



# Incorporation of Telepsychiatry for Patients with Developmental Disorders into Routine Clinical Practice—A Survey of Specialty Clinics Adapting to Telepsychiatry During the COVID-19 Pandemic

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## Abstract

In 2020, a nationwide shift to telepsychiatry occurred in the wake of the Coronavirus Disease 2019 (COVID-19) pandemic and lockdowns. To assess the rates of telepsychiatry appointment attendance pre- and post-lockdown, we conducted a national, multi-site survey of appointments in 2020 compared to a similar time period in 2019, at outpatient child psychiatry clinics that specialize in the treatment of patients with Autism Spectrum Disorder (ASD) and/or Developmental Disabilities (DD). ASD/DD clinics rapidly shifted to telepsychiatry, returning to pre-pandemic appointment numbers and completion rates within months. We advocate for the continued funding of this care model, discuss the substantial benefits physicians, patients and families have found in using telepsychiatry, and suggest ways to improve future access for ASD/DD telepsychiatry.

**Keywords** Autism spectrum disorder · Developmental Disabilities · Telepsychiatry · Clinical care

Traditional clinical service models, in which patients visit centralized clinical sites for routine care, can decrease access to care if travel to the clinic site is difficult for patients and their families to manage. Challenges include long travel distances to specialty clinics, financial constraints including access to transportation, or concerns for the safety of the patient and family members during transit. A special concern for patients diagnosed with autism spectrum disorder

(ASD) or developmental disorders (DD) is that travelling to a new location can trigger severe distress.

Telepsychiatry, in which psychiatric care is provided by videoconference, has been utilized for decades to address these disparities and concerns, but in a limited fashion due to state and institutional regulations within the United States (Shore 2015). In early 2020, however, there was a nationwide shift in the U.S. to telepsychiatry in the wake of the Coronavirus Disease 2019 (COVID-19) pandemic and

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lockdowns to prevent the spread of SARS-CoV-2. To assess the rate of telepsychiatry appointment attendance pre- and post-lockdown, we conducted a national, multi-site survey of appointments in 2020 compared to a similar time period in 2019, at outpatient child psychiatry clinics that specialize in the treatment of patients with ASD and/or DD (ASD/DD clinics). We show that ASD/DD clinics rapidly shifted to telepsychiatry visits within weeks of the COVID-19 lockdown, which facilitated a return to pre-pandemic appointment numbers and completion rates within months. While the COVID-19 lockdown forced the immediate implementation of remote care delivery, in our experience, providers and patients have found many advantages to telepsychiatry that support the continued funding of this care model. We now have a wealth of information and experience to better hone telepsychiatry as a model of care. We discuss the substantial benefits physicians, patients and families have found in using telepsychiatry, as well as concerning factors that must be addressed to improve access to care for this patient population.

### Telepsychiatry as a model of care for people with neurodevelopmental disorders

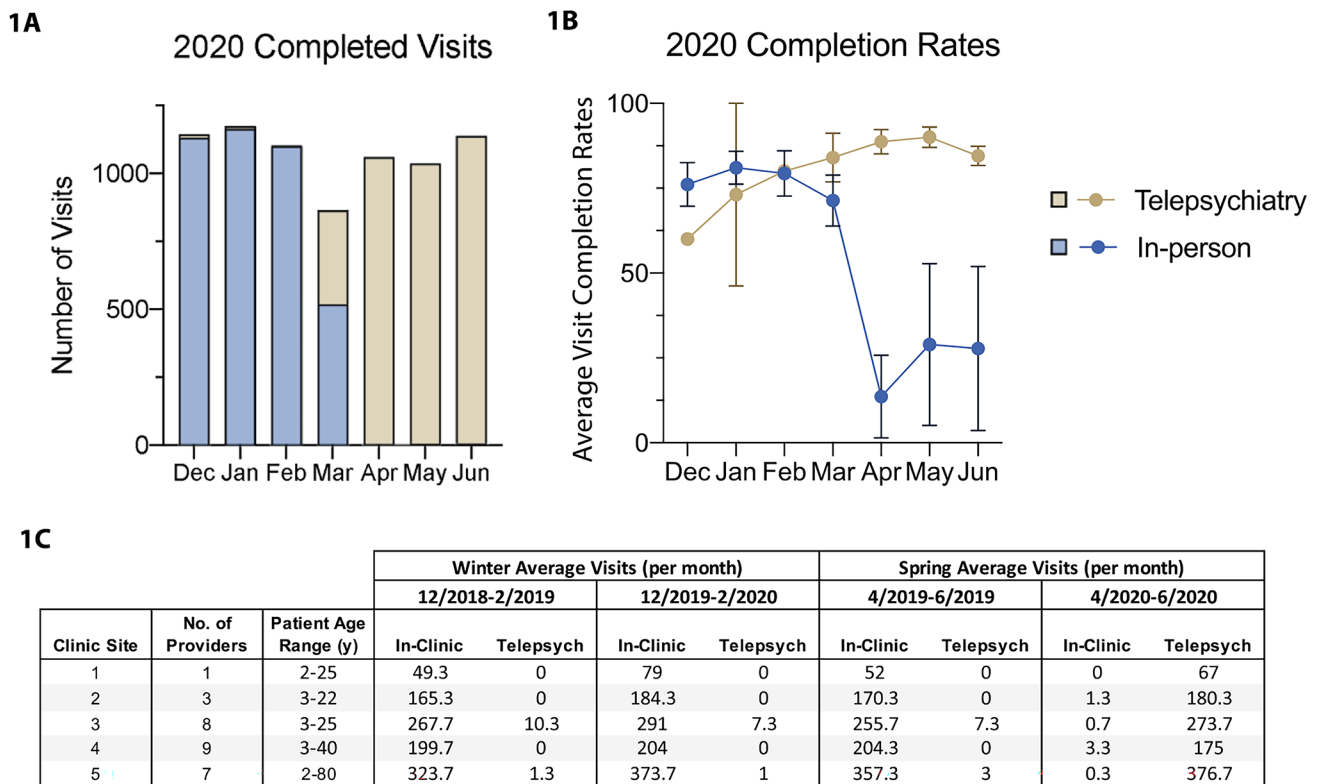
Historically, telepsychiatry was available as early as the 1960s, with renewed interest as a vehicle for care for remote areas in the 1990's (Shore 2015). One author (J.H.) performed telepsychiatry clinics for individuals with ASD/DD residing in a state hospital 3 h away for over two decades, but this necessitated the availability and substantial upkeep of specialized equipment at both locations. In addition, patients with developmental disabilities frequently experienced difficulty in sitting up close to the large, loud television screen and in looking at it while answering questions, even if they had such abilities. Telepsychiatry became more mainstream, with the widespread use of videoconferencing at home on small personal devices, which is overall less challenging to patients with disabilities (Hilty et al., 2018). Studies have found telepsychiatry improves access to care, provides efficacious treatment, lowers costs, and yields comparable patient and parent satisfaction scores (Hubley et al., 2016; Kruse et al., 2017; Pakyurek et al., 2010). Telepsychiatry assessment procedures used by Juarez et al., 2018, supported feasibility, accuracy, clinical utility, and high parent satisfaction in this population. Stavropoulos et al., 2022, completed a review of ten studies. Results seem promising with reliability (accuracy) of 80–91% with high parent and clinician satisfaction in diagnosing ASD through telepsychiatry. This review also included sensitivity from six studies which ranged from 75 to 100% and five of them noted specificity varying between 68.75 and 100%. A recent

review of 16 studies of telehealth in children with ASD found that telehealth programs are comparable to face-to-face interventions and highly acceptable (De Nocker et al. 2021). Telemedicine has also been used successfully to train parents of children with autism and other developmental disabilities to implement applied behavior analysis at lower cost (Lindgren et al., 2016). Telepsychiatry offers the prospect of observing and treating people diagnosed with ASD/DD in their natural environment. For these individuals, changes in routine, new situations, and transitions inherent with travel can cause stress and increase behavioral challenges. Telepsychiatry can decrease these stressors while increasing access to care for these families in a cost-effective way (Ameis et al., 2020; Knutsen et al., 2016). The use of this modality was previously limited, however, due to state and federal regulations, variable insurance coverage, and poor provider familiarity with the technology (Terry, 2009).

These barriers rapidly fell during the spring 2020 COVID-19 lockdowns in the United States, as in-clinic appointments were deemed a risk for SARS-CoV-2 transmission. People with ASD/DD were suddenly cut off from community resources and therapies when they most needed extra support (Colizi et al., 2020; Panda et al., 2021). There was also an interruption of access to psychiatric providers. To prevent adverse outcomes as well as to maintain treatment goals, outpatient psychiatric services quickly transitioned to remote appointments via secure telehealth platforms in lieu of in-clinic visits. This shift in care to a primarily virtual model for ASD/DD individuals presents the child psychiatry field with a unique opportunity to assess the benefits and challenges of this care modality.

### ASD/DD clinics shifted rapidly to remote delivery of care during the COVID-19 pandemic

To assess the attendance at telepsychiatry appointments by ASD/DD clinics during the COVID-19 pandemic, we surveyed 5 unaffiliated ASD/DD psychiatric clinics throughout the United States with the ethics approval of each participating institution's Institutional Review Board. Using de-identified records of each clinic's total number of visits that were scheduled versus completed, we tallied the rate of completed appointments for in-clinic and remote visits from each site and compared rates of total appointments in the same period of the prior year (Fig. 1). In 2020, only 2 of the sites were performing telepsychiatry visits in the 3 months prior to the COVID-19 lockdown, making up only 1.2% of completed visits at those sites. After the lockdown was in place, this rate was immediately inverted, such that telepsychiatry accounted for 99.6% of all completed visits in April



**Fig. 1** ASD/ID clinics rapidly switched to telepsychiatry within weeks of the nationwide lockdown, and visit resumed via telepsychiatry at equivalent rates. **(A)** Completed visits for the months of Dec 2019 to June 2020 were summed across all five clinical sites for in-person (blue), and telepsychiatry (beige) visits. **(B)** Completion rates of in-person (blue) and telepsychiatry (beige) visits across the same time period as in A. **(C)** Average completed visit data from each clinic site for the same periods in 2018–2019 compared with 2019–2020. Visit completion and no-show data from scheduled and completed clinic visit counts from 5 clinical sites were obtained for the three months prior to the March 2020 COVID-19 lockdown (Pre-lockdown: Dec 2019 to Feb 2020) and compared to the three months after the lockdown commenced (Post-lockdown: April to July 2020). We collected the same information from the equivalent months the year prior (Dec 2018 to June 2019) to assess for differences in total visit number and visit completion rate. Respondents provided de-identified summary counts of scheduled in-clinic and telepsychiatry visits for each month, as well as the number of completed visits for each. Visit totals are the sum of visit data across all clinic sites, while completion rates are the average of data from each site (mean  $\pm$  standard error measurement). The data was analyzed as using Graphpad Prism 9

2020, with only a handful of visits completed in person. Outpatient ASD/DD clinics fully shifted to telepsychiatry visits thereafter (Fig. 1 A), with an average telepsychiatry completion rate of 87.8% across all clinic sites (Fig. 1B-C). Total completed telepsychiatry visits in April – June 2020 surpassed the number of in-person visits completed for the same period in 2019 (3119 in 2019 vs. 3218 in 2020). To our knowledge, this is the first multi-site survey assessing the rate of adoption of telepsychiatry services by ASD/DD clinics, and demonstrates the widespread adoption and feasibility of telepsychiatry services.

### Benefits and pitfalls of Telepsychiatry Delivery of Care: collective experiences

The immediate shift to telepsychiatry met with some technical and implementation hurdles experienced by the authors. Health systems endeavored to secure telehealth platforms that met patient confidentiality requirements, while clinicians and families had steep technical learning curves. Families struggled with many aspects of connecting, and a lack of access to video-enabled devices or stable internet severely limited access by disadvantaged communities. Instructions on how to navigate the new platforms were not readily available in languages other than English, and many non-English speaking families struggled with accessing virtual appointments. Integration of live interpreter services improved access to care when it was available. Distractions

in the home could disrupt the appointment, impeding rapport with patients and families.

Physicians also struggled to adapt care to a remote delivery model, but our survey results show the technological hurdle was overcome quickly. Other aspects were more difficult to surmount. Vital signs, laboratory monitoring and complete physical examinations could not be completed unless the patient could access nearby primary care offices or pharmacies. Management of acute behavioral dysregulation or suicidality were especially challenging when patients were not in-person, therefore confirming the location of the patient and accessible care providers was essential at every appointment. Boundaries for both providers and patients could be breached more easily as the “clinic” space merged with home.

As providers and patients became accustomed to telepsychiatry, the benefits of this modality became more apparent.<sup>7</sup> Appointments could be more frequent, and events that would previously cause a cancellation (such as an inability to secure childcare) did not disrupt care. Travel time and costs were eliminated, and sessions could be scheduled with greater ease for working guardians. Many of our patients and families have expressed satisfaction with virtual appointments and relief that travel to the clinic was no longer necessary. For some people with ASD/DD, travel to an outpatient appointment causes high levels of distress and unforeseen triggers potentially leading to self-injurious behaviors, elopement, property destruction and/or aggression. Telepsychiatry allowed patients to remain in their home environment without the increased stress of an unfamiliar setting, and gave clinicians better insight into the patient’s usual demeanor, physical space, routines, and environmental stimuli at home. More naturalistic observations of parenting and family interactions (including the quality and type of interactions) allowed for more informed recommendations for behavioral interventions. While rapport can be difficult to engage in virtual appointments, in our collective experience we found there was as much interaction in remote appointments as in-person ones, and in many cases it was more sustained. For some, virtual meetings cause less anxiety than being in an actual social setting. This modality also facilitated conversations about a patient’s web footprint and interests, with ease of sharing of favorite videos, website, or games, fostering better engagement by allowing patients to lead with their interests.

The transition to telepsychiatry also provided increased opportunities for other treatment team members to participate virtually during appointments. As many people with ASD/DD receive services from multidisciplinary teams, this improved care coordination and facilitated the creation of comprehensive biopsychosocial treatment plans.

## Long term perspectives

In a survey of five ASD/DD clinics across the country, we show that telepsychiatry appointments rapidly became the predominant care model after the COVID-19 lockdown, a remarkably swift transition that yielded unexpected but clear benefits. In our experience, telepsychiatry increases access to care by individuals with ASD/DD for whom travel is unsafe or living in areas of physician shortage (Terry, 2009). It is imperative, however, that the successful implementation of this model during the pandemic be further evaluated. Long-term efficacy and sustainability need to be established by future research, assessing for treatment effectiveness, acceptability by parents and clinicians, and financial viability using evidence-based outcome measures (Ramaswamy et al., 2020). Additional criteria to consider include lapses in treatment, utilization of emergency services, inpatient admission rates, adverse events, accessibility, and quality of care. We must also be mindful that telepsychiatry does not drive further care disparities for those without access to video-conferencing technology (Andrews et al., 2020; Hubley et al., 2016). To ensure healthcare equity, families should be screened to ensure that internet services and devices are accessible, the family is guided through the set-up for telepsychiatry visits before appointments. Providing local clinic offices to aid in telepsychiatry visits and to facilitate in-clinic physical and emergency examinations is also critical for physical monitoring of symptoms and side effects. We have made “tip sheets” available online for patients and clinicians to improve telepsychiatry appointments for people diagnosed with ASD/DD (American Academy of Child & Adolescent Psychiatry, n.d.)

A hybrid in-person/telepsychiatry model, in which the patient primarily accesses care by telepsychiatry, interspersed by in-person appointments when clinically indicated or at least annually, can be a cost-effective, safe, and efficient treatment delivery model. We propose telepsychiatry is a feasible treatment delivery model to increase access to patient care for people diagnosed with ASD/DD, that our authors have continued to utilize in a hybrid manner, and warrants funding at the level provided during the COVID-19 pandemic even after the latter subsides.

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