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Original Article

Knowledge, Perception, and Barriers to Telehealth Practice among Physical Therapy Practitioners of Riyadh, Saudi Arabia during COVID-19 Pandemic

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ABSTRACT

Objectives: Physical therapists in Riyadh have traditionally used conventional methods to diagnose and treat patients; however, the emergence of the COVID-19 pandemic gave rise to the need to implement telehealth services. The aim of the study was to investigate physical therapy practitioners' knowledge, perceptions, and barriers to telehealth and the effects of the pandemic on physical therapy telehealth practice.

Materials and Methods: In this cross-sectional survey study, a self-administered questionnaire was used to collect data which included five main sections, namely demographic characteristics, knowledge about telehealth technology, perception towards telehealth practice, COVID-19 impact on telehealth, and possible barriers to telehealth practice. The respondents completed the questionnaire on their own to ensure that their privacy was not breached and that confidentiality was maintained.

Results: A total of 214 participants responded to the survey. A majority reported low or very low to questions under knowledge about telehealth practice. Many agreed or strongly agreed to the questions under perception towards telehealth practice. Similarly, a majority also agreed or strongly agreed that there was an impact of the pandemic on telehealth practice among physical therapists. Most participants were also in agreement with the questions regarding barriers to telehealth among physical therapists.

Conclusion: A majority of physical therapists had little knowledge and experience with telehealth technology, though some training and administrative support are warranted to ensure that they become highly competitive in executing such a program.

Keywords: telemedicine, physical therapy, health information technology, physical distancing, COVID-19

INTRODUCTION

The novel coronavirus disease 2019 (COVID-19), initially identified in Wuhan, was declared as a pandemic by the World Health Organization within a span of months.^[1] The high morbidity and mortality rate, in addition to its rapid transmission, made it the need of the hour for health professionals to modify the mode of delivery of health services in order to curb the spread of the disease. Physical therapists play an important role in promoting safe and appropriate physical activity programs and non-pharmacological approaches in order to prevent chronic non-communicable diseases and treat several health disorders.^[2] The use of telehealth is one approach that can help keep both patients and PT safe in view of the pandemic.

Telehealth can be defined as the delivery of health care services using electronic communication for the exchange of information pertaining to the diagnosis, treatment, and prevention of diseases and injuries, research, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and the community.^[3] Considering the need to provide high-quality yet cost-effective and accessible healthcare services to patients in both developing and developed countries, information and communication technologies have an immense potential to address the challenges posed by the pandemic. Besides, telehealth aids healthcare professionals in educating and providing services to individuals whose access to healthcare services is hindered by geographical barriers.^[4]

In the Kingdom of Saudi Arabia (KSA), e-health has been designated a sizeable budget by the Ministry of Health (MOH); however, the percentage of existing telemedicine technology used by health professionals is relatively low. The e-health strategy established by the MOH has stressed the use of telemedicine to improve the accessibility and quality of healthcare services provided to patients by healthcare providers, especially in remote or rural areas.^[5] In order to promote optimal use of telehealth, a national-level project called the Saudi Telemedicine Network was launched collaborating with Ontario Telemedicine Network and Canada Health Info way, covering all branches of healthcare.^[6]

Amidst the pandemic scenario, the use of telehealth among health professionals in the KSA is gaining popularity in lieu of conventional therapy approaches. Research in the field of telehealth in the KSA is finite and especially scarce are ones that explore the recognition of the knowledge and attitude of health professionals towards telemedicine.^[7] Though emerging evidence about telehealth is quite clear about the benefits it offers, there still exist a number of challenges and barriers to its adoption by health professionals. Keeping in mind the dearth of evidence on physical therapy telehealth practice in the KSA, the present study was designed to assess the knowledge of practicing physical therapists about telehealth, evaluate the barriers they face, and their perceptions about telehealth in clinical practice in Riyadh province of the KSA.^[8]

MATERIALS AND METHODS

The study was a cross-sectional survey that was carried out among practicing physical therapists in Riyadh province from September 2020 to November 2020. A self-administered survey questionnaire was used to collect the data. The validity of the questionnaire was assessed by an experienced panel of academicians and researchers. Based on the panel suggestions, several items were revised, and the survey was then sent to the other panel members, who then reviewed it several times over. Content validity and face validity were evaluated, the suggested changes were made, and the new draft was reassessed by all panel members, who accepted the face and content validity of the survey as being adequate.

The questionnaire included five main sections: Section 1 aimed to assess participant demography; Section 2 addressed knowledge about telehealth technology; Section 3 consisted of perception towards telehealth practice; Section 4 dealt with the impact of COVID-19 on telehealth; and Section 5 comprised possible barriers to telehealth practice perceived among physical therapists in Riyadh province, KSA. Data about the perceived barriers were collected with an open-ended survey questionnaire. The data collected led to the earmarking of 11 barriers and challenges with respect to the implementation of telehealth in the Riyadh province (Table 1).

The survey was sent to the participants in the form of a Google questionnaire to physical therapists working in different hospitals/clinics in Riyadh province. The author personally contacted the head of each firm to consider promoting the survey among their staff. Thereby, the contact details of physical therapists were obtained from the websites of these hospitals/clinics and e-mail invitations were then

sent to 235 participants, including instructions and an attached link for the online survey. The respondents completed the questionnaire on their own to ensure that their privacy was not breached and that confidentiality was maintained. The questionnaires were submitted anonymously by the respondents to further enhance confidentiality and privacy. In order to increase the response rate of participants, in the second week, an e-mail reminder was sent along with the survey link.

Table 1: Barriers to Telehealth among Physical Therapists

S.N.	Barriers	Code
1	Telehealth applications are costly to implement	CI
2	Telehealth applications are complex to implement and use	CoImu
3	Telehealth applications have more disadvantages compared to face to face interactions	DiFtF
4	Telehealth applications have disadvantages in the demonstration and progression of specific treatments	DiDeP
5	Internet connectivity problems pose a problem in using telehealth systems	InCoPr
6	Lack of technical knowledge poses a problem in using telehealth systems	LaTeKn
7	Limited access to high speed internet poses a problem in using telehealth systems	LiHSI
8	Limited access to smartphones or other gadgets pose a problem in using telehealth systems	LiSnga
9	A onetime face to face consultation required prior to a telehealth consultation	OTC
10	Problems arising from reimbursement for telehealth services	Reim
11	The availability of the experts to implement telehealth services	ExpIm

Statistical analysis

Analysis of the collected data was done using Statistical Package for Social sciences (SPSS) software, Version 20 (SPSS Inc, Chicago, IL, USA). Descriptive statistics in the form of mean and standard deviation and percentages were tabulated and compared.

RESULTS

A total of 214 completed questionnaires were received, the data of which was used for further analysis. The response rate was 91%. Table 2 depicts the demographic characteristics of the study participants. The participants' knowledge regarding telehealth practice is displayed in Table 3. Familiarity and experience with telehealth technology are reported low; 64% of the respondents had only a low rate of familiarity with telehealth guidelines while 53% had a highly familiar with the use of telehealth in other countries. A majority responded high (37%) or very high (37%) when asked the question about the necessity of continuous training in the use of telehealth for physical therapists.

Table 4 depicts participants' perception towards telehealth practices among physical therapists in the KSA. Many participants agreed (59.3%) or strongly agreed (28.4%) that telehealth systems can save time and money for the patient. In addition, many also agreed that it could save the time and effort of the physical therapist as well. 54.3% of participants agreed that the telehealth system could contribute to the quality of health care. Also, 60.5% of participants agreed that this system could be an acceptable adjunct to traditional/face-to-face care. A majority of the participants were in agreement that telehealth would make healthcare more acceptable by patients (59.3%), and telehealth would make patients in remote areas more accessible (56.8%).

Table 2: Demographic characteristics of participants

Characteristic		N	%
Age	Between 19-23	54	25
	Between 24-28	38	18
	Between 29-33	23	11
	Between 34-38	57	26.5
	Between 39-43	26	12
Gender	Male	152	71.1
	Female	62	28.9
Highest academic degree	Bachelor in Physical	93	43.4
	Masters in Physical	67	31.3
	Ph.D.	54	25.3
Practicing Experience	Less than 1 year	70	32.5
	Between 1-5	41	19.3
	Between 6-10	44	20.5
	Between 11-15	41	19.3
	16 or more year	18	08.4

Table 3: Knowledge about telehealth practice

S.N.	Questions	LEVELS							
		Very Low		Low		High		Very High	
		N	%	N	%	N	%	N	%
1	To what extent are you familiar with the telehealth	34	16	106	49.4	66	30.9	8	3.7
2	To what extent do you have experience with telehealth technology?	49	22.8	111	51.9	51	24.1	3	1.2
3	To what extent are you familiar with the physical therapy applications of telehealth technology?	29	13.8	123	57.5	59	27.5	3	1.2
4	To what extent does your department/ organization conduct conferences, speeches, or meetings related to telehealth technology?	66	30.9	84	39.5	61	28.4	3	1.2
5	To what extent are you familiar with telehealth tools?	51	23.8	99	46.3	61	28.7	3	1.2
6	To what extent are you familiar with telehealth guidelines?	64	30	99	46.3	48	22.5	3	1.2
7	To what extent you are familiar with the use of telehealth in other medical and allied health professions?	42	19.8	119	55.6	50	23.4	3	1.2

8	To what extent are you familiar with the use of telehealth in other countries?	45	21	98	45.7	53	24.7	18	8.6
9	To what extent is continuous training in the use of telehealth necessary for physical therapists?	24	11.1	32	14.8	79	37	79	37

Table 4: Perception toward telehealth practice

S.N.	Questions	LEVELS							
		Strongly disagree		Disagree		Agree		Strongly agree	
		N	%	N	%	N	%	N	%
1	Telehealth system can save time and money for the patient	5	2.4	21	9.9	127	59.3	61	28.4
2	Telehealth system can save the time of the Physical Therapist	13	6.1	24	11.1	127	59.3	50	23.5
3	Telehealth system can contribute to the quality of health care	11	5	53	24.7	116	54.3	34	16
4	Telehealth system can reduce the cancellation rates of therapy sessions	13	6.2	32	14.8	137	64.2	32	14.8
5	A onetime face to face consultation required prior to a telehealth consultation	13	6.2	26	12.3	132	61.7	43	19.8
6	Telehealth system could be an acceptable adjunct to traditional/ face to face care	26	12.3	32	14.8	130	60.5	26	12.3
7	Telehealth will make healthcare more acceptable by patients	10	4.9	53	24.7	127	59.3	24	11.1
8	Telehealth will make patients in remote areas more accessible	8	3.7	21	9.9	122	56.8	63	29.6
9	Telehealth system can save the effort of physical Therapists	11	5	26	12.3	124	58	53	24.7
10	Information and communication technology (ICT) has a potential role in healthcare	11	5	16	7.4	116	54.3	71	33.3

Table 5 depicts the impact of COVID-19 on telehealth among physical therapists in the KSA. Among the surveyed participants, 53.1% agreed, and 22.2% strongly agreed that during the pandemic, there had been a rise in the number of physical therapists providing telehealth consultations. 46.9% agreed that physical therapy treatment could be easily implemented via this medium whereas, 58% agreed that telehealth has in turn reduced practice hours. Similarly, 50.6% reported improved patient satisfaction with telehealth consultation.

The barriers to telehealth design and implementation, as perceived by the physical therapists of Riyadh province are depicted in Figure 1. 88.9% of those who participated agreed that limited access to internet of high speed did pose a problem in using telehealth services; a similar percentage also believed that problems with internet connectivity would disrupt the effective use of telehealth systems. For 83.40%, lack of technical knowledge was a problem when using telehealth systems, while 81.5% were of the

opinion that a one-time face-to-face consultation was required prior to starting telehealth consultations. Some other problems reported by the sample were limited access to smartphones or other gadgets (77.80%), and lack of economic feasibility in implementation (76.6%). Some (72.80%) also felt that telehealth applications posed disadvantages in the demonstration and progression of specific treatments.

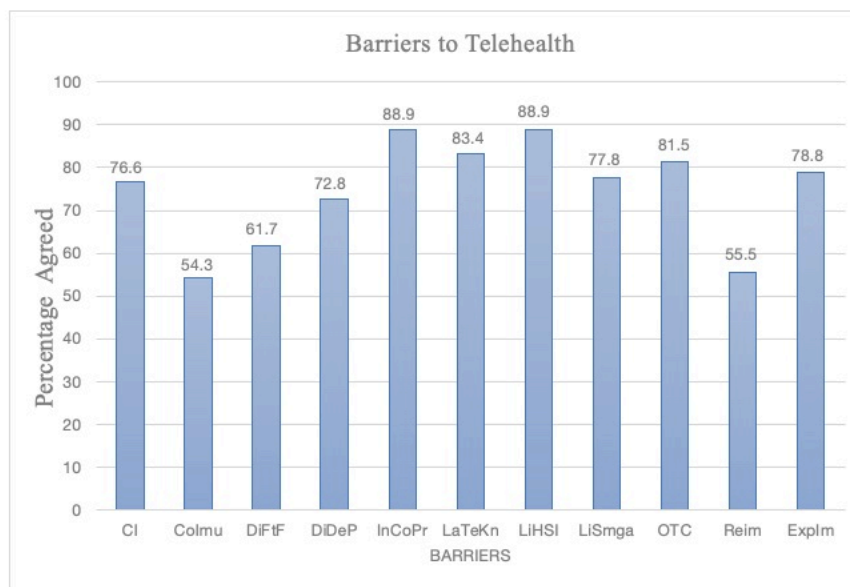


Figure 1: Barriers to Telehealth among Physical Therapists (abbreviations are mentioned in the Table 1)

Table 5: Impact of COVID-19 on telehealth

S.N.	Questions	LEVELS							
		Strongly disagree		Disagree		Agree		Strongly agree	
		N	%	N	%	N	%	N	%
1	During COVID 19 pandemic, the number of Physical Therapists providing telehealth consultants has increased	10	4.9	42	19.8	114	53.1	48	22.2
2	Physical Therapy treatment can be easily implemented via telehealth	24	11.1	82	38.3	100	46.9	8	3.7
3	Physical Therapist practice hours have declined because of telehealth practice	11	5	55	25.9	124	58	24	11.1
4	Patient satisfaction is improved with telehealth consultation	13	6.3	79	36.8	109	50.6	13	6.3

DISCUSSION

The objective of this study was to investigate the knowledge, perception, and barriers to telehealth practice among physical therapists. The results of the investigation throw light upon the various factors in telehealth that influence physical therapy professionals practicing in Riyadh Province, and the study is one of the first of its kind in the KSA. In this article, telehealth was defined as including all forms of

health delivery, including patient consultations via video conferencing, transmitting still images, e-health with patient portals, remote monitoring of vital signs, and continual physical therapy education among many others.

The COVID-19 pandemic proved to have a substantial disruption to the regular scheme of working and conventional physical therapy practice faced many challenges.^[9] At the same time, it brought forward a strong opportunity for all physical therapy practitioners to adopt newer techniques befitting the present scenario and possibly for times ahead.^[10] The need for social distancing and the resulting interruption in the services of physical therapy has had an enormous effect on the health of several thousand patients not only in the KSA but all around the globe. Under such circumstances, telehealth could be a way out, offering the possibility to continue providing services to patients. However, the appropriate definition for digital-physical therapy which can be used among literature writers, stakeholders, and policymakers still does not exist.^[11]

In today's era of advanced technology, physical therapists are well versed with computers and their applications; nevertheless, there is a sizeable number of physical therapists who have never used telehealth or any other digital method to treat their clients. After the first national project in the KSA for telemedicine was introduced in 2011 under STN, a collaborative project between the Saudi Arabian MOH, Ontario Telemedicine Network, and Canada Health Infoway was instituted in 2013 to devise guidelines for the implementation of telemedicine programs in the KSA.^[6] Additional features have been introduced to the existing telehealth services, and these features have been incorporated effectively into the healthcare system through mobile applications such as Mawid, Seha, Tawakkalna, Tetamman, and Tabaud in order to cope with the emergency posed by the pandemic.^[12,13]

It is important to have an understanding of the factors which affect the effectiveness of telehealth and to devise strategies to make sure that the process continues effectively even if patients are not able to visit the physical therapist in person. The results of the present study showed that though a large percentage of participants had several years of practicing experience, a very meager percentage had any experience in telehealth technology, especially when it came to physical therapy applications of telehealth technology and tools. Similarly, relative to other medical and allied health professions, a very small percentage was highly experienced in the use of telehealth. A majority had only a low level of familiarity with the use of telehealth in other countries. This information is a pointer toward the lack of experience among practicing physical therapists in telehealth. A majority agreed that they were confident about continuous training in the use of telehealth being necessary for physical therapists, and only a very small percentage highly or very highly agreed that their department/organization conducts conferences, speeches, or meetings related to telehealth technology. This is a possible indication that advanced training of physical therapists in telehealth tools might help in ensuring the effective delivery of telehealth in physical therapy in the long run.

Telehealth technology has been embraced by different branches of medicine since decades. Applications of telehealth have included telepsychiatry, teleradiology, tele dermatology, telecardiology, and others. Yet, several problems exclusive to physical therapy are yet to be resolved.^[14] Education programs directed in this area can improve the knowledge for the same. A recent study conducted in Saudi Arabia found that a majority of physical therapists reported having a sufficient level of knowledge about telehealth; this discrepancy in findings may be because of the limited sample size in the present study and the study population being physical therapists practicing in Riyadh province alone. However, similar to our study, they too reported that the facilities for telehealth and its usage of it were insufficient to achieve the implementation of telehealth rehabilitation in an effective way in a physical therapy setting.^[15]

When regards to the perception toward telehealth practice, a majority agreed or strongly agreed that telehealth could save the patient both time and money, and a majority also agreed that it could be time-saving for the physical therapist as well. Most participants also agreed that telehealth systems could contribute to the quality of health care. A systematic review conducted in the area of telerehabilitation demonstrated cost savings and revealed a positive impact on health outcomes and patient satisfaction associated with the practice of telehealth.^[16] A good percentage of physical therapists had the perception that adopting the telehealth method could reduce the cancellation rates of therapy sessions. Many believed that at least one face-to-face consultation was required prior to a telehealth consultation, but an equal number was also of the belief that telehealth systems had the potential to be an acceptable adjunct to traditional one-on-one care. Telehealth cannot fully replace face-to-face encounters, though it may radically help combat the risk of spreading COVID-19 further in our communities. It was seen in the same study that patients and their relatives were highly satisfied with video consultations and wished they had been offered to them sooner.^[17] Many of the physical therapists agreed that telehealth would make health care more acceptable by patients and accessible to those in remote areas. The noticeable benefits of telehealth include convenience, reduction in health care costs, and increased accessibility to services from a distance, especially for those residing in rural areas. In addition, some studies have shown telehealth consultations to be equivalent to regular consultations in quality across various specialties.^[18]

When we examined the impact of COVID-19 on telehealth among physical therapists in Riyadh, it was observed that many agreed that the number of professionals providing telehealth consultations during the pandemic had increased, which could be considered as a positive paradigm shift. Most physical therapists agreed that practice hours had declined because of telehealth practice and that treatment could be implemented with ease. Many also agreed that patient satisfaction was improved with online consultations. This approach has been shown to be equally efficient as traditional physical therapy when considering hospitalization and pain factors.^[19] Another study demonstrated that the satisfaction of patients with telehealth was at par with in-person visits during the pandemic. All of these point toward the notion that telehealth can be a feasible alternative to regular face-to-face consultations in times to come.^[20]

Coming to the barriers to telehealth among physical therapists, many were in agreement that telehealth applications were complex to implement and use, and telehealth applications had more disadvantages compared to face-to-face interactions. This perceived barrier could be because of insufficient education about the safety and efficacy of telehealth in the present circumstances, patient hesitance about consulting their regular healthcare provider as opposed to a new face with whom they have no previous relationship, insufficient understanding on telehealth accessibility, and a dearth of telehealth publicity.^[18] Some inadvertent difficulties do exist in the delivery of telehealth, in addition to the challenges faced in adopting it, but most of these are amenable to being addressed strategically. The predominant ones among these are technological limitations and the need for continuing education of the deliverers as the tools evolve.^[21]

Many agreed that telehealth applications have disadvantages in the demonstration and progression of specific treatments. Demonstrating certain types of exercise that required skills and concentration may be difficult to teach via presently available telehealth systems and may require highly sophisticated applications. Loss of human contact (face-to-face interaction) with the doctor could be a difficulty faced by patients availing of telehealth services. Moreover, for each patient, system operators are required to optimize the telehealth according to the type of disease, and sometimes this is not possible due to high costs.^[22]

Most participants agreed or strongly agreed that internet connectivity problems and lack of technical knowledge pose a con in using telehealth systems. Administering a telehealth program requires uninterrupted internet connectivity at both the physical therapist' and patient's end. Consequently, the elderly may find it difficult to use telehealth services with technical guidance. Issues commonly seen in audio transmission during telehealth consultations are delays in the exchange of audio information and the inability to hear properly. Problems with the video transmission (e.g., video delay, freezing video, jerky movements, and tiled or pixelated images) during telehealth sessions may also be encountered owing to system connectivity.^[23] Furthermore, limited access to high-speed internet and access to smartphones or other gadgets pose a disadvantage in using telehealth systems. A high-speed internet connection with reliable internet bandwidth is essential for most applications to run smoothly.^[24,25] These requisites for internet coverage may be difficult to attain in rural areas of many developing countries. Taking into consideration all these factors, there is an ardent need to develop more sophisticated and user-friendly applications that may be suitable for patients as well as physical therapists. Most treatment regimens require exercises, out of which certain exercises may require daily monitoring. A proper training program undergone by the physical therapist regarding telehealth can help them implement telehealth programs efficiently.

CONCLUSION

The benefits of telehealth to the patient-therapist relationship are umpteen. It can be time-saving, and economically convenient for patients, thus contributing to the overall quality of health care. It reduces logistical challenges for families, the disabled, and others for whom transportation is a hurdle. Best of all, it is a part of the health care system which is only improving as technology advances. Telehealth use in rehabilitation settings is continuously growing and has the potential for becoming a viable option for the betterment to physical therapy accessibility to services. Adequate training and continuing education programs for physical therapists regarding telehealth can help them administer it with ease and efficiency.

Recommendations for further study

Further quantitative studies in this area can be undertaken directed toward various telehealth practices among physical therapists. Patient perspectives and attitudes toward telehealth can also be pursued.

Conflict of Interest

The author declares that there are no conflicts of interest relevant to this article.

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