


RESEARCH ARTICLE

Physical therapists' perceptions of and satisfaction with delivering telerehabilitation sessions to patients with knee osteoarthritis during the Covid-19 pandemic: Preliminary study

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Abstract

Objective: This preliminary study was conducted to explore physical therapists' (PT) perceptions of and satisfaction with delivering telerehabilitation sessions to patients with knee osteoarthritis during the Covid-19 pandemic.

Study design: An exploratory preliminary study using an internet-based survey followed by focus group sessions.

Methods: A programme of sessions was administered by 12 PTs from the Physical Therapy Department at Prince Sultan Military Medical City. An internet-based survey containing 17 statements was completed by the PTs.

Results: With regard to telephone-delivered care, four statements related to patients' privacy, programme convenience, safe patients time and money achieved consensus agreement ($\geq 75\%$ agreed or strongly agreed), there was majority agreement ($\geq 50\%$ of respondents agreed or strongly agreed) with seven of the statements regarding the effectiveness, affordability and safety of the programme, but there was no consensus with regard to the remaining five statements. In addition, most of the participants (84.6%) believed that a telephone consultation should cost 25% or 50% less than a face-to-face session.

Conclusion: Despite the lack of physical contact with patients, the PTs agreed that telerehabilitation would offer patients an easy method of being prescribed a therapeutic programme, save time and money, and maintain patient privacy. Further, the PTs reported barriers and suggested adaptations for this method of service delivery.

KEYWORDS

exercise, knee osteoarthritis, physical therapy, telerehabilitation

1 | INTRODUCTION

Osteoarthritis (OA) is a frequently occurring type of arthritis and a well-known cause of pain and disability worldwide (O'Neill et al., 2018). Knees are the most commonly affected joints and individuals with knee OA typically complain of pain, stiffness, and function loss (Deshpande et al., 2016). Risk factors such as increasing rates of obesity and ageing increase the prevalence of OA (Cross et al., 2014; Turkiewicz et al., 2014). A recent study provided the global incidence of knee OA at about 203 per 10,000 person-years (Cui et al., 2020).

Several care guidelines have recommended exercise as the first-line treatment for knee OA and one of the most common and effective management strategies (Chen et al., 2020). A study published in 2001 showed a significant improvement in patients with knee OA in terms of muscle strength, functional level, and decreased pain after strengthening exercises (Baker et al., 2001). Despite the necessity of physical therapy care for knee OA management, there are certain challenges facing this approach, such as lack of service provision and inconvenient appointment times or locations (Ackerman et al., 2016).

Telerehabilitation, also commonly known as telerehab, means providing home-based rehabilitation services using communication technologies (Coats et al., 2020; Cramer et al., 2019). Telerehabilitation can include phone-, image- and sensor-based, virtual environment, and virtual reality rehabilitation (Naeemabadi et al., 2020). Real-time video seminars are used extensively in physical telerehabilitation, and some authors indicate that current video game technologies could also be used in physical rehabilitation (Naeemabadi et al., 2020). Another study suggests that videoconferencing shows better results than telephone consulting calls for home-based exercise in terms of reducing pain and stiffness and increased function in knee OA patients (Rao et al., 2012).

The literature shows some of the advantages of telerehabilitation, this approach having, for example, the potential to increase access to rehabilitation services (Cramer et al., 2019). In addition, when compared with traditional therapy, telerehabilitation could provide better clinical services in rural and remote regions, as well as improving the cost effectiveness and resource management of services to a high level of validity and accuracy (Kidholm et al., 2016; Shenoy & Shenoy, 2018). Barriers and challenges to implementing telerehabilitation were also addressed in a recent systematic review conducted by Rabanifar and Abdi (2021), who found that culture, awareness of the individuals concerned, and the infrastructure of telerehabilitation were the main factors.

The perceptions of physical therapists (PTs) of telerehabilitation programmes have been investigated in various countries. For example, one study was conducted in Australia to investigate the perceptions of PTs with regard to delivering 6 months of strengthening exercise sessions via telephone for knee OA patients (Lawford et al., 2019). The PTs who took part thought that the telephone could only be used for follow-ups due to the lack of visual and physical communication with patients before administering the intervention. However, the PTs noted patients' positive outcomes, such as improvements in pain, function and confidence (Lawford et al., 2019).

However, healthcare researchers need to pay further attention to research on telerehabilitation as it is still in its infancy, especially in countries with limited resources. Studies on telerehabilitation adoption are essential to inform healthcare personnel and clients about successful adoption strategies and reduce the likelihood of implementation failure (Niknejad et al., 2021).

During the Covid-19 pandemic and the demand for social distancing, most hospitals worldwide provided their services using telerehabilitation programmes (Ozden, 2020). Despite the absence of telerehabilitation guidelines in the Kingdom of Saudi Arabia (KSA), most of the countrys hospitals enforced the quick adoption of telerehabilitation (Qureshi et al., 2021). The Prince Sultan Military Medical City (PSMMC) adopted the digital transformation of health services, as it is also one of the goals of the KSA Vision 2030. The current study was conducted to explore the perceptions of and satisfaction of PTs from PSMMC with delivering telerehabilitation sessions to patients with knee OA during the Covid-19 pandemic. Knowing the perceptions of PT practitioners will inform the most effective way of implementing and delivering telerehabilitation programmes to patients with knee OA.

2 | METHODS

2.1 | Participants

A convenience sample of 13 PTs were recruited from PSMMC. The 13 PTs delivered a telerehabilitation programme to patients with knee OA via telephone during the Covid-19 pandemic. The study was conducted in the Physical Therapy Department of PSMMC in Riyadh in the KSA.

2.2 | Sample size

The sample size was calculated according to previous research that recommended a sample of 10–12 participants (Julious, 2005).

2.3 | Design and setting

This exploratory preliminary study was approved by research and ethical committees at PSMMC (IRB Approval No: 1570, 20 December 2021). All the participants signed a consent form before participation.

2.4 | Procedures

2.4.1 | Measurement of perception and satisfaction (instrumentation)

After obtaining permission from the authors, we used a survey from a previous study (Lawford et al., 2018). The original survey consisted of

three sections: Section A, which relates to the demographic and clinical characteristics of the participants, such as gender, nationality and highest physical therapy degree; and Section B and C, which contains 16 statements about delivering a telerehabilitation programme via telephone (Section B) and via video (Section C) to patients with knee OA (Lawford et al., 2018). Some of the statements in Section B (1–10) were originally developed for the Tele-medicine Perception Questionnaire (Demiris et al., 2000), which is a valid and reliable measure of perceptions of the risks and benefits of home telemedicine (Lawford et al., 2018). The other statements (11–16) were developed based on criteria regarding behaviour change for designing and evaluating interventions, and include practicability, acceptability, affordability, safety, effectiveness, and equity (Lawford et al., 2018; Michie et al., 2014).

All statements were framed positively to ensure consistency and the participants were asked to rate their agreement with each statement on a 5-point Likert scale, ranging from strongly agree to strongly disagree. In addition, one more question, concerning the cost of telephone-based consultations relative to traditional consultations was used, the answer was rated on a 5-point Likert scale, ranging from '50% more than the cost of a face-to-face physical therapy session' to '50% less than the cost of a face-to-face physical therapy session'. In the current study, the authors also made minor changes in the survey, all questions related to video calls (Section C) were removed because they were not applicable. The modified survey was piloted with 10 PTs, who were not included in the main study. The modified survey was found to be clear and appropriate.

The modified survey was introduced via Google Forms and was completed by all PTs who delivered a telerehabilitation programme for patients with knee OA at PSMC during the pandemic. The soft copy of the survey was forwarded to the PTs by the department administration via WhatsApp. The time required to complete the survey was deemed to be 5–7 min.

2.4.2 | Procedures of the telerehabilitation programme

As a result of the Covid-19 pandemic and lockdown, the Physical Therapy Department at PSMC used a telerehabilitation programme to introduce its services. A telerehabilitation programme was delivered to 250 patients with knee OA from 13 August 2020. All the patients had been evaluated in the clinic before the pandemic for a place on the waiting list. During the pandemic, patients were contacted by the PTs by telephone and received the same programme. The programme includes an electronic file sent to the patients by WhatsApp, containing educational information about OA, self-management and coping strategies, and therapeutic exercises. The therapeutic exercises included stretching, strengthening and range-of-motion exercises, such as isometric knee extensions, straight leg raising, calf, hamstring and

quadricep muscle stretching, gluteus muscle strengthening, holding a ball while sitting, step-ups, resistance knee extensions with a band, calf muscle and side leg raises, leg presses, cycling, and swimming.

The frequency and number of sets of exercises were tailored to each patient based on the participant's age, current impairments, and the main complaints. In general, patients were recommended to exercise three times per day, each set having 10 repetitions. Some patients complained of other problems, such as lower-back pain, so back exercises were also prescribed for them. The patients were also phoned once a month for follow-up and reassessment. They were asked about their past and current physical activity level during each call, as well as their pain status using a visual analogue scale. The duration of each call was approximately 10–15 min.

2.4.3 | Focus group

A focus group that included all the PTs ($n = 13$) who participated in the telerehabilitation was held after the PTs had completed all their consultations with the participants. A guide was used before the focus group to ascertain the PTs' perceptions of suggested adaptations for delivering therapy and the likely acceptability, effectiveness, and practicability of the delivered therapy (Appendix 1: Focus group plan). This guide was developed by an experienced researcher (ASA, coinvestigator) and reviewed by (DMA, coinvestigator). Both coinvestigators are PhD holders and had a minimum of 10 years' clinical experience in managing musculoskeletal conditions. The focus group lasted for 30 min and was conducted by attending physically with the primary investigator (ASA), who had had no prior interaction with the PTs and recorded by (AMA). The focus group was audio recorded and externally transcribed verbatim. Pseudonyms were assigned to each participant for confidentiality purposes. All data were de-identified and stored in a digital format on a password-protected university server.

2.5 | Data analysis

2.5.1 | Survey instrument

First, all participants' responses were downloaded from Google Forms and then processed using a Microsoft Excel spreadsheet. SPSS V22 was used to analyse the data. Data from Section B statements were described as a number (percentage), with 95% confidence intervals (95% CIs) calculated around proportions. We employed an approach that was used in previous research (Lawford et al., 2018) to assess the level of agreement among participants within each statement. The percentage of PT practitioners who answered 'Strongly agree' or 'Agree' to each statement was evaluated. We then defined 0%–50% as no consensus, 51%–74% as a majority view, 75%–99% as a consensus, and 100% as unanimity.

2.5.2 | Focus group

The first stage of the data analysis involved summative content analysis, in which the data were coded using the aspects of the Donabedian framework as an overarching guide (Tong et al., 2007). Consistent with the aims of the study, a thematic analysis approach was used to examine the focus group data. The objective was to identify common pre-existing codes or keywords, which we subsequently grouped as categories and themes. The focus group data was analysed by two reviewers (ASA and DMA). First, the focus group transcript was read by DMA, who had no contact with the PTs, after the transcription, in order to identify codes and keywords within the data, and then reviewed by ASA. Related codes were organised into categories and combined to form themes. Categories for post-intervention data were organised under each of the three elements of the Donabedian framework (i.e. process, structure and outcome) (Hsieh & Shannon, 2005). Overall themes were divided into sub-themes, which were reviewed, discussed and deliberated upon by all members of the research team (King et al., 2018). All the analytical steps were performed using standard word processing, rather than qualitative analysis software.

3 | RESULTS

3.1 | Characteristics of the participants

Thirteen PTs completed the survey, all of them delivered a tele-rehabilitation programme to patients with knee OA via phone during the Covid-19 pandemic, and 69% were female (Table 1). Of those who participated, 53.8% stated that they were moderately confident using phone services with patients.

3.2 | Telephone-delivered services

Only four statements in the survey (2, 6, 9 and 10) achieved consensus agreement (Table 2) ($\geq 75\%$ agreed or strongly agreed). These were: (2) A patient's privacy would not be violated if I prescribed them an exercise programme over the phone (84.6%); (6) An exercise programme prescribed by a physiotherapist over the phone would save the patient money (76.9%); (9) Receiving an exercise programme from a physiotherapist over the phone would be a convenient form of health care for an OA patient (76.9%); and (10) Receiving an exercise programme from a physiotherapist over the phone would save the patient time (84.6%).

However, there was majority agreement ($\geq 50\%$ of respondents agreed or strongly agreed) with seven statements (1, 3, 5, 7, 14, 15, and 16). Of the PTs who participated, 69.2% thought that they would gain a good understanding of a patient's OA over the phone (statement 1); 61.6% believed that using the phone to consult with an OA patient and prescribe an exercise programme would be easy for them (3); 61.5% agreed that an exercise programme prescribed

by a physiotherapist over the phone would improve the patient's OA (5); and 53.9% thought that they would be able to monitor a patient's OA adequately over the phone (7). In addition, 53.9% agreed that using the phone would be an effective way to deliver an exercise programme to patients with OA (14); 69.2% found that using the phone would be an affordable way for patients to receive a physiotherapist-prescribed exercise programme for their OA (15); and 53.9% thought that using the phone would be a safe way for patients to receive a physiotherapist-prescribed exercise programme for their OA (16).

There was no consensus agreement with the remaining five statements (4, 8, 11, 12 and 13). Only 38.5% of the participants agreed that they would be as satisfied talking to a patient over the phone as they would be talking to the patient in person (4), 30.8% liked that there would be no physical contact with an OA patient when consulting over the phone (8), and 38.5% would be interested in being involved in a service offering PT-prescribed exercise over the phone for people with OA (11). However, 46.2% thought that using the phone would be an acceptable (12) and useful (practical) (13) way to deliver an exercise programme to patients.

In response to the question in the survey (appropriate fees), most of the participants (84.6%) believed that a telephone consultation should cost 25% or 50% less than a face-to-face session, although 15.4% believed that it should cost 25% or 50% more.

3.3 | Focus group analysis

The following four themes arose at the first stage (i.e. during the survey) and were targeted for further discussion and analysis during the second stage (i.e. the focus group interview). The four themes are the adaptations needed for the delivered therapy, the acceptability consideration, the effectiveness of the prescribed therapy, and the practicability of the prescribed therapy.

3.3.1 | The adaptations needed for the delivered therapy

The PTs considered that, in some circumstances, it would have been helpful for them to see the patient's knee or observe the patient doing an exercise to gain a better understanding of the patient's condition. As such, the PTs found that their experience of providing telerehabilitation needed an adaptation, resulting in new suggestions for this kind of service delivery. They reported that the lack of physical and visual contact was a concern that they anticipated, particularly for older patients. They suggested considering video calls as an adaptation. For instance, according to one PT, 'For the video calls, Yeah, it's good. Actually, it will be considered as face-to-face because you can see the facial expression of the patient and the reaction but it's not available in all patients' homes. Some of the patients is elderly'. The PTs also suggested asking the patients to provide a

TABLE 1 Demographic and clinical characteristics of the participants (n = 13)

		n (%)
Sex	Female	9 (69)
	Male	4 (31)
Nationality	Saudi	13 (100)
	Non-Saudi	0 (0)
Highest physical therapy degree	Doctorate	1 (7.7)
	Master's	1 (7.7)
	Bachelor's	11 (84.6)
	Diploma	0 (0)
	Doctor of physical therapy	0 (0)
Current professional accreditation certificate	Physical therapy technician	0 (0)
	Physical therapist	11 (84.6)
	Senior physical therapist	1 (7.7)
	Physical therapy consultant specialist	1 (7.7)
	Fellowship	0 (0)
Current area of physical therapy practice	Orthopaedics	12 (92.3)
	Sport injuries	0 (0)
	Neurological rehabilitation	0 (0)
	Geriatrics	1 (7.7)
	Women's health	0 (0)
	Cardiopulmonary rehabilitation	0 (0)
	Paediatrics	0 (0)
Worked with knee osteoarthritis patients	Yes	13 (100)
	No	0 (0)
How frequently do you treat patients for their chronic knee osteoarthritis?	Infrequently; at most 1 in the last 6 months	0 (0)
	Somewhat frequently; between 2 and 5 in the last 6 months	4 (30.8)
	Very frequently; at least 1 per month	9 (69.2)
Have you delivered physical therapy care for knee OA patients via the phone during the Covid-19 pandemic?	Yes	13 (100)
	No	0 (0)
How confident would you be using phone services with knee OA patients?	Not at all	0 (0)
	A little	1 (7.7)
	Moderately	7 (53.8)
	Quite a bit	2 (15.4)
	Extremely	3 (23.1)

daily exercise diary, to have the first session face to face supported with patient's education about the condition and to provide printed pictures or video links for the patients that would help the PTs to prescribe exercises effectively during the calls. They also suggested having follow-up sessions provided by video calls or recording the sessions and sending them to the patients, all of which were considered potential adaptations for the delivered therapy. For

instance, 'Well, you need it to be recorded videos, pictures as much as possible and being very detailed because no matter how much you tell the patient on the phone, he's never going to understand it'. However, some of these suggestions may influence the acceptability of the delivered care. For instance, there could be cultural barriers, especially for the female PTs/patients who participated in this study. For example, the PTs reported that 'some of the patients will

TABLE 2 Therapists' perceptions of telephone-delivered services for patients with knee Osteoarthritis (OA) (Lawford et al., 2018) ($n = 13$)

Statement	Strongly agree n (%)	Agree n (%)	Unsure n (%)	Disagree n (%)	Strongly disagree n (%)
1. I would get a good understanding of a patient's osteoarthritis over the phone.	0 (0)	9 (69.2)	4 (30.8)	0 (0)	0 (0)
2. A patient's privacy would not be violated if I prescribed them an exercise programme over the phone.	3 (23.1)	8 (61.5)	0 (0)	2 (15.4)	0 (0)
3. Using the phone to consult with an osteoarthritis patient and prescribe an exercise programme would be easy for me.	3 (23.1)	5 (38.5)	3 (23.1)	2 (15.4)	0 (0)
4. I would be as satisfied talking to an osteoarthritis patient over the phone as I would be talking to the patient in person in my consulting room.	1 (7.7)	4 (30.8)	3 (23.1)	3 (23.1)	2 (15.4)
5. An exercise programme prescribed by a physiotherapist over the phone would improve the patient's osteoarthritis.	1 (7.7)	7 (53.8)	3 (23.1)	2 (15.4)	0 (0)
6. An exercise programme prescribed by a physiotherapist over the phone would save the patient money.	2 (15.4)	8 (61.5)	2 (15.4)	1 (7.7)	0 (0)
7. I would be able to adequately monitor a patient's osteoarthritis over the phone.	1 (7.7)	6 (46.2)	3 (23.1)	3 (23.1)	0 (0)
8. I like that there would be no physical contact with an osteoarthritis patient when consulting over the phone.	1 (7.7)	3 (23.1)	5 (38.5)	3 (23.1)	1 (7.7)
9. Receiving an exercise programme from a physiotherapist over the phone would be a convenient form of health care for an osteoarthritis patient.	2 (15.4)	8 (61.5)	3 (23.1)	0 (0)	0 (0)
10. Receiving an exercise programme from a physiotherapist over the phone would save the patient time.	3 (23.1)	8 (61.5)	1 (7.7)	1 (7.7)	0 (0)
11. I would be interested in being involved in a service offering physiotherapist-prescribed exercise over the phone for people with osteoarthritis.	2 (15.4)	3 (23.1)	5 (38.5)	2 (15.4)	1 (7.7)
12. Using the phone would be an acceptable way for me to deliver an exercise programme to patients with osteoarthritis.	2 (15.4)	4 (30.8)	5 (38.5)	2 (15.4)	0 (0)
13. Using the phone would be a useful (practical) way for me to deliver an exercise programme to patients with osteoarthritis.	2 (15.4)	4 (30.8)	5 (38.5)	2 (15.4)	0 (0)
14. Using the phone would be an effective way for me to deliver an exercise programme to patients with osteoarthritis.	2 (15.4)	5 (38.5)	4 (30.8)	2 (15.4)	0 (0)
15. Using the phone would be an affordable way for patients to receive a physiotherapist-prescribed exercise programme for their osteoarthritis.	2 (15.4)	7 (53.8)	4 (30.8)	0 (0)	0 (0)

TABLE 2 (Continued)

Statement	Strongly agree n (%)	Agree n (%)	Unsure n (%)	Disagree n (%)	Strongly disagree n (%)
16. Using the phone would be a safe way for patients to receive a physiotherapist-prescribed exercise programme for their osteoarthritis.	1 (7.7)	6 (46.2)	3 (23.1)	3 (23.1)	0 (0)
A telephone-based session should cost the following relative to a face-to-face physiotherapy session:	50% more than the cost of a face-to-face physiotherapy session n (%)	25% more than the cost of a face-to-face physiotherapy session n (%)	The same cost as a face-to-face physiotherapy session n (%)	25% less than the cost of a face-to-face physiotherapy session n (%)	50% less than the cost of a face-to-face physiotherapy session n (%)
	1 (7.7)	1 (7.7)	0 (0)	4 (30.8)	7 (53.8)

ask to record the session, and we do not like that', 'some patients will not accept to be exposed during the video calls', and 'the privacy depends on our culture, I think they will not like the video calls'.

When the PTs were asked whether they would use this kind of service delivery again with the suggested adaptations, there was a degree of conflict between their answers. Most of the PTs who participated reported that they had an intention to use tele-rehabilitation with adaptations, although a few of them questioned the practicability of this kind of service delivery, as will be discussed later in this section.

3.3.2 | The acceptability consideration

Patients' acceptance is another significant theme that emerged clearly in this study. Patients' acceptance emerged as a factor that, according to the PTs who participated, influenced many aspects of a prescribed exercise programme. These aspects may include the therapeutic-patient alliance, the patient's self-management, patient's satisfaction, and patient's motivation. For instance, in tele-rehabilitation, PTs/patients believed that there is a lack of an appropriate PT-patient relationship. For example, 'patients think that you don't want to see them in clinic, that you are escaping from your job' and 'I think it's the older they are, the harder they are to get the information, ... They need that extra care, extra touch, you know, just the good smile, the good words that they get'. Further, the PTs reported that some of the patients did not accept the concept of self-management. For example, 'they need more someone to help them more than just I'm going to be treating myself' and 'the patient is relying on the therapist to instruct them to do their exercise'. PTs also reported that this may have an impact on the performance of and satisfaction with the prescribed programme, such as 'the patient comes to my boss here, and he complains that he did not get a single exercise.... He's doing the exercise, but still the patient goes to my boss and tells them, I don't know, is this exercise or not', and 'even if the patient knows her exercise, she used to come to hospital and take her information from someone and she feels much more confident in a clinic'. As such, the PTs would have to re-emphasise the importance of education as early as possible in the programme.

3.3.3 | The effectiveness of the prescribed programme

When the PTs were asked about the effectiveness of the programme, they reported that their experiences providing tele-rehabilitation fell behind their expectations. According to them, this may result in less enthusiasm for this model of service delivery using the current procedure due to several factors. They reported that the lack of physical and visual contact was more of a key issue than anticipated. The absence of the usual contact may affect their understanding of the patient's complaints and the patients cannot express themselves. For example, 'he will try to explain it for things by his body language....So, we need to understand the patient, he cannot express about himself and know how to communicate. So, he needs something to, to be face to face to express about himself, especially for the older ages'; 'Most of the patients they have a lack of ability to explain the condition'; and 'he'll not be able to describe ...but in the clinic, I can see it. I can do something about it'.

In addition, the PTs who participated reported that they lacked the ability to do an appropriate assessment of their patients, which may affect the therapy provided. For example, PTs referred to a 'lack of assessment, in a young patient sometimes she does not have knee OA only, maybe she has a meniscus tear or ligament tear, we have to do a special test to figure out the main cause of knee pain, not just knee OA'; 'You cannot differentiate when you're diagnosing'; and 'For me, yes. It's better to see the patient to do full assessment observation, palpation'.

3.3.4 | The practicability of the prescribed programme

The PTs found that providing telerehabilitation was not practical or applicable for all the participants. The PTs reported barriers; for example, receiving exercise through messages or video calls might not be applicable due to technical difficulties and the patient's age. For instance, 'some of the patients do not have WhatsApp, so she will not receive exercises, and I cannot explain for her the exercise, while on top she is old'. As such, they reported that telerehabilitation could be

practical for young and educated participants and those with less condition severity: *'according to which patient will receive this type of treatment. If she's not educated, she will not be able to understand me on the phone. I need her by the clinic, but it's suitable for the educated and younger patients that can help us more by phone'*. Second, the PTs reported that patients with disabilities, such as hearing and vision limitations, might influence the practicability of doing exercises virtually: *'There are sometimes barriers, such as hearing and vision sometimes'*. On the other hand, the participants' place of residence may encourage them to participate in telerehabilitation sessions. For example, if the participant is a resident outside Riyadh, he or she might prefer to participate in telerehabilitation therapy rather than having face-to-face therapy in their original place of residence. One PT reported that, *'Actually we have some stereotype from the people who are living outside of Riyadh, they thought Riyadh has more sophisticated hospitals and they preferred to be treated here'*.

One more barrier is the cultural diversity among the Saudi population and the different accents across the country, which make it difficult for older participants to understand the instructions. For example, *'I was struggling to explain some exercise for my patients regarding the terms; in the KSA we have a high diversity of accents, so this is one of the barriers I note, especially once I call my patient by phone, maybe face to face they can conclude from my facial expression or body language what I mean'*. As such, for those participants who experienced difficulties due to language barriers, the PTs again suggested considering video calls or recorded sessions. Although video calling is time-consuming for the PTs, it might be more practical for them: *'yes, it will consume more time, but it will be more effective than virtual sessions by phone'*.

4 | DISCUSSION

This study aimed to explore the perceptions of and satisfaction among physical therapy practitioners with delivering a telerehabilitation programme to patients with knee OA during the Covid-19 pandemic. Thirteen physical therapy practitioners from PSMHC delivered therapeutic programmes to 250 patients with knee OA over the phone. The findings show consensus agreement among the physical therapy practitioners that telerehabilitation did save patients money and time, maintained patient privacy and was a convenient form of health care for patients with knee OA. This finding is consistent with the findings of a previous descriptive study conducted in Australia to investigate the perceptions and willingness of PTs ($n = 217$) to use telephone- and internet-mediated service models for exercise therapy for patients with knee and/or hip OA (Lawford et al., 2018). The PTs in that study agreed that telerehabilitation showed advantages, such as time savings and privacy, but that they preferred internet-mediated to phone-based services (Lawford et al., 2018). Overall, in our study, the physical therapy practitioners appeared to hold positive perceptions of using the telephone to deliver care to patients with knee OA. This is consistent with the findings of a cross-sectional study conducted in Kuwait to

investigate the perception and willing of PTs ($n = 273$) to use telerehabilitation in the country during the Covid-19 pandemic (Albahrouh & Buabbas, 2021). The PTs showed positive perceptions and a willingness to implement telerehabilitation to make physical therapy services more accessible to patients, particularly during the Covid-19 pandemic (Albahrouh & Buabbas, 2021).

Moreover, the current study team conducted a focus group to clarify the absence of consensus agreement with regard to satisfaction, acceptability, practicability and effectiveness of telerehabilitation. The team also wanted to explore suggested adaptations for the delivered programme, as only 38.5% of the physical therapy practitioners agreed that they would be as satisfied talking to patients with knee OA over the phone as they would be talking to them in person in the clinic. The physical therapy practitioners reported that one reason might be the lack of physical contact, as only 30.8% liked that there would be no physical contact with an OA patient. There was also the matter of the absence of training provided by the hospital on handling patients over the phone prior to applying the programme. This finding is consistent with a study conducted in Saudi Arabia to explore the barriers to implementing telerehabilitation (Aloyuni et al., 2020), which reported that lack of skills and technical issues were the main barriers to implementing such a programme.

According to the literature, exercise and self-management are key components of physical therapy for patients with knee OA and manual therapy is only recommended for specific patients (Odole & Ojo, 2014). However, touch is a frequent method for PTs to interact and communicate with their patients (Bjorbækmo & Mengshoel, 2016). In telerehabilitation, physical therapy practitioners can only rely on subjective information gained from patients during assessment, as they cannot perform quantitative measurements of joint motion, knee palpation, postural examination, gait analysis, or observation of joint motion using categorical assessment scales. This finding is in line with another study conducted in Australia showing that PTs expressed some discomfort without hands-on assessment (Hinman et al., 2017). As well as the lack of physical contact preventing the palpation of a patient's knee to determine the source of symptoms, it helped them to listen actively to the patients (Hinman et al., 2017). A study by Bennell et al. (2017) stated that PTs found that a lack of face-to-face contact made it very difficult for them to establish a normal relationship and build a good connection with their patients.

In this study, PTs reported, incidentally, the importance of PTs' communication abilities and interpersonal skills. They also believed that there was a lack of an appropriate PT-patient relationship, which, according to them, affected a patient's acceptance, the effectiveness of telerehabilitation and the intention to use this kind of care delivery in the future. Previous studies have reported that a lack of staff training and appropriate communication skills during delivering telerehabilitation sessions may negatively influence implementation, patients' acceptance and physical therapists' autonomy (Brewster et al., 2014; Hibbert et al., 2003). As such, staff training has repeatedly been suggested in the literature as a

facilitator that helps improve confidence and collaborative working between patients and healthcare practitioners (Brewster et al., 2014; Hibbert et al., 2003).

In addition, only 46.2% of the physical therapy practitioners who participated in this study agreed that telerehabilitation would be useful and practical for patients with knee OA. This finding is consistent with a previous descriptive study (Lawford et al., 2018), which found that less than 44% of PTs agreed that telephone sessions were useful and improved the status of patients with knee/hip OA. In our study, the physical therapy practitioners assessed patients once a month. They used a visual analogue scale to detect pain levels and asked the patients about their previous and current physical function to determine improvements. However, using valid and reliable outcome measurements would help to determine the effectiveness of the programme. There was also a lack of the contextual factors, such as a hospital/clinical atmosphere, body language, the nature of the therapist's uniform, and the appearance and sight of therapeutic equipment, that were among other elements that lead to positive outcomes in chronic conditions (Patricio & Contreras, 2013).

In general, this study found that most of the PTs who participated agreed that telerehabilitation offered a sensible solution to providing physical therapy services to patients during the Covid-19 pandemic. However, they highlighted the importance of certain adaptations. Importantly, the patient's education in the first session, which may also possibly be done face to face, followed by virtual sessions, such as video calls. The implementation of telerehabilitation is underway in the Saudi population (Alsobayel et al., 2021). As such, educational sessions are essential to establish an appropriate physical therapist–patient relationship, establish a good understanding of the meaning of telerehabilitation, and support the importance of self-management, particularly among older people with OA. This is consistent with MSK physical therapy guidelines on the delivery of patient-centred care that incorporates effective communication and self-management (Lin et al., 2019). Another potential benefit of an educational session is to encourage the patient's motivation and self-confidence to progress through the following virtual sessions (Azma et al., 2018).

Although some of the barriers to applying telerehabilitation reported in this study can be found within the broader literature, such as technical difficulties (Leochico et al., 2020), other unique aspects of the Saudi population were identified. For example, and similar to a previous study (Alsobayel et al., 2021), PTs highlighted not being able to conduct hands-on assessment or treatment as a barrier. However, they also reported barriers such as conservative norms, cultural diversity, and the different accents that exist across the country. Conservative norms, especially for females in respect of using video calls or recorded videos, might be a significant barrier to applying telerehabilitation in the Saudi population. Further, different accents might make it difficult for older participants to understand the exercise descriptions and instructions. It has been reported that culture influences people's perceptions, beliefs, and behaviour (Henschke et al., 2016). Culture could, then, have an important impact on the

treatment provided and the overall experience of pain (Hall et al., 2008). As such, understanding culture is relevant, as it may help to identify potential facilitators for future studies targeting treating people by applying telerehabilitation sessions.

The results of this study show that the potential of physical therapy provided via telerehabilitation for patients with OA has implications for future clinical practice. Telerehabilitation may be a feasible option for providing physical therapy interventions, for example, for those who reside outside city communities, where access to clinics can be challenging and time-consuming for both patients and clinicians. However, staff training should be encouraged to facilitate this kind of service delivery. We also highly recommend future studies to be conducted with larger samples and a greater variety of hospitals offering telerehabilitation care services. Furthermore, exploring the beliefs and behaviours of patients with knee OA in relation to telerehabilitation is an important area of future research.

4.1 | Study limitations

The current study involved a recent topic of research, as technology dominates even health care. Since the research was limited to a single hospital and the practitioners recruited from a single place, they had similar experiences and delivered the same programme. Moreover, this study explored the perception of the physical therapy practitioners, regardless of their qualifications or position. The findings might also provide several insights, inform practical application and direct the way for future research.

The current study has two limitations. The first is the small sample size. The second is that PSMMC did not deliver video-based exercises, so the perception of the physical therapy practitioners towards this method could not be assessed and compared with phone-based telerehabilitation.

5 | CONCLUSION

Physical therapy practitioners in PSMMC agreed that telerehabilitation would be a convenient and safe way to prescribe exercise for patients with knee OA. Furthermore, they agreed that telerehabilitation would offer patients certain advantages, such as saving them money and time, and it would not violate patient privacy. However, most of the PTs found telerehabilitation was not as useful a method as face-to-face sessions and they were not satisfied with the lack of physical contact.

AUTHOR CONTRIBUTION

The study protocol was designed by all authors. Asma Alrushud and Ameerah Alharthi have conducted the focus group sessions, and Asma Alrushud and Dalyah Alamam have prepared the guide for focus group sessions and analysed the transcript. All authors contributed to analysing the survey, writing the paper.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

The study protocol was approved by the Institutional Review Board, Scientific Research Centre, Prince Sultan Military Medical City with IRP Approval No: 1570 on 20 December 2021.

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