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Patient and Provider Satisfaction with Asynchronous Versus Synchronous Telepsychiatry in Primary Care: A Secondary Mixed-Methods Analysis of a Randomized Controlled Trial

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Abstract

Background: *Asynchronous telepsychiatry (ATP) consultations are a novel form of psychiatric consultation. Studies comparing patient and provider satisfaction for ATP with that for synchronous telepsychiatry (STP) do not exist.*

Methods: *This mixed-methods study is a secondary analysis of patients' and primary care providers' (PCPs) satisfaction from a randomized clinical trial of ATP compared with STP. Patients and their PCPs completed satisfaction surveys, and provided unstructured feedback about their experiences with either ATP or STP. Differences in patient satisfaction were assessed using mixed-effects logistic regression models, and the qualitative data were analyzed using thematic analysis with an inductive coding framework.*

Results: *Patient satisfaction overall was high with 84% and 97% of respondents at 6 months reported being somewhat or completely satisfied with ATP and STP, respectively. Patients in the STP group were more likely to report being completely satisfied, to recommend the program to a friend, and to report being comfortable with their care compared with ATP (all* $p < 0.05$*). However, there was no difference between the patients in ATP and STP in perceived change in clinical outcomes* ($p = 0.51$)*. The PCP quantitative data were small, and thus only summarized descriptively.*

Conclusions: *Patients expressed their overall satisfaction with both STP and ATP. Patients in ATP reported more concerns about the process, likely because feedback after ATP was slower than that after STP consultations. PCPs had no apparent preference for STP or ATP, and reported implementing the psychiatrists' recommendations for both groups when such recommendations were made, which supports our previous findings.*

Trial Registration: *ClinicalTrials.gov NCT02084979; https://clinicaltrials.gov/ct2/show/NCT02084979.*

Keywords: *telemedicine, telehealth, telepsychiatry, mental health*

Introduction

Synchronous telepsychiatry (STP) has become an increasingly common method to provide improved access to mental health care, and during the COVID-19 pandemic its use dramatically increased.[1] STP

uses real-time interactive two-way video or telephone conferencing, and is the current standard global telemental health practice.[2] Asynchronous telepsychiatry (ATP) is a store-and-forward method in which a trained interviewer conducts and records a semistructured video interview with the patient who can be seen in either their home or clinic. The video interview and other available clinical data, such as electronic medical records (EMRs), are then sent to a psychiatrist to review and provide treatment recommendations to the primary care provider (PCP).[3]

Before the pandemic, numerous studies examined patient satisfaction with STP,[4–8] mainly using quantitative questionnaires but with some reporting of qualitative data. Fewer studies examined provider satisfaction,[5,6,8,9] and all were based on questionnaire data. The prepandemic literature broadly describes high levels of patient satisfaction with STP but showed less enthusiasm from providers, who were often slow to adapt to the use of telemedicine as a supplement or adjunct to in-person care. During the pandemic, patients reported that they were satisfied with STP as a supplement for in-person care,[1,10] that their experience with telepsychiatry was good to excellent,[11,12] and that there were substantial economic and environmental advantages to STP visits because the need to travel for care was eliminated.[13]

ATP has received much less research attention. Apart from some anecdotal reports focused on patient and provider satisfaction from our group,[2,3,14–18] there are no other formal studies of patient or provider satisfaction with ATP. O'Keefe et al[9] noted how patients have been satisfied with the ATP workflow, allowing for more flexible scheduling than STP for patients and providers. ATP recommendations in most published studies are given within 2 weeks to a referring PCP.[3]

Considering the emerging questions about the acceptability of ATP as a modality of delivering psychiatric care, we sought to explore patient and provider satisfaction further. Qualitative and quantitative satisfaction data were collected from patients and their PCPs as part of a prepandemic randomized controlled clinical trial of ATP versus STP in primary care settings. We have previously reported this trial's clinical outcomes, showing improvement in clinical outcomes for both groups, and no significant differences in clinical improvement between ATP and STP.[3]

In a study evaluating PCP adherence through chart review, we found that PCPs implemented a similar proportion of psychiatric recommendations in both groups.[19] To the best of our knowledge, this is the first mixed-methods longitudinal study to examine satisfaction with the two telepsychiatry modalities from the perspectives of patients and providers, as measured by multidimensional satisfaction questionnaires and unstructured feedback.

Methods

STUDY DESIGN AND SETTING

This study uses patient and provider satisfaction outcomes collected during a randomized clinical trial (RCT) conducted from 2013 to 2019 in the greater Sacramento area. A more thorough description of the study population, methodology, and primary results has been published.[3] Participants were ≥18 mental health treatment-seeking patients with nonurgent psychiatric disorders referred by 36 primary care physicians from two primary care clinics within the University of California, Davis Health System (UCDHS), and a Federally Qualified Health Center (FQHC) serving many Spanish-speaking patients.

Exclusion criteria included cognitive impairment or an emergent psychiatric issue (e.g., suicidality) that would preclude safe treatment in the outpatient setting under normal clinical circumstances. The University of California Davis Institutional Review Board approved this study, and written informed consent was obtained from both patients and the referring PCPs before participation. After screening and following informed consent, eligible patients were randomized to participate in the study's ATP or STP arm.

Patients received their ATP/STP consultations in English or Spanish, depending on their preference. They were treated by their primary care physicians using a collaborative care model in consultation with the UCDHS telepsychiatrists, who consulted with patients every 6 months for up to 2 years using ATP or STP.

Patients were asked to report their satisfaction using a brief survey distributed through email and/or our electronic database after every completed STP or ATP follow-up visit (at 6, 12, 18, and 24 months). We created the patient satisfaction survey, which included six questions about the patients' telepsychiatry experience and a free-text field for comments; one item queries satisfaction in general, three items cover satisfaction with the specific video modality used, and two cover perceived improvement in clinical outcomes.

Similarly, PCPs were also asked to complete satisfaction surveys, designed for this study, sent electronically after their patients' 6-, 12-, 18-, and 24-month visits. Both patient and PCP satisfaction surveys are included in *Supplementary Data S1* and *S2*.

STATISTICAL ANALYSIS

Group differences in demographic and clinical characteristics were assessed using χ^2 (Fisher's exact test) for categorical variables and the two-sample *t*-tests (Wilcoxon two-sample tests) for continuous variables, as appropriate. All patients who provided satisfaction data at least once were included in the analyses. Analyses were intention-to-treat,

with patients analyzed as randomized. The primary goal of the statistical analyses was to compare the average response for ATP and STP (as opposed to the rate of change in our clinical outcomes paper).

Mixed-effects logistic regression models[20] were used to assess differences in satisfaction items between the ATP and STP. This approach explicitly accounts for multiple measurements per person and missing observations, and produces valid inference assuming that data are missing at random. For each satisfaction outcome variable, we used a model that included terms for the intervention arm (ATP, STP) and adjusted for a composite variable whose levels captured all possible combinations of the study site and language of the interview.

We accounted for clustering using a random effect for the patient and, whenever possible, a random effect for the referring physician and the person conducting the interview (ATP interviewer or STP psychiatrist). The arm term allowed us to assess intervention effects; that is, adjusted differences in satisfaction between ATP and STP. All tests were two sided, and p-values <0.05 were considered statistically significant. No adjustments were made for multiple comparisons. All analyses were implemented in SAS Version 9.4 (SAS Institute, Inc.).

THEMATIC ANALYSIS OF FREE-TEXT COMMENTS FROM PATIENTS AND PCPS

Braun and Clarke's[21] six-phase guide was utilized as a framework for the thematic analysis. First, two researchers unaware of group membership evaluated the qualitative data separately to organize and generate initial codes. Subsequently, data were analyzed using an inductive analysis framework where line-by-line coding was utilized to code every single line in open coding. When initial coding was completed, researchers compared codes, and discussed and modified them. The codes were then examined and organized into broader descriptive themes. The researchers then met and read the data associated with each theme, considered whether the data fit the theme, and refined the themes.

Finally, each code section was organized under the associated theme and reviewed by a third researcher for accuracy. Any discrepancy in coding was resolved by consensus among reviewers. Each comment was then classified as an affirmative or unfavorable representation of the relevant theme, or as explanatory.

Results

Figure 1 depicts the flow of patients from screening through the end of the study. As previously described,[3] 401 patients were assessed for eligibility, and 184 (45.9%) were enrolled and randomized to the ATP ($n=94$) or STP ($n=90$) intervention. Of the 184 randomized participants, 18 (9.8%; 11 ATP and 7 STP) consented to the 12-month follow-up, and 160 (87%; 80 ATP and 80 STP) completed baseline visits. Of the 160 participants who provided baseline data, 108 (67.5%; 58 ATP and 50 STP) provided satisfaction data at one or more follow-up visits, and were included in this study.

Supplementary Table S3 shows the demographic and clinical characteristics of the 108 participants who provided satisfaction data and the 52 who did not. The two groups were similar regarding sociodemographic and clinical characteristics at baseline. However, participants who did not provide satisfaction data were more likely to be Spanish speakers (26.9% vs. 14.8%; $p=0.07$) and have their interview in Spanish (21.2% vs. 7.4%; $p=0.01$) than those who provided satisfaction data.

Baseline demographic and clinical characteristics by study arm are presented in *Table 1*. There were no significant arm differences in any of these characteristics. Of the 108 participants, 100 (92.6%) were interviewed in English, and 8 (7.4%) were interviewed in Spanish. Like the overall sample,[3] most patients (38 ATP, 33 STP; that is, 66% for each arm) had mood disorders as their primary diagnosis. Of the 108 patients with satisfaction data, 40 (37%) completed satisfaction questionnaires at a single follow-up visit, 30 (27.8%) at two follow-up visits, 15 (13.9%) at three, and 23 (21.3%) at four follow-up visits (*Fig. 1*).

QUESTIONNAIRE SURVEYS

Patient data. Table 2 summarizes the survey data, and *Table 3* the results of the mixed-effects logistic regression models. Both groups reported high satisfaction rates on most questions, with most of the ATP and STP respondents at each follow-up visit reported being at least somewhat satisfied with the program. In addition, most ATP patients would recommend ATP, while an even larger proportion of STP patients would recommend STP. Similarly, most ATP and STP responses endorsed being comfortable with the care by video, but the percentage of responses supported being comfortable with the care by video was higher in STP.

Despite these positive findings, contrary to our hypothesis, the participants in the ATP intervention group were less likely than those in STP to report being completely satisfied with the program, recommend the program to a friend, and report being comfortable with their care (all $p<0.05$, *Table 3*). However, there was no group difference in patients' perceived improvement in their clinical outcomes ($p=0.51$) and in patients' preference to see a psychiatrist through video or video and in person versus just in person ($p=0.06$).

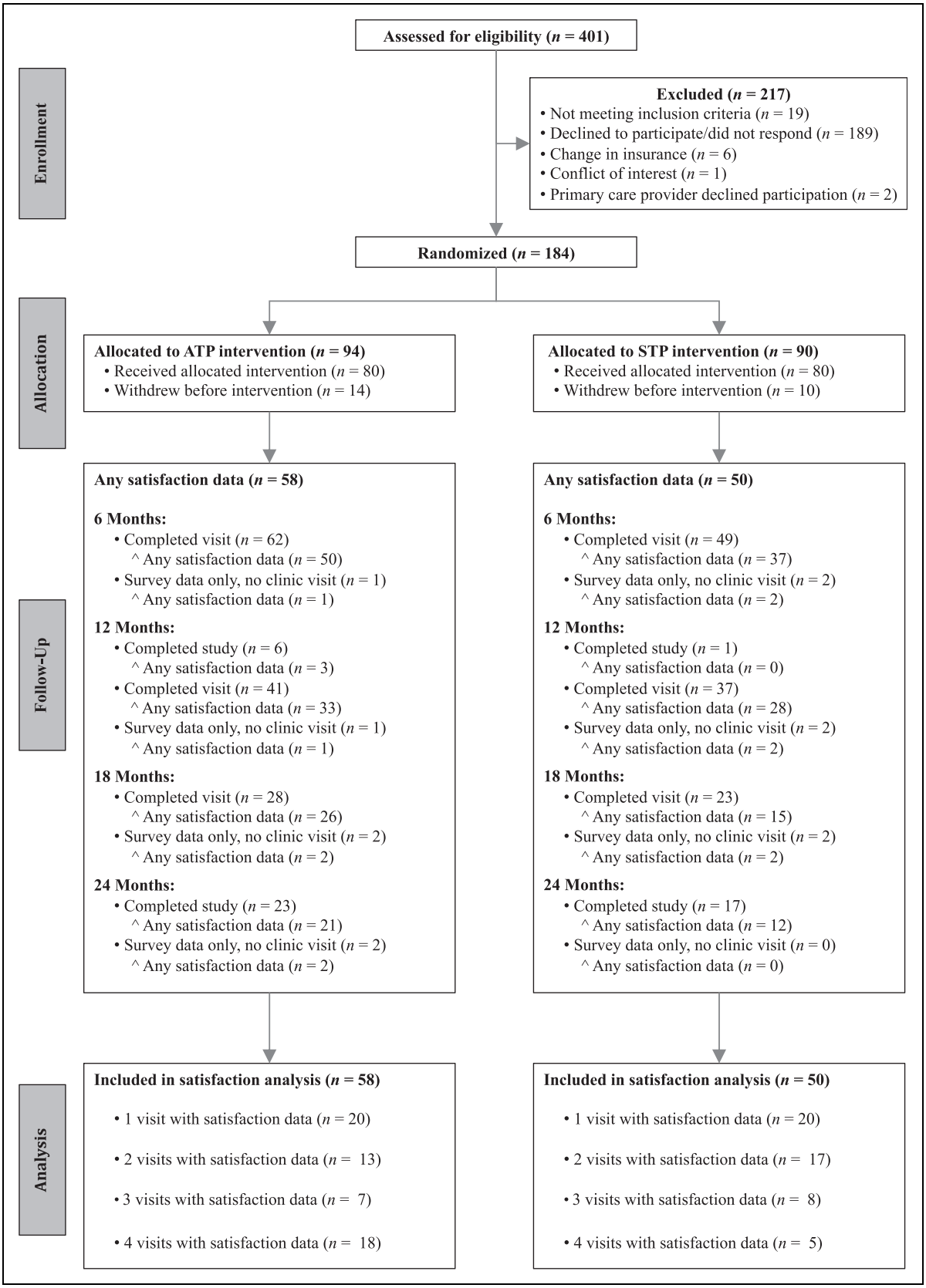

Fig. 1. Consort diagram.

Table 1. Comparison of Demographic and Clinical Characteristics of the Participants Included in the Satisfaction Analysis by the Intervention Arm

CHARACTERISTIC	ATP ($N=58$)	STP ($N=50$)	P
Age, years, mean (SD)	53.7 (14.7)	49.3 (13.7)	0.11
Number of axis I diagnoses, mean (SD)	2.3 (1.0)	2.4 (1.1)	0.67
Screening PHQ-9 score,[a,b] mean (SD)	13.0 (7.1)	13.1 (6.0)	0.73
Screening PHQ-9 category,[b] *n* (%)			0.87
0–4, nondepressed	5 (8.8)	4 (8.2)	
5–9, mild depression	16 (28.1)	11 (22.4)	
10–14, moderate depression	15 (26.3)	16 (32.7)	
≥15, moderately severe to severe depression	21 (36.8)	18 (36.7)	
Primary diagnosis, *n* (%)			1.0
Mood disorder	38 (65.5)	33 (66.0)	
Anxiety disorder	13 (22.4)	11 (22.0)	
Substance abuse	1 (1.7)	1 (2.0)	
Other	6 (10.3)	5 (10.0)	
Clinician ratings at baseline			
CGI,[c] mean (SD)	3.8 (0.8)	4.1 (1.0)	0.15
GAF,[d] mean (SD)	61.1 (10.0)	59.3 (9.4)	0.43
Patient self-reported scores at baseline			
PHS-12,[e,f] mean (SD)	40.4 (11.6)	44.4 (10.5)	0.13
MHS-12,[e,f] mean (SD)	34.2 (9.0)	31.6 (9.3)	0.18
PHQ-9,[a,g] mean (SD)	12.2 (7.2)	11.9 (6.7)	0.96
Female, *n* (%)	42 (72.4)	29 (58.0)	0.12
Race, *n* (%)			0.64
African-American	1 (1.7)	1 (2.0)	
Asian	0 (0)	1 (2.0)	
White	54 (93.1)	43 (86.0)	
Other	3 (5.2)	5 (10.0)	
Hispanic ethnicity, *n* (%)	7 (12.1)	9 (18.0)	0.39
Education, *n* (%)			0.63
Graduate high school or less	12 (20.7)	12 (24.0)	
Some college or 2-year college	26 (44.8)	25 (50.0)	
College or graduate school	20 (34.5)	13 (26.0)	
Marital status,[h] *n* (%)			0.34
Married/living with someone	31 (57.4)	23 (47.9)	
Other[i]	23 (42.6)	25 (52.1)	
Current psychiatric treatment,[j] *n* (%)	18 (31.6)	21 (42.0)	0.26

continued →

Table 1. Comparison of Demographic and Clinical Characteristics of the Participants Included in the Satisfaction Analysis by the Intervention Arm *continued*

CHARACTERISTIC	ATP ($N=58$)	STP ($N=50$)	*P*
Current psychotropic medication,[k] *n* (%)	49 (87.5)	43 (86.0)	0.82
Language of the interview, *n* (%)			0.34
English	55 (94.8)	45 (90.0)	
Spanish	3 (5.2)	5 (10.0)	
Study clinic, *n* (%)			0.53
Auburn	33 (56.9)	23 (46.0)	
J Street (Sacramento)	15 (25.9)	16 (32.0)	
CommuniCare	10 (17.2)	11 (22.0)	

Due to rounding percentages might not sum to 100. *p*-Values from the Wilcoxon rank-sum tests for continuous variables, Fisher's exact tests for screening PHQ-9 category, primary diagnosis, and race, and χ^2 tests for all the other categorical variables.

[a]Range 0–27, higher is more depressed.

[b]Data missing = 1 in ATP group and 1 in STP.

[c]Range 1–7, higher is more severe.

[d]Range 0–100, higher is better functioning.

[e]Range 0–100, higher is better health.

[f]Data missing = 11 in ATP group and 7 in STP.

[g]Data missing = 2 in ATP group and 1 in STP group.

[h]Data missing = 4 in ATP group and 2 in STP.

[i]Includes widowed, divorced or annulled, separated, and never married.

[j]Data missing = 1 in the ATP group.

[k]Data missing = 2 in the ATP group.

ATP, asynchronous telepsychiatry; CGI, severity of illness, GAF, global assessment of functioning; MHS-12, 12-Item Short Form Health Survey Mental Health Summary Score; PHQ-9, Patient Health Questionnaire-9; PHS-12, 12-Item Short Form Health Survey Physical Health Summary Score; SD, standard deviation; STP, synchronous telepsychiatry.

Provider data. A total of 14 PCPs provided 64 satisfaction surveys about 48 unique patients, 45 of which were included in the satisfaction analyses. Five providers returned only 1 survey, one returned 2, three returned 3, one returned 4, one returned 5, one returned 7, one returned 13, and one returned 19 surveys. The PCP data were too small to examine group differences, but the questions in the PCP satisfaction survey asking providers about the psychiatrist's patient recommendations and patient outcomes, as well as the free-text comment section, are summarized in *Supplementary Tables S4* and *S5*.

Overall, the PCPs reported that 39% of the ATP and 42% of the STP participants were at least "much better" at 6-month follow-up. In addition, the PCPs reported that they found the psychiatrist's recommendations at least somewhat useful at 6-month follow-up (100% for ATP and 92% for STP), and reported implementing when such recommendations were made.

QUALITATIVE DATA FROM FREE-TEXT COMMENTS

Patient data. Thirty-five ATP and 28 STP participants provided qualitative data. Three raters reviewed the unstructured patient comments and coded the data. The codes were compared and consolidated into themes, and the comments were classified as an affirmative or unfavorable representation of the relevant theme or as explanatory. *Table 4* summarizes the themes, and the frequencies of comments for each theme for patients and providers. *Table 5* shows the actual patient comments for each of the themes.

1. Affirmative comments: There were many positive comments from both ATP and STP patients, especially regarding their levels of satisfaction with being able to take part in the trial, with several patients wishing to continue their care in the same manner after completion of the program.

Table 2. Summary of Patient Satisfaction at the Follow-Up Visits

	ATP($N=58$)				STP($N=50$)			
	N	COMPLETELY	SOMEWHAT	NOT AT ALL	*N*	COMPLETELY	SOMEWHAT	NOT AT ALL
How satisfied are you with your experience in this program?								
6 Month visit	51	17 (33%)	26 (51%)	8 (16%)	37	17 (46%)	19 (51%)	1 (3%)
12 Month visit	37	14 (38%)	19 (51%)	4 (11%)	29	13 (45%)	15 (52%)	1 (3%)
18 Month visit	28	6 (21%)	18 (64%)	4 (14%)	17	9 (53%)	8 (47%)	0 (0%)
24 Month visit	23	7 (30%)	14 (61%)	2 (9%)	12	9 (75%)	3 (25%)	0 (0%)
	N	MUCH BETTER	BETTER	ABOUT THE SAME	WORSE	*N*	MUCH BETTER	BETTER	ABOUT THE SAME	WORSE
Overall, do you feel that you are[a]										
6 Month visit	50	4 (8%)	19 (38%)	27 (54%)	0 (0%)	39	3 (8%)	18 (46%)	17 (44%)	1 (3%)
12 Month visit	36	3 (8%)	17 (47%)	12 (33%)	4 (11%)	29	6 (21%)	11 (38%)	11 (38%)	1 (3%)
18 Month visit	28	2 (7%)	16 (57%)	8 (29%)	2 (7%)	17	5 (29%)	5 (29%)	6 (35%)	1 (6%)
24 Month visit	23	1 (4%)	13 (57%)	7 (30%)	2 (9%)	12	2 (17%)	7 (58%)	3 (25%)	0 (0%)
	N	YES		NO		*N*	YES		NO	
Would you recommend the video visit to a friend or family member?										
6 Month visit	50	32 (64%)		18 (36%)		39	33 (85%)		6 (15%)	
12 Month visit	36	20 (56%)		16 (44%)		29	23 (79%)		6 (21%)	
18 Month visit	27	16 (59%)		11 (41%)		17	16 (94%)		1 (6%)	
24 Month visit	22	14 (64%)		8 (36%)		12	11 (92%)		1 (8%)	
	N	YES		NO		*N*	YES		NO	
Were you comfortable with your care by video?										
6-Month Visit	50	35 (70%)		15 (30%)		38	36 (95%)		2 (5%)	
12-Month Visit	35	26 (74%)		9 (26%)		28	25 (89%)		3 (11%)	
18-Month Visit	27	19 (70%)		8 (30%)		17	16 (94%)		1 (6%)	
24-Month Visit	22	15 (68%)		7 (32%)		12	12 (100%)		0 (0%)	
	N	VIDEO	IN PERSON	BOTH		*N*	VIDEO	IN PERSON	BOTH	
Would you prefer to see a psychiatrist in-person or by video visit?										
6-Month Visit	48	2 (4%)	23 (48%)	23 (48%)		39	3 (8%)	11 (28%)	25 (64%)	
12-Month Visit	36	4 (11%)	16 (44%)	16 (44%)		30	3 (10%)	9 (30%)	18 (60%)	
18-Month Visit	28	2 (7%)	11 (39%)	15 (54%)		17	0 (0%)	5 (29%)	12 (71%)	
24-Month Visit	23	3 (13%)	12 (52%)	8 (35%)		12	1 (8%)	1 (8%)	10 (83%)	

Due to rounding, percentages might not sum to 100.

[a]This question included *Much Worse* as an option; no patient selected that option.

Table 3. Summary of the Mixed-Effects Logistic Regression Models for Patient Satisfaction Outcomes

SATISFACTION VARIABLE	COMPARISON	ATP VERSUS STP OR (95% CI)[a]	*P*
How satisfied are you with your experience in this program?	Somewhat/not at all versus completely	2.53 (1.13–5.69)	0.02
Overall, do you feel that you are:	About the same/worse versus better/much better	1.55 (0.23–10.55)	0.51
Would you recommend the video visit to a friend or family member?	Yes versus no	0.05 (0.01–0.51)	0.01
Were you comfortable with your care by video?	Yes versus no	0.14 (0.03–0.52)	0.01
Would you prefer to see a psychiatrist in-person or by video visit?	Video/comfortable with both versus in person	0.25 (0.06–1.06)	0.06

[a]From mixed-effects logistic regression models adjusted for study site and language of the interview, as well as clustering due to patient, and, whenever possible, clinician conducting the interview and referring primary care physician.

2. Unfavorable comments: Several comments primarily focused on patients' clinical difficulties and chronic unrelieved symptoms. Another area of concern was communication challenges. Especially in the ATP group, there were numerous comments about the need for more feedback about the consultations and recommendations. Similarly, regarding follow-up frequency, patients in both groups expressed their wish for more frequent study visits and complained about the infrequency of six-monthly study visits, which some considered insufficient, especially if they had little other feedback. Under the reduced satisfaction theme, there were more negative comments in the ATP group, with several patients noting they preferred direct to video or in-person visits with a doctor. Finally, workflow or technical challenges comments mainly belonged to patients who did not like the video or found the surveys too burdensome, with a few remarks on technological problems.
3. Explanatory comments: Most comments reflected patients with complex problems, the lack of change in some patients, specified follow-up comments unrelated to the intervention, and comments on the survey, which were for assessment purposes and not part of the intervention.

Provider data. A total of 10 PCPs provided comments regarding 23 unique patients (9 ATP, 14 STP), which are summarized in *Table 4* and detailed in *Supplementary Table S5*. Following the approach used for patient qualitative data, comments were classified as an affirmative or unfavorable representation of the relevant theme or explanatory.

1. Affirmative comments: These primarily concerned patients who had made substantial improvements in both groups.
2. Unfavorable comments: These mainly focused on the lack of follow-up or the need for more frequent consultations than every 6 months. Regarding complex or nonadherent patients, there were more comments in the ATP group.
3. Communication challenges comments were noted only in the STP group.
4. Stable/unimproved patient: This theme occurred more frequently in the STP group.
5. Medication difficulties: These comments concerned only the ATP group (*Supplementary Table S5*).
6. The explanatory comments from PCPs mainly focused on challenging and complex patients, or patients who changed PCPs.

Discussion

This study is the first randomized controlled longitudinal clinical trial where satisfaction with STP and ATP in primary care has been assessed in English and Spanish-speaking patients and their PCPs using a mixed-methods approach. The patients reporting satisfaction data were demographically and clinically similar to those who did not, except that a smaller proportion was interviewed in Spanish. All the surveys were available in Spanish, and we are uncertain why data submission was less frequent for those interviewed in Spanish. Possible explanations may be that staffing, administrative, and technical difficulties were greater at the FQHC, where most interviews in Spanish were conducted. We will be publishing more details of the crosslanguage group using ATP in a separate paper.

Table 4. Summary of Patient- and Provider-Reported Themes Related to Satisfaction

	ATP	STP
Frequency of patient-reported themes (35 ATP, 28 STP participants)[a]		
Affirmative comments		
Clinical improvements	6	1
Improved communication/feedback	0	1
Improved satisfaction	20	28
Workflow or technical benefits	2	2
Unfavorable comments		
Clinical difficulties	15	10
Communication challenges	20	5
Follow-up frequency	14	13
Reduced satisfaction	13	4
Workflow or technical challenges	11	11
Explanatory comments	5	1
Frequency of provider-reported themes (9 ATP, 14 STP participants)[b]		
Affirmative comments		
Patient improvement	3	3
Improved recommendations	1	1
Unfavorable comments		
Follow-up challenges	1	2
Complex or nonadherent patient	5	1
Communication challenges	0	3
Stable/unimproved patient	3	6
Medication difficulties	2	0
Explanatory comments	5	4

[a]For these summaries, the total sample consists of all participants who provided any qualitative data.

[b]For these summaries, the total sample consists of all participants whose primary care physician provided any qualitative data.

The patient questionnaire data indicated that participants were overall satisfied with both ATP and STP, similar to results reported for STP across multiple UCDHS clinics and specialties.[22] However, satisfaction levels were lower in ATP than in STP in this study. Qualitative themes data derived from patients' free-text comments and our knowledge of the study procedures offer insights into the reasons for this. First, patients seen by STP received immediate feedback from their psychiatrists about possible recommendations.

In contrast, the patients had to wait longer with ATP and sometimes did not see their PCPs for feedback for several weeks. Some administrative difficulties in the ATP group led to several patients' reports being delayed longer than the recommended maximum of 1–2 weeks. Some patients in both STP and ATP were lost to follow-up or had delayed follow-up, leading to their comments about communication challenges, and a larger number of patients in the ATP group reported follow-up difficulties than in the STP group. Despite some administrative challenges, our study,[19] following up on PCP adherence to psychiatrist recommendations at 6 weeks and 6 months, in both groups, showed that recommendation implementation rates were similar (56% for ATP and 58% for STP), suggesting that these delays in ATP reporting may not have major clinical adverse effects.

In future implementations of ATP, we recommend that the psychiatrist's recommendations be made available within one or two business days of the ATP consultation, so that patients and their PCPs can review them as soon as possible. There should also be routine communication with patients through patient-facing EMR portals allowing them to view the results of their STP and ATP consultations, and schedule with their PCP or other providers for a timely follow-up.

The difference in satisfaction between the two groups may impact the future adoption of ATP; however, this is a very early study of this technology, and it is still evolving. This was a pragmatic trial embedded within a real-world clinical setting, which gave us the opportunity to examine how this process of care works in clinical practice. However, this led to a number of unanticipated administrative difficulties. One of the major workflow issues necessary to consider in future implementations of ATP is that patients should be directed to follow-up with their PCP for the results, but this recommendation did not interface well with the existing clinical workflows, and in some cases led to a lack of timely and predictable follow-up.

ATP may ultimately be a more efficient use of clinician time as well as enhancing clinical access—both of which are major issues in today's mental health care system. Patients' preferences and satisfaction with ATP will likely improve when administrative barriers are reduced and implementation in the care setting is improved.

Most of the 36 PCPs originally enrolled in this study were supportive of the trial and continued to refer patients over a 3-year recruitment period. The PCP survey data in this study, while limited by the low response rate, on balance, support and reinforce the positive patient satisfaction data in both the ATP and STP groups. The PCP comments echoed themes from the patient comments, although the PCPs seem to express less differentiation in satisfaction between ATP and STP.

Table 5. Patient Comments for Themes Related to Satisfaction

ATP	STP
AFFIRMATIVE COMMENTS	AFFIRMATIVE COMMENTS
Clinical improvements • "I feel like I am at my most stable right now, than in the past due to proper medication and a stable job and income. Everything is slowly working out and becoming the new norm." • "My anxiety level is way down. It is now mainly a matter of how much pain I'm in. No pain = no anxiety. Lots of pain causes chest muscles to tighten, and much anxiety because I can't breathe." • "With the [medication], I am feeling much less weepy." • "Grateful to be off [medication]" • "I have always found the clinicians interviewing me to be quite competent and professionally compassionate" • "My meds have been changed. I am not as depressed anymore"	Clinical improvements • "The Dr. made it very easy to share some things that are very hard to discuss."
Improved communication/feedback [No comments for this theme] Improved satisfaction • "Easy to do and very nice people to work with!" • "Feels like we are moving in the right direction. I wish it were easier." • "Great program. I live an hour away from Auburn. Two from Sac." • "Having the telepsychiatry appointments are more convenient for me because of the location and access. It is nice that the information is sent to my primary physician." • "I am not under a lot of stress so I think the program better." • "I appreciate the team of people who worked with me. I haven't had a bad experience and have always felt like they care." • "I feel gains were made with me that had not been successful in other treatments I had sought out." • "I feel like I am at my most stable right now… I am pleased, as it has been a lifetime of turmoil to get here." • "I feel that this would have been especially beneficial for me when I first started dealing with the issues that haunted me. I now know why I have certain anxieties and specific moments that caused them." • "I felt comfortable with the process of the taping and questioning" • "I think it is a good direction. I would suggest more active interactive sessions. It could increase the dynamics of the program: keeping the pace more alive and fulfilling to me. thank you for this opportunity to participate in the initial phase of this program." -"I think the program is excellent, it helped with me. I think I just need more fine tuning." • "It seems that overall I am a bit calmer, but far from any large change at this time. I feel positive towards what and where we go is going to help a great deal." • "It was good to talk with someone about how difficult the past couple of weeks were. I'm very satisfied with my visit yesterday." • "Makes me look at what is actually happening in my life and seek remedies to help it other than a pill." • "Much less intimidating than one on one. Very nice and relaxed atmosphere. " • "Thank you." • "the program is great." • "I am grateful that I have been able to significantly reduce my use of [medication] (by substituting [medication]) because [medication] may be related to my mild cognitive impairment. • "It was a pleasant experience"	Improved communication/feedback • "Everyone has been very nice and extremely helpful" Improved satisfaction • "I do feel the time spent with the telepsychiatrist was worthwhile and would like to continue with him if possible." • "Am grateful for the video experience. Also grateful to be involved in study as the treatment has indeed improved quality of life for me." • "Different but works for me" • "Dr. [] prescribed an additional antidepressant that seemed to help" • "Dr. [] has been amazing. I REALLY wish I could see him for regular mental health visits. It's upsetting that I can't. (I understand he doesn't see patients. I just really him and he's very helpful)" • "Dr. [] is great and I hope this program is available to more people" • "For some reason talking by video is less intimidating and it help motivate me to seek more consistent therapy sessions." • "I am comfortable with both" • "I am disappointed that I can't see Dr. []. He is an outstanding caregiver." • "I am grateful for this experience. The collaboration with both doctors has greatly benefited my situation and mental wellbeing." • "I am impressed with the care and concern of the psychiatrist." • "I can't say enough good about Dr. [] and the staff I have worked with through this program. Even though my mental health condition is still serious, I feel I'm better off being in this program than having not taken any action to try and get help. Traditional psychiatry and counseling can be challenging for several reasons: cost, accessibility, insurance limitations, scheduling conflicts and more. I think this program should be expanded to other UC Davis patients that need expert help with their emotional health." • "I enjoy the fact that the video sessions allows for reduced anxiety and stress, because you are not face to face with a person." • "I feel that the video visit program, is a worthwhile program, that will save time, for both the patient, and the Dr. It will eliminate the travel time, allowing both the Dr and the patient, to be more productive." • "I like the simplicity and convenience of the video visit. I don't have to travel far to see the doctor and I get great care." • "I liked participating in the research, and hope this is something that can be offered continuously." • "I think it is an amazing, amazing program" • "I think it's a very good program and I like the video visit." • "I think the skype style visit or in person visit is effective for me as a patient because you can have rapport with the doctor and it is that 'person to person' contact that is vital in validating, supporting and providing interactive feedback. It is my opinion that the best mental health care is provided when people feel some type of relationship with the caregiver, no matter what role the caregiver is in." • "I think this is a wonderful program, and can be beneficial in a lot of ways." • "I was directed to the care I needed" • "I'm hoping I can continue to see the dr. when this study is over." • "Love the program" • "Thanks for allowing us to help with the research."

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Table 5. Patient Comments for Themes Related to Satisfaction *continued*

ATP	STP
AFFIRMATIVE COMMENTS	**AFFIRMATIVE COMMENTS**
	• "This has been extremely good for me." • "Video feels a bit safer. Lately I'm just not wanting to deal with doctors or anything. Just want to be left alone by the world." • "This has been great" • "This program has been very easy to work with"
Workflow or technical benefits • "I think the audio and video recording is better for the doctor to review the sessions and make any treatment adjustments or speak with the patient regarding any specifics from previous sessions" • "…it is nice that my PCP is involved with this process as we do have a better discussion about the diagnosis and I have more faith in my PCP's psychiatric knowledge"	Workflow or technical benefits • "This would be great if I could do it from home" • "If video is a less expensive way to provide care to more patients I think it would be very useful."
UNFAVORABLE COMMENTS	**UNFAVORABLE COMMENTS**
Clinical difficulties • "My concern is that the follow up with my doctor was lacking in expertise especially with the rx for an SSRI, which class of drugs I have never found effective in treating my depression." • "Also, I feel like it is acknowledged that I do have a lot of stress and anxiety, but not why and what can be done about it. I honestly am wondering if what's at the root of a lot of this is (for lack of a better term) ADD. I feel like my mind is always spinning 100 mph and therefore I'm feeling scattered and exhausted from it all. I feel like maybe there is a lack of background info. on me and/or other 'diagnosis's' where not explored." • "Because at the time of my first video visit I was in crisis, I took it upon myself to get care elsewhere." • "Concerns: [diagnosis 1] & [diagnosis 2] Medication: [medication] controls [diagnosis 1] but could make [diagnosis 2] worse. Tried other Meds but they caused increased ED problems and depression. I don't feel like we've made any significant progress." • "Help me walk more than 100 feet without pain, or stand for 15 minutes without pain, or exercise without pain, and I won't be so depressed." • "I may have rated the scale higher in regards to how much better I am. However, my health problems, mainly the [pain] and surgery, caused me a lot of anxiety and depression. I am slowly recovering from the surgery and will feel better when I am 'back on track' with things." • "I have never received any feedback provided by the psychiatrist who reviewed my video.… The change in my perspective of my health improvement is from my visits with my psychiatrist where I have received feedback and was able to discuss my concerns and receive direction and suggestion." • "I just did hospice for my beloved father. I need bereavement counseling." • "I seem to have several emotional/physical things going on so I feel overwhelmed at times." • "The somewhat rating is due to changes in me and I think we needed more time to fine tune medications for my issue's." • "Unclear of my diagnose" • "Wondering if meds. are adding to [feeling tired] instead of uplifting" • "When going through problems as severe as what I've been going through a video interview once every 6 months does not cut it" • "It is clear that they are not there to do anything more than ask questions and get clarification when they deemed it necessary. It's hard to fathom an approach from a client's standpoint that does not incorporate both the beneficial medications along with education/explanations/advice." • "I am frustrated because I can't work. I'm pretty much in a stupor all of the time."	Clinical difficulties • "I am having ongoing depression." • "I missed my last session because of my depression have remade appt" • "I still haven't found a medication that's working for me." • "Sometimes I feel the doctor just wants to push medications on me and they have side effects that feel worse then what I'm going through." • "Stopped anti depressant meds due to side effects" • "When I was depressed and desperate I didn't know how to contact anyone and I don't think my physicians here could either." • "Its hard feeling better when all you have is hopeless optimism in you health problem" • "The doctor do not listen to what I need! because of my past, they assume I am going to screw up my future!!!!!!!!!!!!!!!! I need something to calm me down!!!!!!!!!!!!!!!!!!!!!!!!!!!! something to help me sleep and I do not get anything different" • "I was given a bipolar disorder diagnosis through telepsychiatry. I am seeing a psychiatrist in person now who doesn't think I am bipolar but severely depressed." • "[dr] really hasn't gotten to some deep issues I have, and am quite honestly very apprehensive about going to those places. My anxiety level since scheduling my second appointment has caused me some severe tremors."

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Table 5. Patient Comments for Themes Related to Satisfaction *continued*

UNFAVORABLE COMMENTS	UNFAVORABLE COMMENTS
Communication challenges • "Hard to say because I got NO feedback from this program either directly or through my primary care doctor." • "I don't really feel like I receive the results of my video visit" • "I feel there is no personal interaction with therapist. I am just a number in the pile of patients." • "I have had NO care from this program. No one contacts me about my mental health." • "I have no idea what has been said or recommended." • "I have no idea what is being said about me or placed into my file." • "I never got any care via this program." • "I never seem to get the notes from the Psychiatrist. If these notes could have been sent via message on My Chart or that my doctor would relay the information, without me having to ask would be better." • "I received one-on-one in person discussion but wasn't sure if I was supposed to get something from the doctor who watched the video. Just a little confusion." • "I talk (communicate) with you, my doc gives me anti-depressants, and that's it." • "I was not sure I had been accepted into the study group until I received a new appointment. I was under the impression my doctor would be going over the initial assessment information with me before I would move on to another step." • "It's difficult to rate my experience in the program because I haven't discussed results with my primary care." • "My concern is that the follow up with my doctor was lacking in expertise" • "My doctor did not receive anything for almost 2 months and then she did nothing. She did not tell me of the results or aNY recommendation. I have since switched primary care physicians, and obtained psychiatric and psychological care on my own." • "Not a positive or helpful experience." • "Only comment is about getting the report from psychiatrist." • "Only issue is that I don't remember if I got information back from the last session." • "There is no opportunity to discuss any of the psychological issues, have any of the psychological processes explained to me, or to discuss how severe physical pain can affect a person psychologically. Most importantly, because there is not the dialogue, it is lacking in any feedback on how to resolve or approach any of the issues that were brought up." • "There was a lack of communication after my past appointment regarding medication changes and when that information would be available to my PCP, so I could get my prescriptions filled." • "to get an impersonal response via my PCP seemed to be not comfortable for me. Not bad, just not very satisfying, not being able to question him myself, and even my PCP was a bit confused by the process."	Communication challenges • "[I] feel the therapist on video did not connect with me visually and interrupted session to take a call." • "When I was depressed and desperate I didn't know how to contact anyone and I don't think my physicians here could either." • "It would be nice to have email access to get answers to my questions between visits." • "The psychiatrist I've been paired up with has me mildly concerned about our next meeting mainly because I left the first meeting feeling like there was something very wrong with me. I tried to reach out to him afterward but was left with no response over these last few months…" • "I have no idea what this was all about."
Follow-up frequency • "My follow up visits were never discussed with me by my current doctor either." • "Being able to come in more often if needed to make changes or diagnosis" • "Flexibility on being able to come in before the 6 month mark might be helpful" • "I feel like the end of my visit is the taping of the video and nothing happens beyond that." • "I have not spoke to anyone yet." • "I never receive any outcome from my video visit and I have not received the promised compensation." • "I think there is way to much time between visits." • "No Follow up" • "Other than the six month visit I had no interaction with anybody" • "The follow-up after a video visit lacks. I have never received any feedback provided by the psychiatrist who reviewed my video. I have never received copies of their reports. I have no idea what has been said or recommended."	Follow-up frequency • "Haven't had a video in almost a year." • "I also wouldn't have minded continuing to do the online therapy more frequently … but the period of time between the sessions for this study was too long for longer term help. But it did its job in giving me push I needed." • "I feel like visiting more often than 6 months would help me to talk about things and get over things easier. In saying that, I could also visit a councilor between that time to help me with that" • "I feel that the visits are too far apart to do any good." • "I just need to talk with the doctor more than once every 6 months, since I still haven't found a medication that's working for me" • "I think 6 months apart is too long. Maybe once a month or once every two months…but six is to far apart." • "I would like to see this doctor more frequently either in person or by video."

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Table 5. Patient Comments for Themes Related to Satisfaction *continued*

UNFAVORABLE COMMENTS	UNFAVORABLE COMMENTS
• "There is no follow-up to see how a new Rx is working." • "Would have preferred regularly scheduled visits. Set up ahead how many and how frequently. One initial visit plus one follow-up is not adequate • "It is lacking in any feedback on how to resolve or approach any of the issues that were brought up." • "Video interview once every 6 months does not cut it"	• "It is difficult to only meet once every 6 months." • "I do NOT Know if this survey pertains to me? Reason is that I had an assessment and one follow up." • "need more frequent visits" • "needs follow up's more often" • "There has been a lack of consistency with appointments because of the doctor rescheduling." • "The appointments are so far apart to get a good feel about it."
Reduced satisfaction • "I do not feel measurably better than a year ago. Always very tired." • "I don't really like seeing myself on video" • "I don't think this program has any value except to the Dr./practitioner that gets paid for it. Waste of time." • "I feel that I am more successful with someone I see on a regular basis that I feel I can trust." • "I have found this experience to be extremely frustrating" • "I have mixed opinions about video visits. If I were paying for the visits I would like to physically be seen by the doctor. For cost free visits I find the visits adequate but I feel somewhat distant from the doctor although I doubt it affects the doctor's diagnosis." • "I would have preferred face-to-face. I was OK with video, but not thrilled with it. Wouldn't highly recommend video approach, but would explain it and let them make their own decision. And I do thank you for the participation. Did not like having to get the results through my doc instead of through the psych. But it was OK." • "I would like to see the Dr. in person so I can have my questions answered at least once." • "It feels like a band-aid. I'd much rather get good coping skills than be handed a pill by someone I have not even gotten the chance to talk with. Because I'm answering questions from a clinician (whom I do like), I feel like there is little to no room to interject into the conversation what some of the major factors are in my life." • "Not sure I'm trusting of UCD mental health at this point." • "Personally, I have not gained anything from this program." • "…I feel a hands on approach would have worked better for me." • "I prefer one on one visits with doctors"	Reduced satisfaction • "If these sessions were closer together, I believe that I would have more success." • "I don't really feel this is helping me personally and it's difficult for me to continue." • "I have a hard time trusting people. I honestly didn't believe this would work for me." • "A psychologist would be more helpful i guess. Ultimately it has brought us to finding better treatments through referrals and treatment programs so we are very thankful for the opportunity to be treated successfully so we can rejoin society and serve with love."
Workflow or technical challenges • "The initial 'diagnosis' went to the wrong doctor (wrong patient's file!) and my doctor at the time NEVER talked with me about it" • "Did not know about a video." • "Did not like having to get the results through my doc instead of through the psych. But it was OK." • "Hopefully the researchers will garner something from my answers to all of these surveys" • "I am much more comfortable with a face to face visit. Even though the psychiatry appointment is for the purpose of medication, I feel that it would be helpful to be able to have a dialect with the doctor." • "I didn't do a video visit. So answers 4 and 5 would be 'does not apply'" • "I feel that the primary care physician as an intermediary unnecessarily complicates the entire process." • "I was uncomfortable about this survey because I felt misinformed about what the whole thing was about." • "It is much more beneficial to actually be able to converse with a mental health therapist in person, thoroughly discuss thoughts, feelings, and events, and receive immediate feedback. I don't think that the personal interaction of an in-person visit can be replaced. Possibly if a live video was set up between a psychiatrist and patient it could work but it would be missing the warmth of the in-person appointment." • "The surveys repeat themselves." • "The results of my first visit were sent to the wrong patient's file."	Workflow or technical challenges • "I am not fond of these generalized questionnaires since they could lead to false assumptions about my behavior." • "I do NOT Know if this survey pertains to me? My follow up appointment was NOT a good experience (due to technology issues.)" • "I had no idea what outcomes would be expected. I see only in terms of whether the activity was able to assist me find my own answers. U was lost on what I should feel or expect." • "It's difficult to talk to someone with whom you cannot make eye contact. Is there a way to reposition the camera so it appears that the psych. and patient are looking directly at each other?" • "The main reason I chose somewhat satisfied is these surveys!" • "There is so much involved in this process beyond talking. I am not sure that basically a head shot of each other talking is adequate." • "These questionnaires don't always give a choice that I think is accurate. I don't understand a few of the questions. They take too long to complete. They are the worst part of telepsychiatry." • "Some of the questions asked in the survey are hard to be accurate" • "Too much paperwork" • "Why see a psychiatrist over the video if they cannot prescribe medication?" • "I do not like the surveys! It's really hard to give an accurate answer to many of the questions."

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Table 5. Patient Comments for Themes Related to Satisfaction *continued*

EXPLANATORY COMMENTS	EXPLANATORY COMMENTS
• "Answers are not absolute, I am partially comfortable with the video, and would just tell someone the pros and cons as I see them." • "I accidentally answered no to question on survey for number 4PTSD question. I've been diagnosed with PTSD." • "I don't feel I can fully evaluate the process yet so my 'no' answers are because there wasn't another category more descriptive of my assessment which would be 'unsure at the time'…" • "For #3, there's no scale on the slider. I intended it to be more on the better side." • "… I was not sure on the scale above so it should be 80% positive."	• "I am not fond of these generalized questionnaires since they could lead to false assumptions about my behavior."

PCP, primary care provider; PTSD, post traumatic stress disorder.

This study presents a pragmatic approach generalizable to many other health systems involving referring and enrolling patients within the primary care practice setting using the existing collaborative care models. Furthermore, with the high satisfaction for both STP and ATP patient groups, showing rates at least equivalent to prior published studies,[4–8,17] this study could offer a framework for implementing telepsychiatry in many real-world settings.

The mental health care system has been significantly affected by the COVID-19 pandemic, with what has been described as a follow-on mental health pandemic.[22] As a result, mental health professionals have been required to develop new telepsychiatry protocols and digital systems to help patients who stay at home.[23] It is apparent from the results of this study that both patients and providers find ATP an acceptable clinical approach, and that the ATP hybrid collaborative care model, which leverages the expertise of psychiatrists to oversee the treatment of larger numbers of patients, has the potential to reduce the adverse impact of psychiatrist workforce shortages.

In this RCT, the ATP process was research driven. Based on these results and feedback from study staff and investigators, we note the need for the patient and the PCP to ensure consistent patient-centered follow-up with organizational improvements in the future for the ATP process. These include implementing streamlined and semiautomated processes to avoid administrative barriers and closure of the feedback loop between ATP consultation and patient and PCP reviews; which we believe would improve patient satisfaction rates with ATP.

This study's limitations include the small number of provider respondents, and a measurement instrument that has not been previously validated, as well as several administrative and study difficulties that, in particular, affected the ATP group, leading to the later provision of reports for some patients.

In addition, dropout levels were high for numerous reasons previously discussed,[3] leading to a limited number of patients who provided satisfaction data and the low acceptance rate for 12-month follow-up, which was a significant limitation. Hence, there is potentially some response bias in the results. Finally, these data were collected pre-Covid, and may be more generalizable today as attitudes of patients and providers have changed and become much more positive with increased exposure to telemedicine services.

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These results have not been presented previously.

Authors Contributions

P.M.Y., M.B.P., and A.-M.I. conceptualized the study. P.M.Y., M.B.P., A.D.G., and A.-M.I. drafted the original draft. A.-M.I. designed the analytical plan. A.-M.I. and A.F. conducted the analyses and summarized the results. All authors reviewed and approved the final article.

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The authors report no conflicting financial relationships with commercial interests except P.M.Y., who received royalties from the American Psychiatric Association Press and multiple academic and conference speaking engagements. P.M.Y., M.M.B., and S.R.C. are cofounders of AsyncHealth. J.S. has received royalties from the American Psychiatric Association Press and Springer Press. A.-M.I. has received honoraria for reviewing activities from Elsevier. S.R.C. provided consultation services for Advanced Clinical, University of Wisconsin, Madison, and Orbit Health Telepsychiatry.

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Supplementary Material

Supplementary Data S1
Supplementary Data S2
Supplementary Table S3
Supplementary Table S4
Supplementary Table S5

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