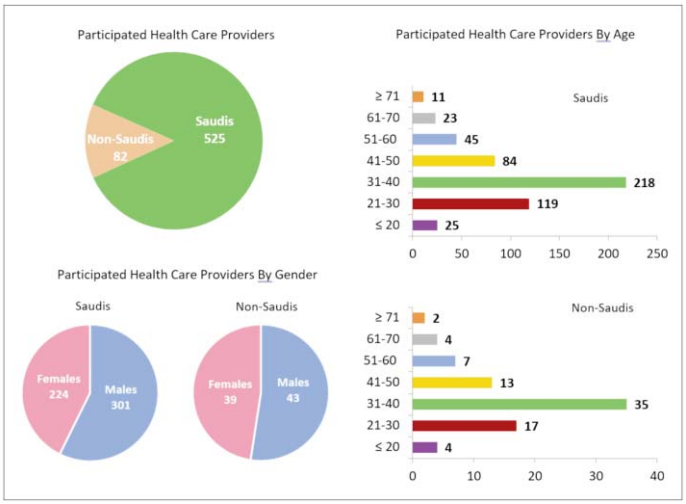

Figure-1: Distribution of participants by gender and age.

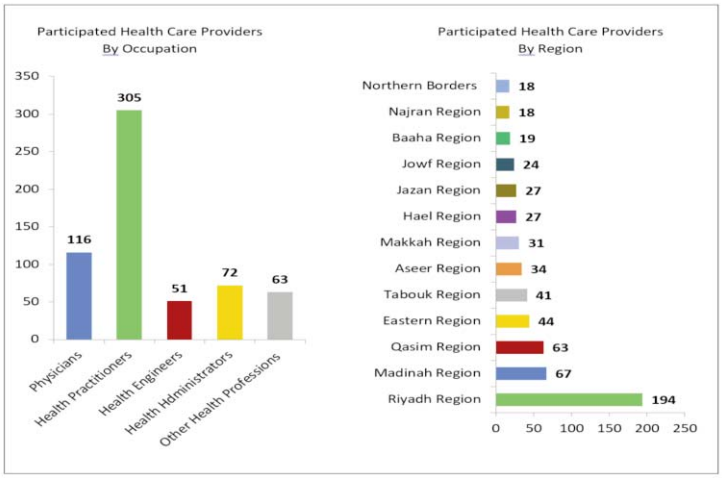

Figure-2: Distribution of participants by occupations and regions.

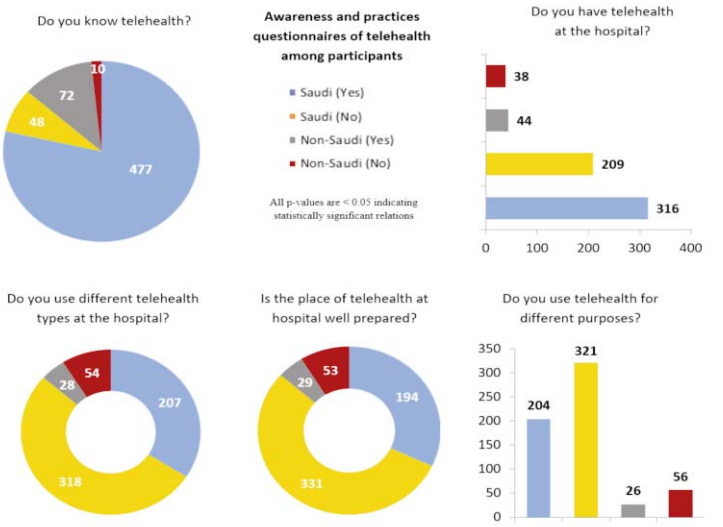

Figure-3: Awareness and practices related to telehealth among the participants

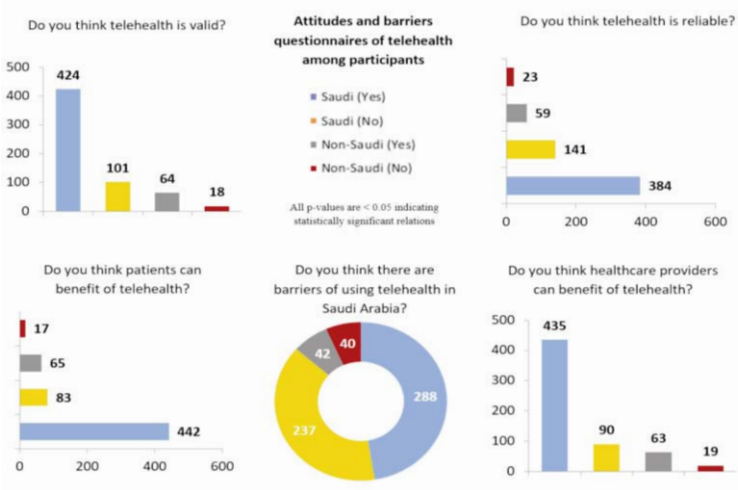

Figure-4: Attitudes and identified barriers related to telehealth.

at the hospitals. Moreover, 204(38.86%) of Saudi HCPs and 26(31.71%) of non-Saudis reported using telehealth at the hospital for different purposes (Figure 3).

Questions related to attitude towards telehealth showed 424(80.76%) of Saudi HCPs and 64(78.05%) of non-Saudis believed telehealth is a valid technology. Also, 384(73.14%) of Saudi HCPs and 59(71.95%) of non-Saudis believed telehealth is a reliable technology (Figure 4). Further, 435(82.86%) of Saudi HCPs and 63(76.83%) of non-Saudis trusted that using telehealth is beneficial for healthcare providers. Also, (442)84.19% of Saudi HCPs and 65(79.27%) of non-Saudis trusted that using telehealth is beneficial for patients (Figure 4). In addition, questionnaires related to barriers, 288(54.86%) of Saudi HCPs and 42(51.22%) of non-Saudis said there were some barriers in the way of using telehealth in Saudi Arabia (Figure 4).

Discussion

There are several studies which investigated some dimension of telehealth in KSA, especially since the COVID-19 pandemic.[28,30-33] However, only two of these studies investigated perceptions and barriers of telehealth use in KSA.[35,36]

This study investigated awareness, practices, attitudes and barriers related to telehealth among HCPs in KSA. Similar to those previous studies, results of this study showed that HCPs in KSA are familiar and aware of telehealth technology. However, there is a significant lack of eligible workplace, practice, adopting and implementing, and trained staff to use telehealth technology (Figure 3). Also, HCPs are advising to use telehealth technology because they believed that telehealth is a valid and reliable technology and it is beneficial for both healthcare providers as well as patients. However, they also believed there are some barriers of using telehealth including: availability, diversity, and network connections to use telehealth technology (Figure 3).

Compared to previous studies on telehealth in KSA, the results of this study indicated that awareness and practices of telehealth are progressively growing and spreading among HCPs and medical facilities in Saudi Arabia especially after COVID-19 pandemic.[37] This may

indicate the cooperation with Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) to introduce telehealth to all parts of KSA which is one of the targets of the Saudi Vision 2030 plan. [35, 38, 39]

According to the results of this study, 80.76% of Saudi HCPs and 78.05% Non-Saudis believed that telehealth is a valid technology and 73.14% of Saudi HCPs and 71.95% of non-Saudis believed that telehealth is a reliable technology (Figure 4). So, why there is a lack of availability and practice of telehealth as well as why there are still some barriers even if telehealth is considered as one of the targets of the Saudi Vision 2030 plan. [35]

The reason behind that are several factors including: the weakness of network connections as well as the resistance of adopting and implementing telehealth technology. So, affecting the influence of adopting and implementing telehealth technology refer to many reasons including: there are not available clear policies of using telehealth, lack of technical skills and well-trained staff, resistance of change, and the fear of new technologies (technophobia) [35,36]

Finally, even if there are some disadvantages of using telehealth, like some concerns of security, privacy, online appointments, and health insurance coverage, there are different advantages of telehealth, including administrative, financial and medical advantages.

The current study has made progress in discovering the general picture of awareness, practices, attitudes and barriers related to telehealth in KSA since it is now considered the principal technology of online medical services. However, the current study also has limitations as it did not determine the exact factors behind the general scenario. Further exploratory and follow-up studies are recommended to establish the validity of the current findings.

Conclusion

Awareness regarding telehealth was high among HCPs who also found it valid and reliable. Majority of hospitals have telehealth services, but the places are not well-prepared. Even if awareness and practices of telehealth are progressively growing and spreading among HCPs and medical facilities in Saudi Arabia, more than the half of the participated HCPs believed there are some barriers in the way of using telehealth in KSA.

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Conflict of Interest: None.

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