

Rapid Telepsychiatry Implementation During COVID-19: Increased Attendance at the Largest Health System in the United States

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Highlights

- Health & Hospitals implemented the novel use of telepsychiatry during COVID-19
- During COVID-19, the odds of completing a telepsychiatry visit was 6.68 times the odds of completing a FTF visit
- In comparison to the pre-COVID-19 reference period, the odds of completing a telepsychiatry visit was 3.00 times the odds of completing a FTF visit

Abstract

Objective: The objective of this study is to examine differences in completion rates between telepsychiatry and face-to-face visits during COVID-19, and in a prior reference period.

Methods: Using electronic medical record data during COVID-19 and a reference period, chi-squared, or t-tests were used to compare demographics. Generalized estimating equations for estimating odds of primary and secondary outcomes were used while controlling for demographics.

Results: During COVID-19, the odds of completing a telepsychiatry visit (N=26,715) was 6.68 times the odds of completing a FTF visit (N=11,094). In comparison to the pre-COVID-19 reference period (N=40,318), the odds of completing a telepsychiatry visit was 3.00 times the odds of completing a FTF visit.

Conclusion: In this cross-sectional study, outpatient adult mental health clinic telepsychiatry appointments, largely telephonic, were strongly associated with a higher rate of visit

completion when compared to FTF visits during and prior to COVID. Regulators should consider permanently enabling reimbursement for telephonic-only telepsychiatry visits.

Introduction

Research indicates that under normal circumstances, 26% of Americans have a mental illness but only 58.9% attend treatment.¹ The unmet need is particularly pronounced for low-income individuals with Medicaid.² In New York City (NYC), approximately 40% of residents with a serious mental illness did not receive mental health treatment in the past year.³ Left untreated, mental illness is associated with a shorter lifespan, increased number and duration of hospital stays, and increased cost to the individual and community.⁴ Removing barriers to care is essential to ensuring access, particularly during a period of crisis.⁵

Telepsychiatry services are defined as the delivery of mental health services via video-based conferencing.⁶ Its efficacy includes reliability of clinical assessment, treatment outcomes, as well as cost across many populations and settings, and is comparable to in-person care.^{7,8} Some studies demonstrated high levels of patient satisfaction, improved medication adherence, and symptom reduction.^{9, 10} While one study found the number of United States facilities offering telepsychiatry has been increasing, it is most commonly utilized in medically underserved and rural areas.¹¹

It is estimated that H+H sees more than one million patients annually, of which 50% of services are for behavioral health. Outpatient adult mental health clinics (clinics) at H+H provide a variety of services including consultation and assessment, as well as continuing care psychotherapy, group therapy, and medication management. Traditionally, telepsychiatry was

only reimbursed by insurances when rendered via video teleconferencing¹². Due to the upfront cost of technology for telepsychiatry, H+H historically has not offered this service. However, NYC's COVID-19 crisis (March-April 2020) forced a system-wide, and unanticipated shift in services for H+H patients. State and federal regulatory entities recognized the need to reduce barriers associated with delivering services remotely, and began allowing clinics to provide and bill for telephonic-only, as well as video sessions.¹³ Dramatically and rapidly expanding telepsychiatry enabled H+H to keep medically high-risk or quarantining patients safely in their homes, and help them avoid potential psychiatric crises. While some patients needed to attend face-to-face (FTF) visits for clinical purposes such as medication injection, those with access to phone and/or video equipment were able to attend telepsychiatry visits.

This study determines the differences in visit completion rates for visits conducted via telepsychiatry, primarily telephonically, when compared to FTF visits for H+H patients during COVID-19, and a pre-COVID-19 time period. A previous study found telepsychiatry appointments were more likely to be kept, and less likely to be cancellations or no shows compared to FTF in rural clinic settings.¹⁴ One recent study reported patient satisfaction to be high, but did not examine visit completion rates¹⁵. Other recent telepsychiatry studies during COVID-19 have found increased attendance for telepsychiatry visits, however the sample size is smaller than this study, they did not compare to a FTF control group, or control for demographics.^{12,8} This study contributes to the literature on telepsychiatry, and is distinct with a significantly larger sample size compared to other published studies with a similar setting and population. Stable or improved visit completion rates would support continuation of this

service, including telephonic-only visits, during and beyond the COVID-19 crisis, with potential policy implications as well.

Methods

Clinic Sites

Telepsychiatry services were rapidly implemented in H+H's 11 hospital-based and 4 free standing clinics during COVID-19. For the purposes of this paper, telepsychiatry is defined as telephonic-only or audio-visual services. Data for these services was collected as part of standard quality improvement (QI) processes at H+H. The H+H Research Office confirmed the protocol for this study met QI criteria and did not need Institutional Review Board review. Descriptive analyses and reports to leadership are regularly completed for QI purposes to guide clinic processes and modifications.

Data Collection

Data from the Electronic Medical Record (EMR) provided cross-sectional patient-level demographic and clinical data, including: age; sex; race; and insurance enrollment. Data was collected on May 19, 2020. The index period for clinic visits was between April 8 and May 8, 2020, representing a period beginning shortly after the onset of the high prevalence of COVID-19 in NYC and H+H's resultant telepsychiatry implementation. Reliable data from the EMR was not available during April and May 2019, so comparative data was drawn from a pre-COVID-19 period between October 8 to November 8, 2019. This calendar period presents normative utilization data similar to the index period in any given year. Data included the type of services

rendered, whether or not the appointment was FTF, and if the patient did or did not keep the appointment. The analysis excluded two of the four free standing clinics and one hospital-based clinic because they had not yet transitioned from the old EMR during the comparative period. One additional hospital was excluded because the clinic did not begin tracking telepsychiatry appointments until later in the study period.

Data Analysis

Data was grouped into 3 main categories: telepsychiatry during COVID-19, FTF visits during COVID-19, and FTF visits pre-COVID-19. To compare demographic characteristics between groups, chi-squared or t-tests were conducted where appropriate. Because the data contained repeated measures (i.e. patients may have multiple visits scheduled during the study period), generalized estimating equations were used to estimate odds of a group attending a scheduled visit, and to control for patient demographics. Visits with missing/unknown demographics were removed. All analyses were conducted in SAS Enterprise Guide 7.15. P-values less than .001 were considered statistically significant.

Results

Patient Characteristics

During the COVID-19 period, 37,809 visits were scheduled, 6% less compared to the pre-COVID-19 reference group (N=40,318). The preponderance of visits scheduled for a telepsychiatry visit during COVID-19 were female (65.3%), identified as 'Other' race (53.5%) and were enrolled in Medicaid (39.3%) or Medicare (31.9%) (see Table 1 for visit outcomes and patient demographics). Comparing groups, there were significant differences between COVID-19 telepsychiatry and FTF patient groups in terms of age ($t=12.41$, $df=21,063$, $p<.001$), gender

($\chi^2=105.15$, $N=37,809$, $df=1$, $p<.001$), race ($\chi^2=196.53$, $df=5$, $N=37,809$, $p<.001$) and insurance provider ($\chi^2=91.33$, $df=4$, $N=37809$, $p<.001$). Significant differences also existed between telepsychiatry during COVID-19 and FTF pre-COVID-19 groups when comparing gender ($\chi^2=39.31$, $N=67,033$, $df=1$, $p<.001$), race ($\chi^2=6482.66$, $N=67,033$, $df=5$, $p<.001$) and insurance ($\chi^2=65.35$, $N=67,033$, $df=4$, $p<.001$). However, there was no significant difference between ages when comparing these groups.

Outcome Measures

COVID-19 period: Telepsychiatry versus FTF Visits

During COVID-19, 70.7% ($N=26,715$) of visits were scheduled to be conducted via telepsychiatry and of those visits, 74.2% ($N=19,831$) were completed. The odds of completing a telepsychiatry visit was 6.68 times the odds of completing a FTF visit after adjusting for age, sex, race and insurance provider ($OR=6.68$, $95\% CI=6.18-7.21$). As a secondary measure examining visits that were not completed (i.e. a patient canceled or 'no-showed' to their appointment), the odds of a 'no show' telepsychiatry visit was 1.54 times the odds of a 'no show' FTF visit ($OR=1.54$, $95\% CI=1.40-1.70$). The odds of a canceled telepsychiatry visit was 0.65 times the odds of a canceled FTF visit ($OR=0.65$, $95\% CI=0.59-0.72$). Finally, we found no association between visit completion of telephone visits ($N=26,594$) as compared to audio-visual visits ($N=121$).

COVID-19 period versus Pre-COVID-19 reference period: Telepsychiatry versus FTF visits

In comparison to the pre-COVID-19 reference period, the odds of completing a telepsychiatry visit was 3.00 times the odds of completing a FTF visits after adjusting for age, sex, race and insurance provider ($OR=3.00$, $95\% CI=2.84-3.16$). As a secondary measure,

examining the visits that were not completed, there was no significant difference between the odds of a 'no show' visit or canceled visit when scheduled as telepsychiatry or FTF.

Discussion

During COVID-19, implementation of telepsychiatry was essential for continued service delivery to clinic patients. This study supports previous findings that telepsychiatry improves attendance to clinic appointments, likely due to the ease of access to these visits, particularly when patients and providers are quarantining at home. It should be noted that telepsychiatry in itself is no small feat. Both patients and providers require some level of technical support in the earliest stages of implementation, and the acquisition of a video device is not always feasible for patients.

Anecdotally, some clinic staff were concerned that the 'no show' rates would be higher via telepsychiatry, and cancellation rates would be higher still. During COVID-19, the findings suggest patients who did not complete their appointments canceled telepsychiatry less often than FTF visits, and instead opted to 'no show' for telepsychiatry visits. However, there was no difference when comparing with the reference period, suggesting patients not completing their appointment would likely 'no show' instead of cancel FTF and telepsychiatry visits with the same frequency in non-acute pandemic periods.

This study has several strengths. Exhaustive literature review of telepsychiatry found the current sample to be the largest and most diverse study sample, particularly in a municipal healthcare system setting. The relatively large proportion of Medicare and Medicaid patients in this sample also strengthens the case for policy decisions regarding reimbursement of audio-

only telepsychiatry services. The study also shows that it is possible to dramatically scale up telepsychiatry on a large scale, even in a crisis, tangibly affecting service delivery.

The results of this study should be considered in the context of its limitations. First, the data includes patients only from select H+H facilities, so is not generalizable, and is dependent on accurate documentation by staff. Second, while the results suggest telepsychiatry may improve accessibility to treatment, outcomes of treatment beyond showing up to a scheduled appointment were outside the scope of the paper. Other patient variables such as income, housing status, and diagnosis were not feasible to report, but should be considered as important variables. Additionally, future studies should examine a longer time period spanning beyond the peak COVID-19 months and early stages of implementation, as telepsychiatry utilization and regulatory policies may change. Finally, because this was a cross-sectional study, further analysis to examine the impact of FTF visits prior to telepsychiatry implementation was not completed. Patient-provider rapport may impact a patient's comfort with providers, making them more likely than new patients to initiate telepsychiatry treatment. Future studies should explore this relationship.

Conclusion

The COVID-19 crisis presented a very challenging time for H+H patients, many with complex behavioral health issues, and the novel use of telepsychiatry was critical to maintaining treatment while clinics were limiting FTF exposure. The authors recommend regulatory bodies consider this study when reexamining telepsychiatry policies in a post-COVID-19 era, and support ongoing research to determine the most effective ways to support patients in need of mental health treatment. Given the findings and relative ease of access to a telephone rather

than video device for service delivery, it is important for regulatory bodies to consider adopting the modified regulations and allow for reimbursement of audio-only telepsychiatry service as deemed necessary by providers.

References

1. Kohn R, Ali AA, Puac-Polanco V, et al. Mental health in the Americas: an overview of the treatment gap. *Rev Panam Salud Pública*. 2018;42. doi:10.26633/RPSP.2018.165
2. Barnett ML, Huskamp HA. Telemedicine for Mental Health in the United States: Making Progress, Still a Long Way to Go. *Psychiatr Serv*. 2020;71(2):197-198. doi:10.1176/appi.ps.201900555
3. Norman C, Goldmann E, Sately B. *Serious Mental Illness among New York City Adults*. New York City Department of Health and Mental Hygiene; 2015.
4. Gomez J. Psychological presentation in various disorders. In: *LIAISON PSYCHIATRY: Mental Health Problems in the General Hospital*. Kent, UK: Routledge; :356-359.
5. Goldmann E, Galea S. Mental Health Consequences of Disasters. *Annu Rev Public Health*. 2014;35(1):169-183. doi:10.1146/annurev-publhealth-032013-182435
6. Hubble S, Lynch SB, Schneck C, Thomas M, Shore J. Review of key telepsychiatry outcomes. *World J Psychiatry*. 2016;6(2):269. doi:10.5498/wjp.v6.i2.269
7. Hilty DM, Ferrer DC, Parish MB, Johnston B, Callahan EJ, Yellowlees PM. The Effectiveness of Telemental Health: A 2013 Review. *Telemed E-Health*. 2013;19(6):444-454. doi:10.1089/tmj.2013.0075
8. Velázquez PP, Gupta G, Gupte G, Venter J. Rapid Implementation of Telepsychiatry in a Safety-Net Health System During Covid-19 Using Lean. Published online 2020.
9. Flaum MA. When Will Telepsychiatry Reach Its “Tipping Point”? *Psychiatr Serv*. 2017;68(12):1205-1205. doi:10.1176/appi.ps.681201
10. García-Lizana F, Muñoz-Mayorga I. What About Telepsychiatry?: A Systematic Review. *Prim Care Companion J Clin Psychiatry*. Published online March 25, 2010. doi:10.4088/PCC.09m00831whi
11. Spivak S, Spivak A, Cullen B, et al. Telepsychiatry Use in U.S. Mental Health Facilities, 2010–2017. *Psychiatr Serv*. 2020;71(2):121-127. doi:10.1176/appi.ps.201900261
12. Chen JA, Chung W-J, Young SK, et al. COVID-19 and telepsychiatry: Early outpatient experiences and implications for the future. *Gen Hosp Psychiatry*. 2020;66:89-95. doi:10.1016/j.genhosppsy.2020.07.002
13. Cuomo A. Executive Order Continuing Temporary Suspension and Modification of Laws Related to the Disaster Emergency. Published online 2020. https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/EO_202_1.pdf

14. Leigh H, Cruz H, Mallios R. Telepsychiatry appointments in a continuing care setting: kept, cancelled and no-shows. *J Telemed Telecare*. 2009;15(6):286-289. doi:10.1258/jtt.2009.090305
15. Yellowlees P, Nakagawa K, Pakyurek M, Hanson A, Elder J, Kales HC. Rapid Conversion of an Outpatient Psychiatric Clinic to a 100% Virtual Telepsychiatry Clinic in Response to COVID-19. *Psychiatr Serv*. 2020;71(7):749-752. doi:10.1176/appi.ps.202000230

Table 1: A comparison of visit outcomes and patient demographics between the COVID-19 and pre-COVID-19 periods

	COVID-19						Pre-COVID-19		COVID-19 p ^a	Pre-COVID-19 p ^b
	Telepsychiatry		Face-to-face		All visits		All visits			
	N	%	N	%	N	%	N	%		
Primary outcome	N = 26715		N = 11094		N = 37809		N = 40318			
Completed visits	19831	74.2	3924	35.4	23755	62.8	23640	58.6		
Secondary outcome										
Visit cancellations	3425	12.8	4082	36.8	7507	19.9	8139	20.2		
Visit no shows	3459	13.0	3088	27.8	6547	17.3	8539	21.2		
Demographics										
Age (M ±SD)	49.5 ±16.0		47.3 ±15.8		48.8 ±16.0		49.28 ±15.9		<.001	<i>ns</i>
Gender									<.001	<.001
Female	17451	65.3	6629	59.8	24080	63.7	25379	63.0		
Male	9264	34.7	4465	40.3	13729	36.3	14939	37.0		
Race									<.001	<.001
Other	14283	53.5	5542	50.0	19825	52.4	13464	33.4		
Black	5801	21.7	3117	28.1	8918	23.6	6735	16.7		
White	4075	15.3	1608	14.5	5683	15.0	18052	44.8		
Asian	2409	9.0	773	7.0	3182	8.4	1950	4.8		
American Indian / Alaskan Native / Native Hawaiian / Pacific Islander	116	0.4	42	0.4	158	0.4	84	0.2		
Multi-Racial	31	0.1	12	0.1	43	0.1	33	0.1		
Insurance									<.001	<.001
Medicaid	10493	39.3	4675	42.1	15168	40.1	16478	40.9		
Medicare	8525	31.9	3011	27.1	11536	30.5	12709	31.5		
Commercial	4979	18.6	2291	20.7	7270	19.2	7680	19.1		
Uninsured/self-pay	2641	9.9	1082	9.8	3723	9.9	3309	8.2		
Other	77	0.3	35	0.3	112	0.3	142	0.4		

^a P-value of chi-squared test (or t-test, where applicable) comparing telepsychiatry and face-to-face visit demographics during the COVID-19 period

^b P-value of chi-squared test (or t-test, where applicable) comparing visit demographics between telepsychiatry during the COVID-19 period to the pre-COVID-19 period