



Retrospective study

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# Chronic Pain Patient Satisfaction with Telemedicine Compared to In-person Visits During the COVID-19 Pandemic

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## Abstract

**Objectives:** During the COVID-19 pandemic, many outpatient clinics temporarily closed. Telemedicine appointments, which refer to the remote delivery of healthcare services through audio or visual means, were offered as an alternative to in-person visits in an effort to continue delivering quality patient care while practicing social distancing recommendations in a safe manner. We hypothesize that patient satisfaction with telemedicine visits is similar when compared to in-person office visits during the COVID-19 pandemic.

**Methods:** A retrospective, single institution analysis was conducted to assess patient satisfaction with telemedicine and in-person visits with a chronic pain provider during the COVID-19 pandemic. A total of 170 patient visits were included in the study, including 42 telemedicine and 128 in-person patient visits.

**Results:** Both telemedicine and in-person patients rated the provider similarly on a scale of 0-10, with means of 9.0 and 9.2 respectively [ $p = 0.56$ ]. A majority of patients in each group, 83.3% for telemedicine and 87.5% for in-person, expressed a high degree of confidence that the care provider knew their medical history [ $p = 0.6$ ]. Similarly, 83.3% of telemedicine and 93.0% of in-person expressed a high degree of confidence that the provider listened to them [ $p = 0.07$ ]. Lastly, 83.3% of telemedicine and 93.0% in-person patients would "definitely recommend" the provider's office to family and friends [ $p = 0.07$ ] (Table 1).

**Discussion:** The post appointment surveys were not statistically different between the two studied populations. This supports the notion that telemedicine appointments are potentially non-inferior to in-person appointments in regard to patient satisfaction and provider rating.

## Keywords

Telemedicine, Chronic pain, Patient satisfaction, COVID-19

## Introduction

The coronavirus 2019 (COVID-19) pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), required most non-essential outpatient medical centers and clinics to temporarily close their doors, forcing patients to address their non-urgent medical issues through different avenues. Telemedicine refers to remote delivery of healthcare services through audio or visual means [1]. Chronic pain physicians turned to telemedicine to safely and easily connect with their patients, while evaluating, managing, and treating them from a distance. More so, telemedicine has been successfully used to treat chronic pain patients with evidence-based algorithms [2]. With this brisk shift toward telemedicine, there exists more information on how telemedicine is changing the field of chronic pain. For example, telemedicine allows for the provider to sense the patient's

psychosocial barriers to care, including living arrangements and familial support. Patients with physical limitations and limited mobility can still see their providers and obtain medical care, without having to worry about transportation

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or associated costs. Additionally, it can decrease waiting room times and exposure to other illnesses. However, telemedicine can potentially lead to weakening of the patient-provider relationship [3]. Despite the increase in telemedicine chronic pain visits, there has been limited literature evaluating patient satisfaction in comparison to in-person office visits, especially with regard to chronic pain [4,5].

This study evaluates patient satisfaction with telemedicine visits compared to in-person visits during the COVID-19 pandemic. We hypothesize that patient satisfaction in this patient population is similar when comparing telemedicine to in-person office visits during the COVID-19 pandemic. Additionally, the study addresses overall patient satisfaction with telemedicine visits in the chronic pain setting.

## Materials and Methods

A retrospective cohort analysis was conducted at Cedars-Sinai Pain Center (CSPC): A single, tertiary hybrid academic/private institution in Los Angeles, California. The Cedars-Sinai Medical Center (CSMC) Institutional Review Board approved exemption for this study without a requirement for written patient consent. Patients between the ages of 20 and 91 who were seen by a single chronic pain physician remotely via telemedicine or in-person between June 2020 and July 2021 were included for analysis. For the purposes of this study, telemedicine is defined as an audio or virtual health visit between a provider and patient in two remote locations while in-person visits required the patient and physician to be physically present in the CSPC office.

During the COVID-19 pandemic, this chronic pain physician offered telemedicine audio or video visits through the hospital's electronic medical record system, Epic. Patients who completely filled out an emailed patient satisfaction survey following their appointment were included in the final analysis. Exclusion criteria included patients who partially filled out the provider satisfaction portion of the survey, patients under the age of 20 years old, and patients seen by other chronic pain providers.

A total of 170 patient visits were included in the study, with 42 telemedicine visits and 128 in-person visits. No identifying patient information was collected, with adherence to the Health Insurance Portability and Accountability Act. Patient characteristics including age, gender, and race were collected and included in the analysis. Date of the telemedicine or in-person visit was also obtained. All patient information was acquired from their respective electronic medical record chart.

CSPC patients automatically received the survey via email after their telemedicine or in-person office visit. If there was no email address listed, patients received the survey via an automated phone call to ensure all patients were given the opportunity to fill out a satisfaction survey. National Research Corporation (NRC), a third-party firm, collected all survey results, which was then forwarded to CSPC's main office.

The two groups completed surveys via a three-point scoring scale. Only four questions overlapped between the two surveys. For the purposes of this study, only four out of

eight questions were analyzed amongst the two groups. Three questions included in the analysis are "did the care provider know your medical history, did the care provider listen carefully to you, and would you recommend this provider's office to your family and friends?" Responses of "yes definitely" and "yes somewhat" were considered positive responses, and "no" was considered a negative response. The last question included was "on a 0 to 10 point scale, where 0 is the worst provider possible and 10 is the best provider possible, what number would you use to rate this provider?" [Appendix 1].

Telemedicine patients were given an additional two questions, including "was this method of connecting with a care provider easy to use" and "was the quality of the video good enough" using the same scale as above (yes definitely, yes somewhat, or no)" [Appendix 2]. All data was extracted to R. 4.1.0 (R Core Team, 2021) for statistical analysis. Patient characteristics were compared using two-tailed Fisher's exact tests or Chi-square tests for categorical variables. Student's t-tests were used for the continuous, normally distributed age variable. The two groups' survey responses were compared using two-tailed Mann-Whitney U tests. Associations with  $p < 0.05$  were considered statistically significant.

## Results

530 medical records were reviewed in this retrospective analysis. A total of 249 patients were excluded from the study as these patients were seen outside of the June 2020 to July 2021 time frame or did not fully complete a survey following their appointment. 111 patients were not included due to failure to complete the survey. Between June 2020 and July 2021, a total of 170 patient visits, 42 telemedicine and 128 in-person patient visits, were included in the analysis. The survey completion rate is 75% for the telemedicine group and 32% for the in-person group. The average age of the telemedicine group is 56.8 years old while the in-person group averaged 57.9 years old [ $p = 0.7$ ]. Of the 42 telemedicine patient visits, 20 males and 22 females were analyzed. Of the 128 in-person patient visits, 47 males and 81 females were analyzed. There exists no statistically significant difference between the two groups with respect to marital status (Table 2). The majority of patients in each group, 85.7% for telemedicine and 77.3% for in-person, were of White Caucasian descent [ $p = 0.02$ ].

Four questions overlapped between telemedicine and in-person surveys. The majority of patients in each group, 83.3% for telemedicine and 87.5% for in-person, expressed a high degree of confidence that their care provider knew their medical history with no significant difference between groups [ $p = 0.6$ ]. Similarly, 83.3% of telemedicine and 93.0% of in-person expressed a high degree of confidence that the provider listened to them [ $p = 0.07$ ]. Both telemedicine and in-person patients rated their provider similarly on a scale of 0-10, with means of 9.0 and 9.2 respectively [ $p = 0.56$ ]. Lastly, 83.3% of telemedicine and 93.0% in-person patients would "definitely recommend" the provider's office to family and friends [ $p = 0.07$ ] (Table 1). Within the telemedicine visit group, the majority of patients found it easy to connect with their physician and reported that the quality of the video and call was sufficient (Table 3).

**Table 1:** Satisfaction in telemedicine and in-person visits.

Satisfaction Measures	Telemedicine								In-Person								P value	Test
	Yes definitely		Yes somewhat		No		Total		Yes definitely		Yes somewhat		No		Total			
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
Did the care provider know your medical hx?	35	83.3	7	16.7	0	0.0	42	100.0	112	87.5	9	7.0	7	5.5	128	100.0	0.6	Mann-Whitney U test
Did the care provider listen to you carefully to you?	35	83.3	5	11.9	2	4.8	42	100.0	119	93.0	4	3.1	5	3.9	128	100.0	0.07	Mann-Whitney U test
Would you recommend this provider's office to your family and friends?	35	83.3	3	7.1	4	9.5	42	100.0	19	93.0	3	2.3	6	4.7	128	100.0	0.07	Mann-Whitney U test
	N	Mean	Median	IQR					N	Mean	Median	IQR					P value	Test
Using any number from 0 to 10, where 0 is the worst provider possible and 10 is the best provider possible, what number would you use to rate this provider?	42	9.0	10	(9-10)					128	9.2	10	(9-10)					0.56	Mann-Whitney U test

**Table 2:** Demographics.

Demographic Variables	Telemedicine			In-Person			P value	Test
	N	Mean	SD	N	Mean	SD		
Age	42	56.8	15.9	128	57.9	15.8	0.7	T-test
	Freq	%		Freq	%	RR		
Gender							0.28	Chi-square
Male	20	47.6		47	36.7	1.30		
Female	22	52.4		81	63.3	0.83		
Total	42	100.0		128	100.0			
Marital Status							0.12	Fisher's exact test
Single	20	47.6		59	46.1	1.03		
Married	20	47.6		44	34.4	1.39		
Divorced	2	4.8		20	15.6	0.30		
Other/Unknown	0	0.0		5	3.9	0.00		
Total	42	100.0		128	100.0			
Race							0.02	Fisher's exact test
White	36	85.7		99	77.3	1.11		
Black	2	4.8		25	19.5	0.24		
Other/Unknown	4	9.5		4	3.1	3.05		
Total	42	100.0		128	100.0			

**Table 3:** Additional telemedicine outcome variables.

Outcome Variables	Telemedicine									
	Yes definitely		Yes somewhat		No		Unknown		Total	
	N	%	N	%	N	%	N	%	N	%
Was this method of connecting with a care provider easy to use?	29	69.0	9	21.4	0	0.0	4	9.5	42	100.0
Was the quality of the video or call good enough?	26	61.9	9	21.4	3	7.1	4	9.5	42	100.0

## Discussion

This study aimed to assess patient satisfaction with a chronic pain provider as well as efficacy when comparing telemedicine appointments with traditional in-person appointments during the COVID-19 pandemic. The post appointment surveys were not statistically different between the two studied populations. This supports the hypothesis that telemedicine appointments are potentially non-inferior to in-person appointments in regard to provider rating and patient satisfaction.

Telemedicine became more widely used between the patient and provider as COVID-19 rendered in-person visits as dangerous and unfeasible. In New York, telemedicine urgent care visits increased by 683% in a matter of weeks in March 2020 [6]. Given the country's lack of knowledge of the disease in early 2020, telemedicine became a feasible alternative to in-person visits. During the COVID-19 pandemic, Medicare patients qualified for telemedicine care at the same rate as in-person visits. This expansion of reimbursement and coverage may have contributed to the increased use of telemedicine between patients and providers since the start of the global pandemic [7]. Understanding the benefits and impediments of telemedicine are essential as it continues to grow in popularity.

Telemedicine has the potential to enhance the care of remote, underserved populations to reach their provider despite transportation, financial, or mobility barriers [8]. It may also provide access to care with less social repercussions. For instance, patients with young children do not need to find appropriate childcare when participating in a telemedicine visit. Also, patients that work do not have to take as much time off work to account for transportation. Similarly, chronic pain patients in geographic areas with minimal access to specialists, such as pain medicine physicians, are able to participate in telemedicine appointments with chronic pain medicine providers in distant locations [9]. Additionally, for ailments such as chronic pain, providers are able to observe the patient's home environment and understand any potential psychosocial factors affecting their diagnosis and disease management.

However, video or telephone appointments inevitably limit the physical examination, which may be imperative to accurately identifying, treating, and managing various chronic pain diagnoses [3]. For example, if a patient is complaining of lower back pain, the provider may want to perform a thorough physical examination including palpating the spine. Furthermore, it may be difficult for the provider and patient to establish a good rapport, especially if meeting for the first time as a new consultation. There may also be distractions and poor connections that would weaken the appointment's effectiveness and amount of time available to the patient. Despite this, this study shows no statistically significant difference between the two groups regarding the patient's perception of the provider's knowledge of the patient's medical history as well as the provider's ability to listen effectively.

This study yields several limitations. As with all retrospective studies, only association, not causation, can be determined. As this was a single-center, single-provider study, external validity may be limited to other institutions.

There is a small sample size of the telemedicine visits and fewer telemedicine patients relative to in-person visits for the duration of the study. However, the study included only those patients who completed the voluntary post-visit surveys, which may inherently pose some bias. Additionally, there is a highly skewed distribution toward positive responses. In this study, patient satisfaction with their provider was defined as the patient's rating of their provider as well as likelihood of recommending the provider to their family and friends. Other studies within the literature may define patient satisfaction differently. Lastly, patient outcomes were not analyzed so though high patient satisfaction rates existed, this may not correlate with better patient outcomes [10].

There is concern for potential health consequences secondary to COVID-19 including new chronic pain diagnoses as well as worsening of existing chronic pain diseases [11]. Further research is necessary to continue safely incorporating telemedicine into daily medical practice without sacrificing quality patient care as chronic pain patients require regular, consistent follow-up and continuity of care. Despite the recent growth in popularity secondary to the COVID-19 pandemic, telemedicine has become a permanent staple in chronic pain medicine among other medical specialties. Further research evaluating its efficacy and non-inferiority to in-person visits is necessary.

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## Competing Interests

None.

## Full disclosure information

Nothing to disclose.

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## Appendix 1

Survey distributed to both telemedicine and in-person patients

1. Did the care provider know your medical history?\*
2. Did the care provider listen carefully to you?\*
3. Would you recommend this provider's office to your family and friends?\*
4. On a 0 to 10 point scale, where 0 is the worst provider possible and 10 is the best provider possible, what number would you use to rate this provider?.

\*Yes Definitely, Yes Somewhat, No.

## Appendix 2

Survey distributed to only telemedicine patients.

1. Was this method of connecting with a care provider easy to use?\*
2. Was the quality of the video good enough?\*

\*Yes Definitely, Yes Somewhat, No.

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