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Unlocking the Potential of Telerehabilitation for Enhanced Osteoporosis Care: Patient Perspectives and Challenges

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Abstract

Background

Millions of people around the world, including in Karachi, Pakistan, suffer from osteoporosis, which is a common condition. Numerous obstacles prevent patients with osteoporosis from receiving medical care, particularly during the COVID-19 pandemic. The improvement of access to care and removing barriers may be accomplished through telehealth. However, more research is required to understand how Karachi's progress feels about the acceptability of telehealth for treating osteoporosis.

Methods

This mixed-methods study aimed to understand more about the current barriers osteoporosis patients in Karachi face in accessing healthcare services and the acceptability of using telehealth to provide that care. The study enrolled 60 individuals with a confirmed diagnosis of osteoporosis and surveyed and interviewed the participants to assess their current management experiences, attitudes towards telehealth, technology access and literacy, and attendance barriers.

Results

According to the findings, patients with osteoporosis face numerous obstacles to receiving care, such as apprehension about coming into contact with COVID-19, transportation problems, financial limitations, a lack of support, and scheduling conflicts. Despite these obstacles, most patients said they were happy with how their osteoporosis was managed. However, the majority of patients had a positive attitude towards telerehabilitation. Patients expressed a desire for improved communication with their therapists and had varying degrees of comfort using technology for rehabilitation.

Conclusion

It was ascertained that telerehab could significantly enhance osteoporosis treatment. By removing barriers to care, enhancing communication, and increasing access to technology, the delivery of healthcare services to osteoporosis patients in Karachi could be improved.

Keywords

Healthcare, Osteoporosis, Patient-Care, Telehealth.

Introduction

The most prevalent chronic metabolic bone disease, osteoporosis, is characterized by increased bone fragility and is linked to several factors, including menopause and ageing[1]. Osteoporosis is escalating into a global epidemic due to an ageing population and a longer life expectancy. More than 200 million people are thought to be affected by osteoporosis[2]. The International Osteoporosis Foundation recently released statistics showing that 1 in 3 women over 50 and 1 in 5 men will sustain an osteoporotic fracture during their lifetimes[2]. However, risk factors like multiparity, an increase in postmenopausal years, low calcium intake, vitamin D deficiency, and physical inactivity are on the rise in Pakistan, where there is a dearth of reliable epidemiological data on the disease[3]. Significant osteoporosis risk factors were identified in Peshawar-based research, including menopause and menarche age, pregnancy history, personal and family history of fractures, smoking, medication use, occupation, and income[4]. Additionally, research showed that postmenopausal women's average calcium intake was significantly lower than the 1300 mg/day recommended daily intake by the WHO. Women were considerably less likely than men to exercise physically[4].

Osteoporosis must be managed over an extended period, which can be difficult for patients, especially those who have trouble accessing care or need help getting to appointments[5]. Only some patients may be able to receive traditional care, especially in resource-constrained areas or during pandemic-related restrictions. In this setting, telehealth services, including telemedicine, remote patient monitoring, patient education, and virtual doctor consultations, have shown promise as an alternative to traditional osteoporosis management methods[6].

Telehealth services have many benefits for treating osteoporosis[7]. Patients with trouble travelling or living far from medical facilities will benefit from the convenience. Patients' adherence to their treatment plan may improve, and their likelihood of missing appointments may decrease[8]. By providing patients with access to monitoring tools and educational resources that can help them better manage their conditions; telehealth services can also increase patients' feelings of self-efficacy. These tools may also result in financial savings by reducing the necessity of in-

person consultations and hospital stays[9]. Telehealth services have many benefits for managing osteoporosis, but they also have some drawbacks. Technical issues and a lack of digital health literacy can hamper the efficient implementation and use of telehealth services[10]. For some patients, the absence of a physical examination during virtual visits can be problematic because the doctor may be unable to assess their condition accurately. Communicating with other healthcare professionals in a virtual setting can be more challenging, resulting in fragmented care[11].

Nevertheless, during the COVID-19 pandemic, telehealth services have proven effective in managing osteoporosis[11]. Physical and occupational therapists have successfully tracked the healing of osteoporosis patients who have suffered fragility fractures thanks to telerehabilitation in particular. Additionally, it enables patients to receive care without leaving their homes, fostering continuity of care for those with incapacitating conditions. The patient's viewpoint is crucial for telehealth osteoporosis care strategy optimization[12]. Patients' experiences with telehealth services could be insightfully gleaned from a cross-sectional study, which could also point out potential adoption hurdles[13]. Additionally, by comprehending patient viewpoints, healthcare professionals can better target telehealth services to patients' needs and enhance osteoporosis care.

Methodology

Study Design

This mixed-methods study aimed to gather information on the current obstacles to obtaining healthcare services and the acceptability of telehealth as a method of delivering healthcare to osteoporosis patients.

Study Setting and Sample Selection

The study was conducted in primary and tertiary facilities across Karachi at the orthopedic physiotherapy screening clinic and multidisciplinary service. Participants were chosen using a

convenience sampling method. During routine clinic visits, osteoporosis patients who met the inclusion criteria were sought out.

Eligibility Criteria

Patients with a confirmed diagnosis of osteoporosis, those receiving care in the orthopedic physiotherapy screening clinic and multidisciplinary service at primary and tertiary facilities throughout Karachi, those able to provide informed consent, those willing to complete the survey questionnaire, and those with rudimentary digital literacy skills were among the inclusion criteria for participation in the study. Patients who failed to meet the inclusion criteria were unable to give informed consent, were physically or mentally incapable of completing the survey questionnaire, had a history of severe mental illness or cognitive impairment that would make it impossible for them to give accurate answers to the survey questionnaire, and lacked basic digital literacy skills were all excluded from the study.

Sample Size and Sampling Technique

Out of the 80 patients who were recruited for this study, 60 responded to the survey. The sample size was chosen based on the estimated number of osteoporosis patients in Karachi who sought treatment at primary and tertiary facilities. Given the study's resource and time constraints, non-probability convenience sampling was used to select participants because it was the most feasible and practical sample selection method.

Survey Questionnaire

There were 48 items in the survey used in this study. The questionnaire was created to assess five crucial factors, including demographics, current attendance barriers, satisfaction with the management currently in place, access to and literacy with technology, and attitudes and preferences towards telerehab. The questionnaire was created after consulting with telehealth and osteoporosis management experts and reviewing relevant literature. A pilot test was conducted to ensure the survey's validity and reliability. The survey questionnaire was given to the participants to complete during their clinic visit after they had provided their informed consent.

Interviews

A total of 25 respondents were requested to participate in a face-to-face interview after completing the survey questionnaire to talk about their attitudes towards telehealth and their experiences and difficulties obtaining healthcare services. Participants were chosen based on their availability and willingness to participate in an interview. The participants permitted the discussions to be audio recorded by the researcher or trained research assistants. Participants were informed that they could leave the study any time during the interviews, which took place in a private room at the clinic.

Data Collection and Analysis

Face-to-face interviews and the survey questionnaire were used to gather the data. Descriptive and inferential statistics were used to analyze the survey questionnaire data. The data was compiled using descriptive statistics, revealing the frequency of the phenomenon under investigation.

Results

The study recruited 60 participants with a confirmed diagnosis of osteoporosis, receiving care within the orthopedic physiotherapy screening clinic and multidisciplinary service at primary and tertiary facilities throughout Karachi. Participants were required to provide informed consent, be willing to complete the survey questionnaire, and have basic digital literacy skills. The demographics data indicate that most participants were female (53.3%) and 60 years or older (50%). Regarding education, 50% of participants held a bachelor's degree or higher, while 33.3% had completed secondary school. The study also assessed comorbidities and found that 50.0% of participants had hypertension, 25% had diabetes, and 16.7% had cardiovascular disease. Most participants were employed (58.3%), 25.0% were unemployed, and 16.7% were retired. The details are depicted in Table-1.

Table-1 Demographic details of participants	
Variables	**n (%)**
Gender	
Male	28 (46.7%)
Female	32 (53.3%)
Age (years)	
50-59	15 (25%)
60-69	20 (33.3%)
70-79	15 (25%)
80+	10 (16.7%)
Education	
Primary school	8 (13.3%)
Secondary school	20 (33.3%)
Bachelor's degree	30 (50%)
Comorbidities	
Diabetes	15 (25%)
Hypertension	30 (50%)
Cardiovascular disease	10 (16.7%)
Respiratory disease	5 (8.3%)
Employment status	

Employed	35 (58.3%)
Unemployed	15 (25%)
Retired	10 (16.7%)

As depicted in Table-2, the study surveyed 60 patients with osteoporosis to evaluate their current management experiences and attitudes towards telerehabilitation. The results showed that fear of COVID-19 exposure was the primary barrier to attending in-person therapy sessions, and patients expressed a desire for better communication with their therapists. Although patients reported varying levels of comfort with using technology for rehabilitation, most patients had a positive attitude towards telerehabilitation. The survey results suggest that patients with osteoporosis face multiple barriers to accessing care. The importance of effective communication and telerehabilitation as a potential alternative for patients unable or unwilling to attend in-person therapy sessions was highlighted.

Table-2 Participants experiences and attitudes towards telerehabilitation

Key Areas of Questionnaire	Responses
Current barriers to attendance	Fear of COVID-19 exposure (30%), Transportation issues (12%) Financial constraints (6%) Lack of support (9%) Scheduling conflicts (3%)
Satisfaction with current management provided	Very satisfied (25%) Somewhat satisfied (20%) Neutral (10%) Somewhat dissatisfied (3%) Very dissatisfied (2%)
Communication with therapists	Excellent (18%) Good (22%) Fair (10%) Poor (7%) Very poor (3%)

Technology access and literacy	Very comfortable (12%) Somewhat comfortable (18%) Neutral (15%) Somewhat uncomfortable (10%) Very uncomfortable (5%)
Attitudes and preferences towards telerehabilitation	Positive (32%) Neutral (10%) Negative (6%) No preference (12%)

Amongst 60 participants, 25 patients with osteoporosis who participated in face-to-face interviews reported some potential advantages and challenges of telerehab as perceived by them. Overall, most participants found the convenience of telerehab to be the most significant advantage. However, the technical difficulties with equipment and lack of personal interaction with healthcare providers were the most common challenges reported. Addressing these challenges will be crucial in implementing a successful telerehab program for patients with osteoporosis, as depicted in Table-3.

Table-3 Participants interview on advantages and challenges of telerehabilitation

Advantages	Frequency
Convenience of care delivery	22
Ability to perform exercises at home	19
More frequent and regular check-ins	18
Time-saving aspect of telerehab	15
Avoiding exposure to other illnesses	13
Ability to access care despite mobility issues	12
Cost savings (no transportation costs)	10

Improved access to healthcare for rural patients	8
Reduced anxiety associated with in-person appointments	7
Increased sense of control over care	5
Challenges	**Frequency**
Technical difficulties with equipment	14
Lack of personal interaction with healthcare provider	13
Difficulty in performing exercises without supervision	12
Concerns about the quality of care provided	10
Difficulty with scheduling and coordinating appointments	9
Lack of privacy during telerehab sessions	8
Lack of access to necessary equipment at home	6
Limited ability to diagnose or monitor conditions	5
Difficulty in accessing telerehab due to lack of internet or computer skills	4
Reduced motivation to continue telerehab program	3

Discussion

The COVID-19 pandemic has significantly impacted the global healthcare system. Many patients cannot attend in-person therapy sessions to treat various medical conditions, including osteoporosis, due to social distancing policies in place[14]. Patients can now access care remotely thanks to telerehabilitation, which has emerged as a practical substitute[15]. This Pakistani study demonstrates the potential of telerehabilitation for osteoporosis management.

The telerehabilitation study for a 5-year-old boy with a genetic disorder demonstrates that telerehabilitation is a practical and efficient method of treating patients who cannot be treated in person. The study adhered to AOTA's occupational therapy standards. I-PiCS (Internet-Based Parent-Implemented Communication Strategies Programme), the Tele-Health Decision Guide, the AOTA Occupational Profile Template, the AOTA Advisory Opinion for the Ethics Commission, and a modeling strategy. The findings of this study indicate that telerehabilitation may be an effective treatment option for patients who may find it challenging to attend in-person sessions for various reasons, such as distance, mobility, or safety issues[14]. Another Australian study found that people with long-term musculoskeletal conditions were open to using telehealth for multidisciplinary care. According to the survey, telehealth was a suitable method of providing healthcare for these patients, highlighting its potential to increase patient access to care and the quality of its results[15]. According to a US study on the remote management of osteoporosis using telehealth, telehealth strategies like phone or video telemedicine appointments and electronic systems for triage and specialist consultation can improve patient-physician communication and facilitate access to healthcare[16]. However, hurdles like lack of access to technology and issues with follow-up must be removed to ensure that telehealth effectively manages osteoporosis. In home-telerehabilitation has been shown to increase independence, reduce hospital stays, and lessen the burden on carers, according to a Pakistani study on the effectiveness of a telerehabilitation intervention to improve performance and reduce morbidity for people recovering from hip fractures[17]. Ten videoconference or in-person sessions with an occupational therapist in the presence of the primary carers were part of the suggested intervention. It was designed to smooth the transition from rehab facilities to communal housing[18]. Despite the potential advantages of telerehabilitation, patients with osteoporosis encounter numerous obstacles when trying to get treatment. The study on patients' experiences with current management found that the main deterrent to attending in-person therapy sessions was the fear of COVID-19 exposure[19]. In addition, difficulties with transportation, a lack of funding, support, and scheduling conflicts were cited as obstacles to attendance. Their expressed desire for better contact to discuss their condition and progress highlighted the importance of effective communication between patients and their therapists[20-22].

Patients reported varying degrees of comfort using technology for rehabilitation in terms of availability and literacy. Most patients had a positive attitude towards telerehabilitation, indicating they were open to using technology to access rehabilitation services, despite their varying levels of comfort. The study also identified telerehabilitation potential drawbacks, including technical equipment issues and a lack of direct contact with medical professionals. Implementing a successful telerehab program for osteoporosis patients will depend on overcoming these obstacles. Subsequently, telerehabilitation has become a practical option for treating various medical conditions, including osteoporosis. Patients must overcome several challenges to receive care, and there are issues with telerehabilitation that must be resolved to be effective. Implementing a successful telerehabilitation programme for patients with osteoporosis requires addressing technical issues, a lack of personal interaction, and effective patient-therapist communication. With the ongoing increase in diseases burden, telerehabilitation is more critical than ever, offering patients who find it challenging to attend in-person sessions a secure and convenient alternative.

The study’s strength is in emphasizing the patient’s perspective, which is frequently disregarded in studies on healthcare. The survey’s findings thoroughly explain patients' difficulties in receiving care and their attitudes towards telerehabilitation. The study’s limitations, which restrict the generalizability of the results, include a small sample size and a lack of diversity in the patient population. The study also failed to evaluate telerehabilitation efficiency in treating osteoporosis, which would have revealed more information about its potential as a treatment. It emphasizes how crucial it is to remove the obstacles osteoporosis patients must overcome to receive care and how telerehabilitation may offer a workable substitute for those unable or unwilling to attend in-person therapy sessions. Future studies should examine the efficacy of telerehabilitation in treating osteoporosis and address the difficulties patients have had using this method of healthcare delivery.

Conclusion

It was concluded that fear of COVID-19 exposure was a significant barrier to in-person therapy sessions, and patients expressed a need for better communication with therapists. Most participants had a positive attitude towards telerehabilitation, citing convenience as the main advantage. Challenges included technical difficulties and a need for more personal interaction with healthcare providers. These findings highlight the potential of telerehabilitation as an alternative for osteoporosis patients and emphasize the importance of addressing challenges for successful implementation.

Authors Contribution

Batool F: Conception, design and data acquisition.

Mehrin H: Design and data acquisition.

Fatima S: Drafting and analysis.

Khan E: Revising the draft.

Mehmood Z: Critical revision.

Gondal SA: Final approval.

Declaration of Interest

None.

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