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A Pilot Study of Knee and Hip Osteoarthritis Patient Experience with Telemedicine During the COVID-19 Pandemic

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A Pilot Study of Knee and Hip Osteoarthritis Patient Experience with Telemedicine During the COVID-19 Pandemic

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Abstract

Objective: The purpose of this pilot study is to examine patients' experience and satisfaction using telemedicine for knee and hip osteoarthritis care during the COVID-19 pandemic.

Methods: Adult patients seen via telemedicine for knee and/or hip osteoarthritis pain completed surveys through the REDCap online platform or pen/paper evaluating their experiences and satisfaction with telemedicine, assessed using yes/no and Likert scale questions. Demographic information was collected from the electronic medical record (EMR).

Results: 32 subjects (9 males, 23 females, mean age 63.2 years [SD = 12.2 years]) completed surveys. 90.6% of subjects stated that they were satisfied with the audio/video quality of their telemedicine visit. The majority of subjects responded favorably (agree or strongly agree) to survey statements about whether the doctor explained their condition/problem (93.8%), the subject understood their treatment (96.9%), the doctor answered their questions (93.8%), the doctor spent enough time during their visit (93.8%), the patient was satisfied with their telemedicine visit (90.6%), the patient was interested in future telemedicine visits (68.8%), and the patient would recommend telemedicine visits to others (78.1%).

Conclusion: Survey respondents expressed overall satisfaction and positive experiences with seeing a physiatrist for knee or hip osteoarthritis via telemedicine. Telemedicine has been demonstrated to be a useful tool for patient visits during the COVID-19 pandemic.

Keywords

PM&R, telemedicine, osteoarthritis, musculoskeletal, patient satisfaction

Introduction

On March 11, 2020, the World Health Organization declared the coronavirus disease 2019 (COVID-19) a pandemic. With over 700,000 cases spread among 203 countries, mass enforcement of quarantine orders and social distancing regulations were undertaken to limit the growing number of mortalities.¹ In the wake of such rapid change, healthcare systems were forced to adapt. Telemedicine, which had shown its utility in prior viral outbreaks, such as the severe acute respiratory syndrome associated coronavirus (SARS-CoV) in 2003 and the Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012, was again brought to the forefront of healthcare as a means of connecting patients with providers.

In the United States, the uptake of telemedicine had previously shown the potential for rapid growth; an examination of telemedicine adoption among the commercially insured showed annual telemedicine visit increases from 206 in 2005 to 202,374 in 2017. However, most visits had been for mental health or primary care concerns,² with slower uptake among specialists due to a lack of regulatory framework to authorize and reimburse telemedicine for all patients.³ The combination of the Centers for Disease Control and Prevention's (CDC) recommendation for telemedicine instead of in-person clinic visits,⁴ patients seeking out telemedicine options while under prolonged social distancing guidelines, and a surge in telemedicine companies shifted policies to allow payers to expand coverage.^{5,6}

Literature has recently begun to show the versatility of telemedicine for a variety of clinical uses. For example, telemedicine services have been used successfully to evaluate patients with complex medical problems, including stroke and gastrointestinal issues.^{7,8} Studies evaluating the use of telemedicine in orthopaedic and sports medicine clinics have been emerging, though studies examining telemedicine consultations for arthritis patients have been limited. Among these studies, even fewer have assessed both subjective and objective measures of the patient experience with telemedicine. A study evaluating injured military personnel with telemedicine showed that virtual consults were effective in diagnosing and triaging acute musculoskeletal complaints, though patient experience was not assessed.⁹ Another study examining the use of telemedicine for pediatric orthopaedic referrals showed a high level of patient satisfaction with virtual visits as well as cost savings for both the clinic and the patients.¹⁰ An additional study comparing telemedicine with in-person post-operative visits after orthopaedic trauma surgeries showed that satisfaction and complication rates were similar between the two groups.¹¹ Furthermore, one study looking at patient and physician satisfaction in a sports medicine clinic during the COVID-19 pandemic found both patients and physicians to be satisfied or very satisfied with telehealth.¹²

Telemedicine visits during the COVID-19 pandemic have allowed not only continuity of care for follow-up visit patients but have included new patient consultations as well. Furthermore, telemedicine has allowed patients located in distant settings new access to specialty care providers. In order to continue adapting telemedicine programs to the needs of patients while social distancing persists and beyond, assessment of the patient experience is necessary. Surveys are a commonly used technique to assess both subjective and objective measures of the patient experience independently and confidentially. The purpose of this pilot survey study is to examine

patients' experience and satisfaction using telemedicine for knee and hip osteoarthritis care during the COVID-19 pandemic.

Materials and Methods

Male and female subjects with age ≥ 18 were recruited through a university-based physical medicine and rehabilitation (PM&R) clinic. The study was approved by the institutional review board, and informed consent was obtained from all patients. Inclusion criteria consisted of new and established patients who were seen for either knee or hip pain due to osteoarthritis during a formal telemedicine visit (either telephone or Zoom video call) with any of the three attending physicians involved in the study from 3/18/2020 to 7/6/2020, along with fluency in English and ability to read and answer the survey questions. Exclusion criteria consisted of patients who had encounters that were not billed as a telemedicine encounter. Potential subjects were identified through review of the three attending physicians' clinic schedules in the electronic medical record (EMR). All patients who met the study inclusion criteria were contacted via EMR secure message or telephone call. According to their preference, each subject who agreed to participate received either a link to complete the survey through the REDCap electronic data capture system or a paper version of the survey to be completed manually and mailed back to the study investigators.^{13,14}

Subjects completed a survey with questions about their experience and satisfaction with their most recent telemedicine visit (**Figure 1**). Items on this novel survey created by the study investigators included both yes/no questions and Likert scale questions. Demographic information included age, gender, type of patient visit (new vs. follow-up), type of telemedicine visit (telephone, video, or scheduled as video and switched to telephone), primary location of pain (knee vs. hip), distance between subject's home and the PM&R clinic, scheduling status of appointment (rescheduled from an in-person visit vs. originally scheduled as a telemedicine visit), need for urgent in-person follow-up visit after a telemedicine visit, and amount of time between cancelled in-person appointment and rescheduled telemedicine appointment (when applicable). This information was collected from the patient's medical record and linked to corresponding surveys using individual subject code numbers. Descriptive statistics based on subject demographics and survey answers were calculated. For Likert scale items, subjects' answers were categorized into two groups: (1) "Strongly agree" and "Agree," and (2) "Undecided," "Disagree," and "Strongly disagree."

Results

We identified 102 patients who were seen for a telemedicine visit for knee or hip osteoarthritis during the study target period. Out of these, 32 subjects completed surveys (31.3% completion rate), with a mean age of 63.2 years (standard deviation [SD] = 12.2 years). **Table 1** displays demographic data for the surveyed population. One subject (3.1%) was originally scheduled as a video visit and switched to telephone after experiencing technical difficulties. Of the telephone visits, 2 were new patient visits, while 13 (including the patient who had to switch from video to telephone) were follow-up visits. Subjects lived an average (mean) of 14.7 miles away from clinic (SD = 16.0 miles). No subjects required an urgent in-person clinic visit after their most

recent telemedicine visit. Nineteen subjects (59.4%) had been rescheduled for a telemedicine visit after a cancelled in-person clinic visit, with a mean wait time of 17 days (SD = 24 days).

Overall, 90.6% of subjects stated that they were satisfied with their telemedicine visit, and the majority of subjects responded favorably ("Agree" or "Strongly agree") to survey statements asking about different elements of their telemedicine experience (**Table 2**). Comparing telephone vs. video visit satisfaction, 93.3% of patients who had telephone visits and 88.2% of patients who had video visits were satisfied with their telemedicine visit.

Discussion

The results of our survey on telemedicine for patients with knee and hip osteoarthritis revealed high levels of satisfaction with telemedicine visits. Over 90% of subjects responded positively to survey statements regarding overall satisfaction with the telemedicine visit and other components of the visit, including diagnosis and treatment, answering patient questions, and time spent. Our results are comparable to those of similar studies on patient satisfaction and experience with telemedicine for musculoskeletal/orthopaedic care.^{10,11,15-19}

In our study, there were notably lower percentages of subjects who agreed that they would be interested in future telemedicine visits or would recommend telemedicine visits to others, despite the greater than 90% positive response to the other survey questions. One reason for this may be that subjects were recruited for the study and completed their surveys after the target period. Since in-person clinics had reopened by this point, some subjects may have preferred to follow-up in-person rather than via telemedicine despite having a positive experience with the telemedicine visit. Another possibility is that some patients in this study with knee and hip osteoarthritis required a subsequent injection, so despite a positive telemedicine experience some subjects still went with an elective in-office visit for further interventional care. Also, some patients (primarily new patients) experiencing pain may have required diagnostic imaging such as a radiograph, so they would have preferred to be seen in the clinic when obtaining the imaging despite their positive experience with telemedicine.¹²

There were similar levels of satisfaction between subjects who were seen via telephone visit versus those who were seen via video visit. While communication via telephone lacks visual feedback for both provider and patient, subjects appeared to be as satisfied with telephone visits as they were with video visits. Technical challenges are also important to consider with telemedicine (particularly with online video platforms), though only one respondent noted technical difficulties with operating a video visit, therefore requiring a telephone visit instead. Our survey results suggest that both telephone and video visits are useful in caring for patients with knee and hip osteoarthritis, as patients exhibit high levels of satisfaction with both methods.

Despite the limitations of telemedicine in comparison to in-person evaluation, our study provides further evidence that patient experience is positive. While clinics across the United States have reopened with safety measures in place, exposure to the virus from a clinic visit remains a concern, especially for older patients, and having the option of a virtual visit could allow a patient access to care when they may be reluctant to have physical contact with the healthcare system. Telemedicine also eliminates the travel variable for patients who live far from a clinic or

who have transportation limitations. For society and the healthcare system, telemedicine can provide cost savings by eliminating transportation expenses and allowing patients to take less time off work or avoid having to arrange for child care.^{12,20} Continuing to offer telemedicine options even when the pandemic is less acute can allow healthcare systems to reach more patients.

In addition to patient satisfaction, a study examining physician response to telemedicine also noted high levels of satisfaction among providers using telemedicine for the management of conditions seen in an outpatient musculoskeletal setting.¹⁵ Though providers may initially face barriers in performing the physical examination portion of the visit, methods have been proposed to address this shortcoming and to ensure adequate documentation.²¹

Limitations of our study include a relatively low response rate of 31.3%, and the relative lag time between telemedicine visits and survey completion as previously mentioned. Given the low response rate, the high rates of satisfaction may reflect a participation bias in which those who responded to the survey may have tended to have more positive experiences with their telemedicine visit. A few patients declined to participate because they did not recall details of their telemedicine visit. It is possible that patients who responded were more likely to be those who had a positive and memorable experience with their telemedicine visit. Another limitation is that during part of the time period studied, telemedicine visits were the only option, since our in-person clinic was closed, and the convenience factor of being able to see a clinician may have contributed most to overall satisfaction. This study did not evaluate how the experiences of patients receiving osteoarthritis care via telemedicine compares to those patients via standard in-office appointment, as there were limited in-office appointments occurring during our recruitment period. Future areas of research would include comparison of patient experiences to such a control group (possibly using a modified version of the survey used in this study), or expansion to include other patients seen in a psychiatry practice.

Conclusion

Survey respondents expressed overall satisfaction and positive experience with seeing a psychiatrist for knee or hip osteoarthritis via telemedicine visit. Telemedicine has been demonstrated to be a useful tool for patient visits during the COVID-19 pandemic. As barriers to adopting telemedicine continue to decrease, elements most central to patient satisfaction with telemedicine visits must be identified and maintained. Concurrently, visits must be optimized to allow providers to efficiently and accurately address patient concerns.

Disclosures

There are no conflicts of interest to report.

Funding

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Variable		Number of subjects (Percent of surveyed population)
Category	Subcategory	
<i>Gender</i>	Male	9 (28.1)
	Female	23 (71.9)
<i>Visit type</i>	New	7 (21.9)
	Follow-up	25 (78.1)
<i>Appointment status</i>	Originally scheduled as telemedicine visit	13 (40.6)
	Rescheduled after cancelled in-person visit	19 (59.4)
<i>Telemedicine type</i>	Video	17 (53.1)
	Telephone	14 (43.8)
	Scheduled as video and switched to telephone	1 (3.1)
<i>Primary pain location</i>	Hip	3 (9.4)
	Knee	29 (90.6)

Table 1. Demographic information of surveyed population (n = 32).

Survey statement	Response	Number of subjects (Percent of surveyed population)
<i>I had to take time off work for my telemedicine appointment</i>	Yes	5 (15.6)
	No	27 (84.4)
<i>I was satisfied with the audio/video quality of my telemedicine visit</i>	Yes	29 (90.6)
	No	2 (6.3)
	Did not answer*	1 (3.1)
<i>The doctor explained my condition/problem during my telemedicine visit</i>	Agree/Strongly agree	30 (93.8)
<i>I understood my treatment/recommendations</i>	Agree/Strongly agree	31 (96.9)
<i>The doctor answered all my questions</i>	Agree/Strongly agree	30 (93.8)
<i>The doctor spent enough time with me during my telemedicine visit</i>	Agree/Strongly agree	30 (93.8)
<i>I was satisfied with my telemedicine visit</i>	Agree/Strongly agree	29 (90.6)
<i>I would be interested in future telemedicine visits</i>	Agree/Strongly agree	22 (68.8)
<i>I would recommend telemedicine visits to others</i>	Agree/Strongly agree	25 (78.1)

Table 2. Responses to survey assessment of subject telemedicine experience (n = 32).

Items included both yes/no questions and Likert scale questions answered as "Strongly disagree," "Disagree," "Undecided," "Agree," and "Strongly agree." Responses indicating "Agree" or "Strongly agree" were categorized and reported together.

* For question 2 (audio/video quality), one subject who responded via paper survey misinterpreted the question and did not answer yes or no.

Patient survey: satisfaction and experience with a musculoskeletal telemedicine practice

Please base your answers to the following items on your most recent telemedicine visit only.

Indicate whether you agree with the following statements by selecting yes or no.

1. I had to take time off work for my appointment.

Yes No

2. I was satisfied with the audio/video quality of my telemedicine visit.

Yes No

Rate how much you personally agree or disagree with each statement by selecting the appropriate button. Please select only one answer for each statement.

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
3. The doctor explained my condition/problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I understood the treatment/therapy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The doctor answered my questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. The doctor spent enough time with me during my telemedicine visit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Overall, I am satisfied with my telemedicine visit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I am interested in future telemedicine visits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I would recommend telemedicine visits to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 1. Patient survey: satisfaction and experience with a musculoskeletal telemedicine practice (online version).