Open Trial of a Telehealth Adaptation of Team-Based Delivery of Cognitive Behavioral Treatment for Pediatric Anxiety and Obsessive-Compulsive Disorder

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ABSTRACT

This brief report presents the results of an open trial of a telehealth adaptation of a novel team-based approach to cognitive behavioral treatment (CBT) for pediatric anxiety and obsessive-compulsive disorder (OCD). This telehealth modification was necessary as a response to COVID-19 to allow clients to continue to receive treatment during a pause to in-person care in a larger trial of team-based treatment for anxious youth. Participants included 46 youth between the ages of 5 and 18 who received telehealth delivered CBT via a task-sharing model whereby patients and families met monthly with a supervising licensed clinician and with non-licensed staff all other weeks of the month. Participants received treatment for up to 6 months and completed symptom assessments every 6 weeks throughout treatment. Descriptive results demonstrated high patient and caregiver treatment engagement and satisfaction. Anxiety and OCD symptoms decreased significantly from baseline to post-treatment with 68% of participants classified as treatment responders. Patient- and caregiver-reported Top Problems and caregiver-reported quality of life improved significantly from baseline to post-treatment. In addition, the clinical capacity of the licensed provider increased more than two-fold by leveraging non-licensed staff. This novel telehealth delivery model using team-based care has potential to increase provider capacity and reduce barriers to mental health care access for youth.

Introduction

Evidence-based delivery models that optimize remote access to care are desperately needed given the ongoing mental health burden of the COVID-19 pandemic (Panchal et al., 2021; Wang et al., 2020). Both the pandemic itself and the subsequent increase in symptomatic youth (Loades et al., 2020; Samji et al., 2022; Slomski, 2021) have exacerbated the ways in which our current outpatient model does not meet the needs of families with anxious children (e.g., access barriers, therapist shortages). Telehealth treatment models were a necessary adaptation in the height of the COVID-19 health crisis and also may improve access to care post-pandemic. Telehealth-delivered CBT is effective for youth with anxiety and obsessive-compulsive disorder (OCD) when the services are provided by a doctoral-level clinician, with response rates ranging from 73% to 82% (Carpenter et al., 2018; Comer et al., 2017; Storch et al., 2011). Although telehealth treatments can address barriers associated with face-to-face treatment, they are still limited by the availability of licensed clinicians. A team-based "task-sharing" delivery model whereby patients and families meet once per month with a licensed provider and all other weeks of the month with non-licensed staff (under supervision of the licensed provider) is an innovative service design with the potential to radically expand treatment capacity, while maintaining quality (Barnett et al., 2018; Shahmalak et al., 2019; Verhey et al., 2020).

This Patient Centered Outcomes Research Institute (PCORI)-funded study (#IHS-2017C1-6400) used a team-based approach to telehealth intervention as an adjunct to a larger in-person study comparing team-based delivery of CBT in the home and/or community (i.e., patient-centered) to traditional care in the office with a licensed provider (i.e., provider-centered). The

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methods and details of this larger study are described elsewhere (Freeman et al., under review). Due to COVID-19 related changes in hospital policy and to maintain patient and staff health, we temporarily halted in-person treatment for the larger study in March 2020. We subsequently received a COVID-19 enhancement award from PCORI (#IHS-2017C1-6400) to conduct an open pilot trial of team-based "telehealth" ($N = 46$) modeled after our patient-centered "home" treatment occurring fully remotely. This pivot caused by the pandemic allowed for the novel combination of a team-based treatment model with a telehealth delivery modality. The participants reported on here will not be included in analyses for the larger ongoing in-person trial.

This open trial had three specific aims: (1) to examine the feasibility and acceptability of team-based telehealth including patient and caregiver (1a) treatment engagement and (1b) satisfaction; (2) to establish the potential for change through measurement of clinical outcomes including (2a) anxiety/OCD symptoms and treatment response, and (2b) associated disability and (3) to describe provider capacity of the team-based telehealth model.

Methods and materials

Participants

Study participants were individuals and caregivers who contacted the Pediatric Anxiety Research Center (PARC) for services for youth with anxiety and/or OCD. PARC is an integrated research and clinical program located in an academic medical center in the Northeastern United States. Inclusion criteria were: a) age 5–18, b) primary or co-primary DSM-5 diagnosis of Separation Anxiety Disorder, Specific Phobia, Social Anxiety Disorder, Panic Disorder, Generalized Anxiety Disorder, Selective Mutism, Agoraphobia, or OCD, c) symptom duration of at least 3 months, d) appropriate for outpatient level of care, e) presence of a caregiver to participate in treatment. Exclusion criteria were: a) other primary or co-primary disorder requiring a different intervention, b) documented intellectual disability, c) thought disorder or psychotic

symptoms, d) conduct disorder, e) acute suicidality, f) concurrent psychotherapy, g) chronic medical illness that would preclude active participation in treatment, and h) treatment with psychotropic medication that was not stable (medication start/stop <4 weeks or dose change <2 weeks). Of note, participants with comorbid Autism Spectrum Disorder (ASD) were not excluded. Psychologist visits were paid for by insurance (both public and private) while visits with non-licensed staff were paid for as part of the research study.

The final sample included 46 participants who received team-based telehealth treatment. See Table 1 for demographic information. For an overview of participant flow throughout the study, as well as a detailed review of reasons for withdrawal, see Figure 1.

Measures

Demographic information was collected from caregivers and youth (ages 12 and up) at baseline. Clinical assessment measures were administered by Independent Evaluators (IEs). Other self-report measures were completed by youth 8+ and their caregiver(s) as described below. See Table 2 for an overview of all study measures, including reporters and administration timing.

Psychiatric diagnosis: mini international neuropsychiatric interview - child/adolescent version 7.0.0 (Sheehan et al., 2010)

Primary, co-primary, and secondary diagnoses were determined at baseline using the MINI-KID based on which presenting symptoms were deemed by the patient, caregiver(s), and evaluator to be causing the most distress and interference.

Treatment engagement: attendance

Treatment attendance was measured by the number of sessions a patient and/or their caregiver(s) attended during active treatment.

Treatment engagement: homework compliance

The Homework Compliance measure asks clinicians to rate the quality and quantity of patient and caregiver homework completed between each treatment

Table 1. Demographic characteristics of the study sample.

	Percent
Patient race	
White	87%
Black	2%
Multi-racial	7%
Asian	2%
Hawaiian, Pacific Islander, Alaska Native	3%
Patient ethnicity	
Non-Hispanic	91%
Hispanic	9%
Patient gender	
Male	50%
Female	50%
Household annual income	
<$5,000	2%
$15,000–24,999	2%
$25,000–49,999	4%
$50,000–74,999	13%
$75,000–99,999	11%
$100,000–149,999	35%
$150,000+	13%
Missing	20%
Insurance provider type	
Commercial Insurance	87%
Public Insurance	7%
Tricare	2%
None	4%
Primary or co-primary anxiety diagnosis[a]	
Any anxiety disorder	
Generalized anxiety disorder (GAD)	63%
Social anxiety disorder	35%
Separation anxiety disorder	11%
Specific phobia	7%
Unspecified anxiety disorder	13%
	2%
Primary or co-primary obsessive compulsive disorder (OCD	52%
Secondar Diagnoses	
Generalized anxiety disorder (GAD)	17%
Social anxiety disorder	2%
Specific phobia	4%
Attention deficit/hyperactivity disorder (ADHD)	33%
ADHD-Inattentive	11%
ADHD – Hyperactive	4%
ADHD – Combined	17%
Tic Disorder	15%
Excoriation Disorder	2%
Trichotillomania	2%
Unspecified Mood Disorder	2%
Number of diagnoses	
1 diagnosis	35%
2 diagnoses	35%
3+ diagnoses	30%

[a]Diagnostic data sum to more than the total sample size ($N = 46$) due to comorbidity (i.e., one patient may have multiple diagnoses).

session. This form has been used in multiple large-scale clinical trials (Freeman et al., 2014).

Treatment satisfaction: therapeutic alliance scales for caregivers and parents (TASCP) (Accurso et al., 2013) and therapeutic alliance scales for children-revised (TASC-r) (Creed & Kendall, 2005; Shirk & Saiz, 1992)

The TASCP/TASC-r was completed weekly and measures therapeutic alliance between a *caregiver* and their child's therapist and *youth* and their

therapist, respectively. Each item is rated using a scale from zero: "not true" to 4: "very much true." This measure has demonstrated excellent reliability and validity.

Treatment satisfaction: client satisfaction questionnaire-8 (CSQ-8) (Larsen et al., 1979)

The CSQ-8 is a patient- and caregiver-report questionnaire assessing consumer satisfaction with mental health services. The dimensions of consumer satisfaction include physical surroundings, treatment staff, quality of service, outcome of service, and procedures. Each item is rated using a zero to four scale, with higher scores indicating greater satisfaction with services.

### Anxiety symptoms: pediatric anxiety rating scale: (PARS) (2002)

The PARS is an IE-administered measure assessing frequency, severity, and impairment of common anxiety disorders. The measure provides an index of overall anxiety severity and has demonstrated adequate reliability and validity as the primary outcome measure in large clinical trials of anxiety disorder treatments (Compton et al., 2014; Walkup et al., 2008). The cutoff for a clinical level of anxiety symptoms is a score of 12 out of 30 possible points, however, this was not used to determine inclusion for the study which was determined by our diagnostic interview (MINI-KID) (Ginsburg et al., 2011).

OCD symptoms: children's yale-brown obsessive-compulsive scale (Scahill et al., 1997)

The CY-BOCS is an IE-administered, "gold standard" assessment of OCD symptom severity with excellent psychometric properties (Scahill et al., 1997). Each item is rated on a zero to four scale such that total severity scores range from zero (no symptoms) to 40 (severe). A score of 16 on the CYBOCS is generally considered the cutoff for clinically significant symptoms (Franklin et al., 2011; Freeman et al., 2014; Lewin et al., 2014; Pediatric OCD Treatment Study POTS Team, 2004).

Global symptom severity and treatment response: clinical global impression – severity and improvement scales (CGI-S and CGI-I; Guy, 1976)

The CGI consists of two brief, clinician-rated measures of global severity and improvement in
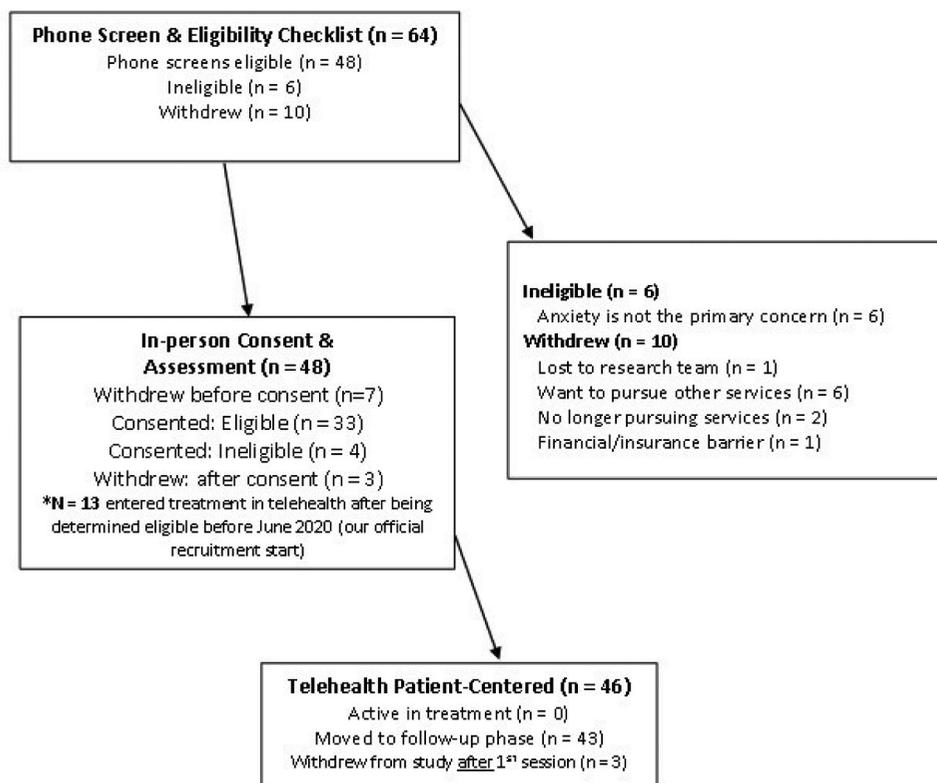
Figure 1. Participant flow June 2020 through December 2020.

Table 2. Overview of study measures and administration timing.

Measure	Purpose	Reporter	Administration Time			
			Baseline	Weekly	Every 6 weeks	Post-treatment
MINI-KID	DSM-5 Diagnoses	Independent evaluator	X			
C/Y-BOCS, PARS	Symptom Severity	Independent evaluator	X		X	X
CGI*	Treatment Response	Independent evaluator	X		X	X
Top Problems Assessment	Consumer improvement	caregiver, patient	X		X	X
SDS	Functional Impairment	caregiver, patient	X	X	X	X
PQ-LES-Q	Quality of Life	caregiver, patient	X	X	X	X
Attendance	Session attendance	provider		X		
Homework Compliance	Homework completion	provider		X		
TASC/P	Therapeutic Alliance	caregiver, patient		X		
CSQ-8	Treatment Satisfaction	Parent				X

*Primary clinical outcome.
MINI-KID: Mini International Neuropsychiatric Interview for Children and Adolescents.
C/Y-BOCS: Children's Yale-Brown Obsessive Compulsive Scale; PARS: Pediatric Anxiety Rating Scale; CGI: Clinical Global Impression – Severity and Improvement Scales; SDS: Sheehan Disability Scale; PQ-LES-Q: Pediatric Quality of Life Enjoyment and Satisfaction Questionnaire; TASC/P: Therapeutic Alliance Scales for Children/Parents; CSQ-8: Client Satisfaction Questionnaire-8.

treatment for children and adults. The CGI – Improvement scale was the primary measure of treatment response in this study. The CGI – Improvement scale is a single item that ranges from one (very much improved) to seven (very much worse). Previous large-scale clinical trials (e.g., Franklin et al., 2011) have defined clinically meaningful treatment response using this measure

such that scores of one ("very much improved") and two ("much improved") indicate treatment response, and all other scores from three ("minimally improved") to seven ("very much worse") indicate treatment non-response. We used the same convention to define treatment response in this study. This measure has good psychometric properties (Beneke & Rasmus, 1992).

Patient- and caregiver-identified top problems: top problems assessment (TPA) (Weisz et al., 2011)

The TPA asks patients and caregiver(s) to identify the top three problems most important to address in treatment and rate the severity of these problems throughout treatment. This is an idiographic measure of impairment that is driven by the individual needs and desires of the consumer. Respondents rate how much each problem bothers them from 0 ("not at all") to 10 (very, very much). This measure has demonstrated strong reliability, validity, and sensitivity to change during treatment (Weisz et al., 2011).

Functional impairment: sheehan disability scale (SDS) – child and parent versions (Whiteside, 2009)

The SDS measures the extent to which anxiety or OCD symptoms interfere with daily functioning across school, social, and family functioning domains. Items are rated on an 11-point scale ranging from 0 (not at all) to 10 (very, very much). Higher scores indicate greater functional impairment. This measure has demonstrated acceptable validity and reliability (Whiteside, 2009).

Quality of life: the pediatric quality of life enjoyment and satisfaction questionnaire (PQ-LES-Q) (Endicott et al., 2006)

The PQ-LES-Q is a patient and caregiver-report measure of patient's functioning in a variety of domains that uses a five-point ratings scale, with higher scores indicating better quality of life. Versions of this measure have been used in our group's prior POTS trials (Wellen et al., 2016), and demonstrate good psychometric properties for the age range of our study.

Procedures

Recruitment and enrollment

Most participants were referred to the study by community providers (pediatricians and mental health professionals) or found the study via internet search or through a state-wide child mental health referral hotline. Interested callers completed a phone-based eligibility screen. Those meeting preliminary inclusion criteria proceeded to an in-depth eligibility assessment, including independent evaluator (IE)-

administered diagnostic interview (MINI-KID version 7.0.0) and symptom-specific interviews (PARS and/or CYBOCS). All participants provided informed consent/assent. Independent evaluators were bachelor's- or Ph.D.-level staff who underwent didactic training at PARC and became reliable assessors (e.g., ratings were consistent with established IE ratings). The cases were conferenced with the PI and/or a study psychologist to determine appropriateness/eligibility for the study.

Treatment

The team-based "telehealth" treatment model was based on our existing in person team-based "home" treatment model, where treatment is delivered to each patient individually by one licensed provider (in this study a Ph.D.-level psychologist) once per month for up to 60 min in the provider's office and by one non-licensed "exposure coach" weekly on all other weeks of the month for up to 90 min in the patient's home or community. The only difference between team-based telehealth treatment and the original team-based model (in patients' home/community) was the use of an online secure video platform. Exposure coaches were selected from a pool of college-educated (i.e., B.A., B.S.) candidates recruited for a dual exposure coach/research assistant position in our center as per past hiring protocols for this position. All coaches completed a standardized 12-hour training that included didactic and experiential training components.

The primary intervention ingredient was exposure therapy and followed the manual "Cognitive Behavioral Therapy (CBT) for Anxiety and OCD" authored by the study team (Benito et al., unpublished manual). The manual includes general reminders about principles and structure of treatment sessions, and specific guidance for using CBT for anxiety and OCD, focusing on 1) psychoeducation, 2) hierarchy building, 3) exposure, and 4) relapse prevention. Both patients and their caregivers (if clinically indicated) play active roles in the treatment sessions. Patients and their caregivers (if clinically indicated) also complete treatment "homework" outside of the session to increase treatment dose and support generalization of skills gained. This manual was designed to be

used flexibly to enhance tailoring for patient needs and future implementation (as evidence suggests is beneficial, e.g., Weisz et al., 2012). Sessions do not need to be implemented in order and typically involve many repetitions of the "Exposure Session" before proceeding to relapse prevention at the end of treatment. Session content and intervention dose did not differ by provider type such that all sessions involved the delivery of the same core exposure intervention. The once monthly session with the Ph.D. psychologist also tended to include more "big picture" exposure planning, the addressing of family conflict and specific comorbidity, case conceptualization, discussion of parental concerns, and problem solving around specific barriers to treatment compliance. All sessions included caregiver-involvement to the degree that it was clinically indicated. Given the wide age range in our sample, both our provider training and the flexible manual facilitated developmental tailoring. Participants received individual treatment once weekly for *up to* 24 weeks, with some participants discharging early due to fully addressing anxiety/OCD targets. Participants who discharged early due to improvement are considered treatment completers. Decisions to end treatment prior to 24 weeks were determined collaboratively between families and providers. All treatment completers received at least 16 weeks of treatment.

The licensed psychologist provided weekly group supervision for exposure coaches focused on case supervision, troubleshooting, and maintaining treatment quality. Supervision also emphasized active learning strategies and cultural responsiveness, including awareness of one's own identities and possible biases, and of individual differences and situations that would be inappropriate for exposure (e.g., a realistic fear, see Falender et al., 2014 for a thorough review).

Data analysis procedure

Descriptive analyses were conducted to report on treatment engagement (session attendance and homework compliance), satisfaction, evaluator measured anxiety/OCD symptoms, treatment response and associated disability at each assessment time point across treatment. We conducted paired samples t tests to examine change in mean scores from baseline to post-treatment. Provider capacity was measured using the number of cases that one individual psychologist was able to treat within the team-based "telehealth" model compared to a traditional "office" model in which the psychologist sees one patient weekly. Estimates of provider capacity for each model are based on average provider caseloads within our clinic. Provider time included time spent with a patient in session and other clinical-related activities such as supervision and writing notes. We estimated the number of cases treated at a given time and number of provider hours per participant in 24 weeks of treatment. All analyses were conducted in IBM SPSS (Version 26). We set the p-value to $p < .01$ to adjust for multiple comparisons. Missing data were handled using listwise deletion (Allison, 2001).

Results

Descriptive statistics for all outcomes are presented in Table 3.

Aim 1a, b. Feasibility and acceptability

Participants completed between one and 24 treatment sessions ($M = 19.0$, $SD = 5.5$). Number of treatment session cancellations during active treatment ranged from 0 to 6 ($M = 2.2$, SD = 1.7). See Table 4 for common cancellation reasons. A majority of patients (61%) completed the full 24-week course of treatment (only three participants ended treatment early for reasons other than symptom improvement). Patients and caregivers reported strong therapeutic alliance and high treatment satisfaction across all time points (see Table 3).

Aim 2a. Change in anxiety/OCD symptoms and treatment response

Change in anxiety symptoms

A paired samples t test indicated that independent evaluator-rated anxiety symptoms decreased significantly from baseline ($M = 13.93$, SD = 2.76) to

Table 3. Descriptive statistics of outcome variables.

Outcome variable	Timepoint	N	Mean (SD[a])
Patient homework compliance	Average weeks 1–24	45	12.8 (3.4)
Caregiver homework compliance	Average weeks 1–24	41	13.6 (3.5)
TAS-C	Average weeks 1–24	37[b]	38.40 (4.61)
TAS-P	Average weeks 1–24	43	44.95(3.59)
CSQ-8-Child	Week 6	29[c]	27.48 (3.32)
	Post-treatment	27	29.11 (4.07)
CSQ-8 – Parent	Week 6	39	29.00 (3.14)
	Post-treatment	36	29.61 (3.64)
PARS***	Baseline	29[d]	13.90 (2.66)
	Post-treatment	35	7.43 (4.85)
CY-BOCS***	Baseline	25[e]	23.36 (2.61)
	Post-treatment	26	17.23 (7.02)
CGI-S***	Baseline	46	4.68 (0.47)
	Post-treatment	44	3.66 (1.18)
Top Problems Assessment #1***	Baseline	46	8.11 (1.68)
	Post-treatment	44	3.98 (2.82)
Top Problems Assessment #2***	Baseline	46	7.20 (1.82)
	Post-treatment	44	4.30 (2.53)
Top Problems Assessment #3***	Baseline	44	6.77(2.09)
	Post-treatment	43	3.72 (2.90)
SDS-Child*	Baseline	33[f]	12.88 (6.43)
	Post-treatment	26	9.27 (6.45)
SDS-Parent*	Baseline	41	17.10 (9.77)
	Post-treatment	36	14.67 (10.72)
PQLES-Child*	Baseline	33[g]	48.67 (6.13)
	Post-treatment	27	52.52 (6.97)
PQLES-Parent**	Baseline	36	48.58 (6.67)
	Post-treatment	34	51.47 (6.98)

[a]Standard deviation.
[b]$n = 6$ patients too young to complete the survey.
[c]$n = 6$ patients too young to complete the survey.
[d]$n = 17$ not diagnosed with an anxiety disorder at baseline.
[e]$n = 21$ patients not diagnosed with OCD at baseline.
[f]Missing data due to patients being too young to complete the survey ($n = 6$).
[g]Missing data due to patients being too young to complete the survey ($n = 4$).
*$p < .05$. **$p < .01$. ***$p < .001$(significant paired samples t-test values).
TAS-C = Therapeutic Alliance Scale-Child; TAS-P = Therapeutic Alliance Scale-Parent; CSQ-8-Child = Client Satisfaction Questionnaire-8 - Child Version; CSQ-8-Parent = Child Satisfaction Questionnaire −8-Parent Version; PARS = Pediatric Anxiety Rating Scale; CY-BOCS = Childrens' Yale-Brown Obsessive Compulsive Scale; CGI-S = Clinical Global Impression- Severity Scale; SDS-Child = Sheehan Disability Scale-Child Version; SDS-Parent = Sheehan Disability Scale – Parent Version; PQLES-Child = Pediatric Quality of Life Enjoyment and Satisfaction Scale -Child Version; PQLES-Parent = Pediatric Quality of Life Enjoyment and Satisfaction Scale – Parent Version

Table 4. Clinician-reported reasons for treatment session cancellation.

Frequency*		Percent
Patient sick	7	6%
Caregiver sick	5	4%
Clinician sick	3	3%
Transportation	1	1%
Weather	1	1%
Holiday	22	19%
Family away	11	9%
Other family commitment	32	3%
No call/no show	18	15%
Planned cancellation due to wrapping up services	5	4%
Other	14	12%
COVID-19	2	2%
Family emergency	2	2%
Family wanted to wait until after an evaluation	1	1%
Insurance stopped covering telehealth	1	1%
Clinician emergency	2	2%
Clinician away on vacation	5	4%
Power outage	1	1%
	1	1%

*$N = 119$ total session cancellations.

post-treatment ($M = 7.70$, SD = 4.71; t(26) = 5.87, $p < .001$). The effect size, as measured by Cohen's d (d = 5.51), indicates a large effect. At post-treatment, 26/39 (82.8%) of the sample scored in the non-clinical range on the PARS.

Change in OCD symptoms

A paired samples t test indicated that independent evaluator-rated OCD symptoms decreased significantly from baseline ($M = 23.36$, SD = 2.61) to post-treatment ($M = 17.28$, SD = 7.16; t(24) = 4.59, $p < .001$). The effect size, as measured by Cohen's d (d = 6.63), indicates a large effect. At post-treatment, 10/26 (38.5%) of the sample scored in the non-clinical range on the CYBOCS.

Treatment response

A paired samples t test indicated that independent evaluator-rated global symptom severity as measured by the CGI-S decreased significantly from baseline ($M = 4.68$, SD = 0.47, indicating moderate to marked severity) to post treatment ($M = 3.66$, SD = 1.18, indicating mild to moderate severity; t(43) = 6.36, $p < .001$). The effect size, as measured by Cohen's d (d = 1.07), indicates a large effect. Moreover, using the CGI-I, 11% of patients responded to treatment by week six, an additional 19% of the patients responded by week 12, an additional 30% of the patients responded by week 18, and an additional 7% of the patients responded by post-treatment. Overall, 68% of patients were classified as treatment responders over the course of treatment.

Aim 2b: change in disability associated with anxiety/OCD symptoms

Patient- and caregiver-identified top problems

Paired samples t tests indicated that patient and caregiver-reported Top Problems Number 1 (t(42) = 7.87, $p < .001$), Number 2 (t(42) = 7.33, $p < .001$), and Number 3 (t(41) = 7.35, $p < .001$) decreased significantly from baseline to post-treatment. The effect sizes as measured by Cohen's d for Top Problems 1 (d = 3.13), 2 (d = 2.73), and 3 (d = 2.78), indicate large effects.

Functional impairment

Paired samples t tests indicated that patient-rated (t(23) = 2.63, $p = .02$) and caregiver-rated (t(34) = 2.10, $p = .04$) functional impairment did not decrease significantly from baseline to post-treatment. The effect sizes, as measured by Cohen's d for patient-rated (d = 8.07) and caregiver-rated (d = 9.68) impairment, indicate large effects.

Quality of life

Paired samples t-tests indicated that patient-reported (t(23) = −2.43, $p = .02$) and caregiver-reported (t(28) = −3.35, $p = .002$) quality of life improved significantly from baseline to post-treatment for caregiver report only. The effect sizes, as measured by Cohen's d for patient-rated (d = 7.30) and caregiver-rated (d = 6.53) quality of life, indicate large effects.

Aim 3: provider capacity

Provider capacity

Psychologists spent an estimated 15.5 clinical hours over the course of treatment per patient treated via patient-centered telehealth, in comparison to an estimated 38 h required of psychologists per patient treated via a traditional weekly office-based model. These estimates are based on a theoretical model in which patients receive 24 total treatment sessions delivered once per week. Estimates include psychologist time spent in session with a patient, as well as conducting other clinical-related activities (i.e., clinical supervision and writing clinical notes). See Table 5 for more detail.

Discussion

The results of this study provide preliminary data to support a novel team-based telehealth treatment for pediatric anxiety and OCD. Patients and families demonstrated high treatment engagement and satisfaction comparable to past studies of both telehealth (Babiano-Espinosa et al., 2021;

Table 5. Calculation of provider capacity in patient-centered telehealth compared to a theoretical provider-centered office delivery model (aim 3).

Provider hours spent per patient Traditional office model		Telehealth model
Number of treatment sessions delivered by psychologist	24 sessions	6 sessions)[a]
Psychologist time spent per one treatment session	1 h	1 h
Total number of psychologist hours spent in session per one patient	24 sessions[b] 1 h = 24 h	6 sessions[b] 1 h = 6 h
Total psychologist time spent in clinical supervision across 24 weeks of patient's treatment	2 h	6.5 h[b]
Psychologist time spent on other clinical-related activities (e.g., writing clinical notes, completing administrative forms)	12 h	3 h
Total number of psychologist hours required per delivery model	38 h	15.5 h

[a]additional 18 sessions provided by bachelor's-level staff.
[b]increased supervision time due to providing clinical supervision to bachelor's-level staff.

Carpenter et al., 2018) and in-person (Storch et al., 2015) CBT for pediatric anxiety and OCD. Notably only three participants terminated early for a reason other than symptom improvement. This may reflect the significant reduction in barriers to accessing care with telehealth as well as the pandemic associated lockdown leading to fewer competing family demands. Independent evaluator-rated anxiety and OCD symptoms decreased significantly throughout treatment. The majority of participants (68%) were classified as treatment responders at post-treatment, and rates of treatment response were similar to those of previous telehealth studies (Carpenter et al., 2018; Comer et al., 2017; Storch et al., 2011) and previous in person studies (Franklin et al., 2011; Freeman et al., 2014, 2018; Higa McMillan et al., 2016; Pediatric OCD Treatment Study POTS Team, 2004; Walkup et al., 2008). Further, patient- and caregiver identified Top Problem severity and caregiver-reported quality of life improved over the treatment course. Notably, the rate of symptom remission (scoring in the non-clinical range) was much higher on the PARS (82.8%) than the CYBOCS (38.2%). We think this is due in part to the fact that participants with OCD were more ill at baseline likely reflecting the fact that our center is an OCD specialty treatment setting and many participants may have stepped down from a partial hospital level of care. Additionally, we think that some of the participants with primary anxiety were not in the presence of their triggers during the pandemic (e.g., school, social settings) and therefore their scores may have been artificially lowered. Given these factors, symptom remission data must be interpreted with caution, particularly given the high number of treatment responders (those rated as "much improved" or "very much improved") on the CGI-I.

Licensed psychologists were able to treat a larger caseload of patients in less time given that non-licensed exposure coaches conducted most sessions with patients. In a traditional office-based outpatient treatment model, assuming a 40-h work week, one psychologist would be able to treat approximately 27 patients in a 6-month (1,008 h) time period (calculated as 1,008 h/38 h per patient). In the team-based telehealth delivery model, one psychologist would be able to treat approximately 65

patients in the same 6-month (1,008 h) time period (calculated as 1,008 h/15.5 h per patient).

The results of this pilot study suggest that team-based telehealth treatment may produce clinical outcomes which are comparable to both traditional in-person and telehealth outpatient treatment with a psychologist and with the increase in provider capacity could improve access to care. The results are best generalized to other anxiety and OCD specialty clinics providing outpatient services. The study included youth 5–18 such that the results can be generalized to both youth with early-onset anxiety or OCD symptoms as well as older teens. Although eligible, there were no participants with primary diagnoses of SM, panic, or agoraphobia, so the results of this trial may not generalize to these disorders. From a historical context, the project was conducted early in the emergence of the COVID-19 global pandemic which may have affected participants' experiences both in and out of treatment.

Primary study limitations include the single arm open trial design which limits conclusions about whether the intervention caused the symptom improvement, and the small sample size. The longer length of the exposure coach visit (which lasted up to 90 min) was acceptable for youth and families and represents a higher dose of care than a typical 45-min insurance-reimbursed session. Although rates of completion of IE administered measures were high, some of the youth and parent self-report measures had higher rates of missing data, perhaps weakening power. This is consistent with evidence that families find lengthy assessments to be overly burdensome in the context of CBT research (Norris et al., 2023). The study took place in an anxiety specialty clinic, which may have biased the sample toward participants with private insurance, financial (fairly high income) and transportation resources, and more flexibility of work/childcare needs. The potentially biased sample, missingness of income data, and an overall lack of racial and ethnic diversity limit the generalizability of the findings. Finally, although the flexibility of the treatment model and ability to include caregivers allowed for successful tailoring of treatment across our full age range of 5–18 years, clinically we did find that younger children and those with comorbid depression, inattention/hyperactivity,

and social skills deficits were somewhat harder to keep engaged over longer periods of time.

A fully powered comparative effectiveness trial would provide a more rigorous evaluation of this team-based telehealth treatment model in comparison with existing treatment models (e.g., team-based treatment in the office or community, traditional office-based treatment with a licensed provider). Future research should also aim to examine differences in responses to a given treatment model among subgroups of participants (e.g., younger vs older, those with more severe illness, or certain comorbidities) to better understand which treatment model works best for whom. It is imperative that subsequent studies include a more racially and ethnically diverse and representative sample of patients and caregivers. As such, future efforts must involve taking this model of care outside of specialty clinic/hospital settings and collaborating with local community mental health centers or pediatric primary care settings.

Despite limitations, this novel team-based telehealth treatment for pediatric anxiety and OCD shows significant promise for addressing several key barriers (e.g., provider availability, transportation) to high-quality treatment for youth and their families. Providing team-based treatment via telehealth may be a good option for families with barriers to accessing office- or home-based services. In addition, given the national shortage of mental health providers (Leeb et al., 2020), this model may be particularly effective when the demand for youth anxiety/OCD treatment is higher than the number of available licensed practitioners.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Informed consent

Informed consent was obtained from all individual participants included in the study.

Research involving human participants

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (Lifespan Institutional Review Board, project #1204342) and with the1964 Helsinki declaration and its later amendments or comparable ethical standards.

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