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ORIGINAL RESEARCH



In a Pandemic That Limits Contact, Can Videoconferencing Enable Interdisciplinary Persistent Pain Services and What Are the Patient's Perspectives?

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Abstract

Objective: To explore patients' thoughts and satisfaction with using videoconferencing during the COVID-19 pandemic. The current study aimed to gather (1) patient feedback and satisfaction with videoconferencing across all health professions as well as divided into a subgroup for each profession, (2) patient preferences for either videoconference or face-to-face consultations during the pandemic lockdown, and (3) whether patients would consider using videoconferencing once face-to-face appointments were available.

Design: An observational cross-sectional, mixed methods study design.

Setting: Tertiary-level persistent pain center.

Participants: Sixty-five patients aged 18 to 85 years with persistent pain lasting more than 12 months.

Interventions: Not applicable.

Main Outcome Measures: Data were collected using a patient survey. Descriptive statistics were used to report findings from 5-point Likert scales. Qualitative analysis was guided by content analysis to organize and categorize the open-ended survey response text.

Results: Videoconferencing platform features including audiovisual, usability, and privacy worked well for most patients (\geq 90%). Two-thirds of those surveyed reported the videoconferencing sessions as equal to face-to-face attendance (68%). In the context of the pandemic, almost as many preferred videoconferencing (65%), whereas 26% preferred face-to-face attendance and 9% were unsure. Preferences for videoconferencing over face-to-face in context to the pandemic varied depending on the health discipline involved: pharmacy (83%), occupational therapy (78%), psychology (61%), pain specialist physician (59%), and physiotherapy (53%). Even outside of a pandemic situation, 80% would consider using videoconferencing in the future. Qualitative analysis on an open-ended question asking patients for any further comments regarding their experience with the videoconference consultation, found 3 main categories: (1) overall satisfaction with videoconferencing, (2) technology qualities and (3) clinical interaction.

Conclusion: In the context of a pandemic, videoconferencing for interdisciplinary persistent pain management services was effective and preferred, and most patients would continue its use into the future. Alternative or mixed modes of support may be needed for the 26% who currently prefer onsite attendance, when that mode of delivery is not available.

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The COVID-19 pandemic has had a profound effect on health care attendance for face-to-face appointments, including access to pain management services for those living with persistent pain.¹

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Multidisciplinary persistent pain management services can provide patients with the skills to develop their individual pain management strategies, build self-efficacy, and facilitate reengagement with valued life activities. It is suggested that multidisciplinary pain management delivered by telehealth platforms

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should be considered when providing ongoing access to health care for persistent pain populations during the COVID-19 pandemic.^{2,3} There is also a need to match the mode of health care delivery to patient preferences, to maximize attendance and overall effect of services. Models of care are rapidly evolving with a shift toward increased use of videoconferencing.⁴ The COVID-19 pandemic has provided an opportunity to accelerate the development of telehealth, including videoconferencing, as a high-quality alternate model of health care delivery for multidisciplinary pain care that is safe, effective, and accessible.⁵

Recent systematic reviews explored the efficacy of telehealth interventions, including videoconferencing and telephone for musculoskeletal rehabilitation. The findings demonstrated equal outcomes for pain, function, and quality of life compared with face-to-face interventions and superior outcomes when modalities are combined compared with face-to-face alone.^{6,7} These previous reviews consisted of mostly postoperative orthopedic, acute, and subacute musculoskeletal pain populations. It is unclear whether those findings can be applied to a cohort with persistent pain who require comprehensive multidisciplinary care. The scope of systematic reviews exploring the efficacy of telehealth interventions in persistent pain populations has been predominately limited to internet-based interventions including website-based, mobile phone applications and telephone-based communications and has not included videoconferencing.8-10 Various studies have also explored patient satisfaction with telehealth including videoconferencing,11-13 although there is limited evidence examining patient satisfaction in a persistent pain population.^{11,14} Videoconferencing technology and health professional competency using these platforms may have advanced since these reviews.

For pain management services, a current understanding of patient experiences with the implementation of videoconferencing platforms is required. Research evaluating telehealth intervention uptake, use, satisfaction, and preferences for telehealth interventions from the perspective of patients have been deemed research priorities owing to the rapid introduction of telehealth in pain management services.² The current study surveyed the thoughts and experiences of patients with persistent pain who utilized videoconferencing during the COVID-19 pandemic at a tertiary-level persistent pain management service. The aims were to gather (1) patient feedback and satisfaction with videoconferencing across all health professions as well as divided into a subgroup for each profession, (2) patient preferences for either videoconference or face-to-face consultations during the pandemic lockdown, and (3) whether patients would consider using videoconferencing once face-to-face appointments were available.

List of abbreviations:

APA	Australian Physiotherapy Association	
COREQ-32	Consolidated Criteria for Reporting Qualitative	
	Research	
HREC	Human Research Ethics Committee	
sd	standard deviation	
STROBE	Strengthening the Reporting of Observational	
	Studies in Epidemiology	

Methods

Ethics

The project was approved as a low or negligible risk research quality activity under the Human Research Ethics Committee reference number LNR/2020/QGC/63141.

Study design

The project was an observational cross-sectional, mixed methods study design. A mixed methods study aims to collect both quantitative and qualitative data. The Consolidated Criteria for Reporting Qualitative Research¹⁵ and Strengthening the Reporting of Observational Studies in Epidemiology¹⁶ recommendations were used as reporting guidelines for the qualitative and quantitative components of the study design.

Patients and setting

The study was conducted at a tertiary-level persistent pain center. Patients who attended the pain service for a clinical appointment via videoconference from April to June 2020 were eligible for inclusion and informed about the survey at the completion of their appointment. Sixty-five patients aged 18 to 85 years with persistent pain lasting longer than 12 months were surveyed after attending videoconference appointments with pain specialist physicians, pharmacy, occupational therapy, psychology, and physiotherapy services.

Protocol

The Cisco Jabber^a software platform was used for the delivery of videoconferencing. Following a videoconference consultation, the clinician informed their patient about the study and volunteers provided their consent. Those who agreed to participate in the study were transferred within the videoconferencing platform to a registered nurse to complete the survey. To reduce the risk of bias in communication for data collection, the registered nurses collecting data were not involved in the provision of videoconferencing and clinical treatments for these patients. Patients remained anonymous in communication with the nurses and data were deidentified during the collection into a spreadsheet that was only accessible to the research team.

Outcome measures

Demographic information collected included age, sex, and cultural background. A custom patient satisfaction survey was developed to suit a persistent pain cohort and based on a previous telehealth trial.¹⁷ Domains including audio quality, visual quality, privacy, useability, preference compared with usual face-to-face care, and consideration of future use were measured with 5-point Likert scales. Results were separated into groups that support the statement by selecting agree or strongly agree, refute the statement by selecting disagree or strongly disagree, or were unsure. The qualitative component of the study was included in the survey and involved an open-ended question asking patients for any further

51 ()	
Characteristic	Distribution, n
Sex	
Male	27
Female	38
Age, mean \pm SD, y	47.8±14.0
Aboriginal or Torres Strait Islander	
Yes	1
No	64
Prior use of telehealth	
Yes	19
No	46
Device used	
Mobile phone	58
Laptop/PC	6
Tablet	1
Discipline	
Pain specialist physician	17
Pharmacy	б
Occupational therapy	14
Physiotherapy	15
Psychology	13

comments regarding their experience with the videoconference consultation.

Data analysis

For quantitative analysis, descriptive statistics were used to report findings from the 5-point Likert scale (1, strongly disagree; 2, disagree; 3, unsure; 4, agree; 5, strongly agree). Statement responses from the Likert scale were consolidated into 3 categories: disagree/strongly disagree, neutral, and agree/strongly agree, as per a previous telehealth trial.¹⁷

The open-ended question component of the survey enabled patients' to further express their experience with the videoconference consultation. The qualitative analysis of the open-ended question was guided by content analysis to organize and categorize the text.¹⁸⁻²⁰ The first stage of analysis involved 2 authors reading and rereading patient responses to familiarize themselves with the data and develop a clear sense of the patients' account of the experience. Each author then identified recurring topic areas from patient responses and coded these into descriptive categories. The second stage of analysis involved the authors discussing the categories that had been independently identified and combined similar categories to develop a set of categories that adequately reflected the data content. All patient responses were then recoded under the agreed category framework. This was a reflective process between the authors, focused on the manifest content of the data, seeking to provide an accurate account of the patients' experience.

Results

Sixty-five patients completed the Likert scale component of the survey for quantitative analysis, and 43 answered the final openended question for qualitative analysis. Demographic information is provided in table 1. Fifty-eight percent of patients were women, and the mean age was 47.8 years (SD, 14.0y). Only 29% (n=19) of patients had experience using telehealth prior to their pain center appointments and most attendees used a mobile phone device (89%, n=58) compared with a laptop or PC (9%, n=6) and tablet (2%, n=1).

Quantitative

Results from Likert scale responses are shown in table 2. Most patients agreed or strongly agreed that the audio (91%, n=59) and video (98%, n=64) aspects worked well. All patients reported that they believed their privacy was maintained (100%, n=65) and the majority reported that the technology was easy to use (95%, n=62). A majority rated the videoconferencing session as equal to face-to-face attendance (68%, n=44). When considering the pandemic, 65% (n=42) preferred videoconferencing, 26% (n=17) preferred face-to-face attendance, and 9% (n=6) were unsure. Most patients indicated that they would consider using videoconferencing in the future (80%, n=52).

In the context of the pandemic, most patients preferred videoconferencing over face-to-face consultations for all health professions, but the proportions varied between pharmacy (83%, n=5), occupational therapy (78%, n=11), psychology (61%, n=8), pain specialist physician (59%, n=10), and physiotherapy (53%, n=8).

Qualitative

Three main categories were identified from the qualitative content analysis. The following outcomes are provided with representative quotes from patients to illustrate the findings. Anonymized patient identifiers are associated with each quote (P#). Several subcategories were identified and grouped under the main categories, as shown in table 3.

Category 1: Overall satisfaction with videoconferencing

Patient responses indicated that, overall, they were satisfied with the use of videoconferencing for their persistent pain consultations, particularly in the context of the restrictions imposed by the COVID-19 pandemic with lockdown conditions: "I think it's brilliant considering what's going on to be able to use the technology" (P26).

Convenience of the videoconference service was identified as a subcategory within patient satisfaction. Reasons for convenience included transport issues, time restrictions, financial limitations, and addressing their concerns regarding the risk of leaving their house due to COVID-19.

- "It saves me a lot of time, money, and anxiety not having to get to appointments" (P3).
- "Good because I don't have to drive, don't want to go anywhere, risk of COVID-19, convenient" (P12).
- "It was great, very convenient. Loved I could do this from the comfort of my own home when in pain. Made life so much easier" (P33).

Two patients described how they entered a consultation with another patient within the videoconferencing platform, rather than the intended therapist: "[I was] worried someone might be listening in on telehealth" (P27). This contrasts with the quantitative outcomes of the patient satisfaction survey, where all patients agreed that their privacy was maintained in the videoconferencing appointment.

Table 2 Percentage of patient agreement on the post-telehealth survey (N=65)

	Response,	Disagree/Strongly		Agree/Strongly
Question	Mean (SD)	Disagree	Neutral	Agree
1. I was able to hear (audio) without difficulty.	4.34 (0.89)	9	0	91
2. I was able to see (visual) the screen without difficulty.	4.77 (0.46)	0	2	98
3. I felt my privacy was maintained in the telehealth appointment.	4.86 (0.35)	0	0	100
4. The telehealth technology was easy to use.	4.57 (0.64)	2	3	95
5. I would prefer to attend a face-to-face appointment even when considering the situation with the pandemic		65	9	26
6. I would rate the telehealth session as being equal to a face-to-face session.	3.86 (1.14)	20	12	68
7. I would consider using telehealth for health services in the future after the pandemic is over.		14	6	80

Category	Subcategory
Technology qualities	Technology platform Audiovisual interaction
Satisfaction with videoconferencing	Convenience
	Privacy
	Overall positive service experience
Clinical interaction	Profession specific interaction
	Interpersonal interaction

Category 2: Technology qualities

One patient commented on the technology platform, indicating that it was easy to use. It was also evident that some patients found the delivery of messages as equal to face-to-face consultation, for example:

- "Very easy to use, not having to login makes it really user friendly for those who aren't great with technology" (P18).
- "Found the [pain] explanations clear and was explained to me well even though it was on telehealth" (P8).

Some patients had difficulty with the audiovisual qualities of the technology during the appointment, although they still seemed satisfied with the consultation. The quotes represented may reflect the 9% who were dissatisfied with the audio component found in the survey response.

- "Background static, raffling microphone, other than that it was fabulous" (P15).
- "Clicking sound interfered with the call constantly" (P4).
- "Audio would break up. Visual connection would break up sometimes. Minor inconvenience" (P21).

Category 3: Clinical interaction

Two subcategories emerged regarding the patients' experience with the clinical interaction during videoconferencing: the professionspecific interaction and the interpersonal interaction. Patients reported mixed experiences regarding the clinical interaction with contrasting reports for profession-specific preferences and how they like to engage with clinicians at a physical level. For example:

• "For psychology appointments I would want to see body language of the therapist. Happy with telehealth with physiotherapist" (P36).

- "Found using telehealth for physio where needing to demonstrate movements is not so good" (P29).
- "I react to being able to read someone's emotions and body language so face to face is better, but telehealth is good too" (P11).

Discussion

The current study explored patient satisfaction with videoconferencing-based health care consultations conducted in a persistent pain population. The present study findings indicate that a majority of patients were satisfied with the technology, privacy, ease of use, and quality of care compared with face-to-face visits and would consider using videoconferencing into the future. When considering the pandemic context, most patients preferred videoconferencing over face-to-face consultation with all professional disciplines, ranging from the highest proportion for pharmacy, followed by occupational therapy, and then smaller majorities for psychology, physiotherapy, and pain specialist physician. Furthermore, most would consider using videoconferencing into the future, although a small proportion would prefer face-toface attendance.

Our quantitative findings are similar to those from previous studies which demonstrated that most patients who engage with videoconferencing are satisfied with the quality of care provided by videoconferencing, technology, appreciated the convenience of the service, and were extremely satisfied with the level of privacy.^{12,14,21,22} In 2013, Hanna et al¹² surveyed a population of chronic pain patients undertaking physician-led videoconference consultations at a telemedicine pain clinic using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The average across all questions, including convenience, overall satisfaction with videoconferencing, and quality of care, was 4.6 points. Bennell et al²² surveyed patients who undertook individual videoconferencing consultations with Australian-based physiotherapists for any health problem or condition. The majority of participants reported a "moderate to extreme" positive experience with ease of using the videoconferencing technology (94%), satisfaction with privacy (98%), and effectiveness of videoconferencing (83%). The most valued features of videoconferencing were convenience (88%) and access (54%).

Our qualitative data reflected an overall satisfaction with videoconferencing, including subcategories of convenience and privacy. Patient responses from the qualitative component demonstrated that convenience was attributed to financial savings with eliminating need for transport, eliminating barriers with accessing transport, eliminating the need to enter the community due to concerns with COVID-19, and retaining the benefit of still having access to health care during a pain flare-up when travel is difficult. In our study, 2 patients commented on their concerns with their privacy regarding others listening or dialing in on the consultations. Despite this, all patients identified that their privacy was maintained. Data from a recent industry survey by the Australian Physiotherapy Association (APA) reported²¹ across a broad range of clinic settings, including community health centers, private practice, and public health outpatient departments. All participants surveyed reported being satisfied with their privacy during the consultations.

Our study demonstrated that 58% preferred care delivered by a pain specialist physician by videoconference rather than face-to-face consultations. This may demonstrate a growing acceptance of videoconferencing as a form of health care provision or reflective of patients seeking a noncontact option of health care during the pandemic. Polinski et al¹⁴ surveyed a patient population involved in a primary care general practice pilot program in 2014, who were given the option of videoconference or on-site consultation and reported that 32% of participants expressed a preference for receiving care via videoconferencing. Hanna et al¹² found that most participants (average 4.4 of 5 points) would rather use videoconferencing than have their next visit in-person.

Most patients rated the videoconference session as equal to face-to-face attendance (68%) and 80% of patients reported they would continue videoconferencing into the future. Other studies have shown similar findings. In studies by Polinski et al¹⁴ and the APA,²¹ 57% and 55% of participants, respectively, reported that videoconferencing was just as good as, or better than, face-to-face consultation. The APA²¹ demonstrated that 69% of patients are likely to use videoconferencing in the future, whereas Polinski et al14 reported that 71% "definitely" will and 27% "probably" will use videoconferencing in the future. Bennell et al²² reported that 58% of participants identified videoconferencing as being equal to or better quality than face-to-face and 72% are "somewhat, moderately, or extremely" likely to choose to use videoconferencing in the future. Currie et al¹¹ demonstrated a broad acceptance for future use of eHealth in an older chronic pain population, which includes videoconferencing and other telecare technologies. Hanna et al¹² demonstrated that most participants agreed videoconferencing was equal to an in-person visit (average 4.3 of 5 points) and would recommend videoconferencing to other patients (average 4.7 of 5 points). This is consistent with findings in the current study, where most patients reported an interest in continuing videoconferencing into the future, beyond COVID-19.

Most patients (\geq 90%) agreed that the audiovisual qualities were used without difficulty. Despite the strong agreement, the only comments regarding audiovisual quality within the qualitative data were generally negative. Despite some patients finding difficulties with the audiovisual components, only 1 patient identified that the technology was not easy to use. This may highlight a satisfaction with the technology platform greater than the audiovisual properties themselves. Most patients used a mobile phone device, which could influence audiovisual quality compared with, for example, use of a laptop or PC. Our findings support the literature that patients generally have an acceptable experience with audiovisual qualities with videoconferencing.¹² For the small percentage, a focus on optimizing these components within the videoconferencing platforms may improve adherence and utilization. There are a multitude of technology platforms, and current recommendations for telehealth and chronic pain is for the clinician to understand the available technology and decide on an appropriate platform based on what offers the patient with the best experience, including audiovisual, background distractions, and lighting qualities.² This decision may be led by the health service themselves depending on the clinical context and security needs.

Despite more than 90% of patients reporting satisfaction with the audiovisual features and 100% of patients reporting maintenance of privacy, only 65% preferred videoconferencing over face-to-face attendance and 26% still wanted traditional face-toface consultations considering the pandemic. This may have been owing to profession-specific preferences for using videoconferencing, and a factor that may account for this is the preferences for certain aspects of the clinical interaction between professions. The clinical interaction was a main category that emerged from the qualitative data, focusing on the interpersonal interaction with face-to-face consultations including comments indicating the importance of face-to-face contact and being able to read emotions and body language. Concerns regarding limitations in building an interpersonal connection over videoconferencing through loss of nonverbal and verbal cues have been raised.²³ Videoconferencing presents advantages over email or phone, but still restricts degrees of freedom with nonverbal communication, and any lag in video or audio can influence the free flow of conversation between people. These findings highlight the need for mixed models of care, where telehealth is delivered alongside traditional health care consultations and not as a replacement.^{7,11} The sustainability of persistent pain management delivered via telehealth relies on patient engagement, and these findings support the recommendations that persistent pain management models involving a mix of face-toface and telehealth is needed to satisfy a broad range of patient preferences.²

Study strengths

Strengths of this study were that it reports on patient preferences that are specific to a cohort who were referred to a public persistent pain service, which enables comparison of videoconferencing vs face-to-face delivery between professions.

Study limitations

Limitations of this study included the small numbers of patients in the profession-specific analysis, which limits the strength of these conclusions. Convenience sampling also contributes some risk of bias. The percentage of patients who responded to the survey was not collected, and therefore the response rate remains unknown. The study provides a snapshot in time during the pandemic that can be used for comparison with subsequent studies after the pandemic is no longer a threat. Within the current dataset, we are unable to compare pre- and-post—COVID-19 with data during the pandemic.

The original videoconferencing platform used when beginning the study had some privacy concerns, as patients connected with other patients while preparing to commence their appointments, although this did not occur during the disclosure of information in their appointment. This was resolved with the introduction of a telehealth virtual clinic where the clinician controlled the time at which the patients entered the consultation.

Recommendations for future research

The current study identified variation in preferences between professions, which requires further exploration between and within each profession. Further studies postpandemic should continue to monitor patient satisfaction and the implementation of telehealth in a persistent pain population to inform the use of online vs faceto-face service delivery. The significance of the present study and future research could be relevant for some years to come, considering the recurrent threat posed by COVID-19 outbreaks. Future research examining the association of patient demographic and pain-related variables with telehealth preferences may help streamline health access processes to support specific populations in the community.

Conclusion

In the context of a pandemic, videoconferencing for interdisciplinary persistent pain services was effective and preferred. Most patients would continue its use into the future, but the proportion varied between health professions. Alternative and mixed modes of support may be needed for the 26% of patients who currently prefer face-to-face attendance, when that mode of delivery is not available.

Supplier

a. Jabber; Cisco Systems, Inc.

Keywords

COVID-19; Patient satisfaction; Rehabilitation; Telehealth; Videoconferencing

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