"My attitude on telehealth has completely changed.": Facilitators and Barriers to Implementing Technology for Care Delivery in Community Mental Health Centers

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Abstract

The purpose of this study was to explore facilitators and barriers to community mental health centers implementing technology-assisted care during the COVID-19 pandemic. Six key informants were interviewed and 28 clinicians were surveyed from three community mental health centers. Interviews focused on technology-assisted care implementation efforts and factors that facilitated adoption. Surveys focused on clinician beliefs and experience with technology-assisted care in addition to training needs. Barriers to technology-assisted care implementation included beliefs about the quality of virtual services and a lack of technology access. An increase in service utilization was reported. Technology-assisted care facilitators included reimbursement policy changes and clinic-based factors such as clinician training and supervision efforts. Clinicians reported having the skills necessary to implement technology-assisted care however endorsed a need for training. Implementation of technology-assisted care in community mental health centers was largely successful however support is needed to help clinicians adapt services to client needs.

Keywords

Technology-assisted care, community mental health, mHealth, telehealth

Technology-assisted care (TAC) can expand access to care and improve mental health outcomes (Mishkind et al., 2018). TAC like videoconferencing or text-messaging approaches have been developed for clients presenting with a wide variety of behavioral health problems that are common to community mental health clinics (CMHCs), including serious mental illness and substance use disorders (Ben-Zeev et al., 2020; Lawes-Wickwar et al., 2018; Lin et al., 2019; Santesteban-Echarri et al., 2020). These remote services have the potential to be cost-effective, acceptable to both clients, counselors, and other providers, and can reduce overall reliance on overburdened mental health treatment systems (Lawes-Wickwar, et al., 2018). Previous to the COVID-19 pandemic, numerous implementation efforts within CMHCs have reported barriers that make it difficult for CMHCs to initiate and sustain the use of these promising tools with their clients (Cortelyou-Ward et al., 2020; Cowan et al., 2019; Granja et al., 2018). Barriers include issues related to laws and reimbursement practices as well as characteristics of treatment providers themselves such as clinician and counselor attitudes about technology, availability of resources to maintain interventions, and a perceived lack of compatibility between interventions and routine workflows, such as clinician perception that the effectiveness of the intervention is inferior (Cook et al., 2009; Cowan et al., 2019; Proctor et al., 2007). During the COVID-19 pandemic, behavioral health clinics adopted digital technologies to support service delivery at a speed never before seen (Alavi et al., 2021; Connolly et al., 2021). This study provides important context to the documented adoption of TAC during the pandemic. This study captures

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day-to-day experiences of technology adoption and highlights a CMHC workforce new to technology who were confronted with unplanned and rapid adoption.

The COVID-19 pandemic has necessitated a shift in the delivery of community-based mental health services in the United States. To facilitate this transition, federal and state bodies have relaxed regulations, lifted restrictions, and expanded payment policies around the use of technologies in mental health service delivery (Goldman et al., 2020; State of Washington Office of the Governor, 2020). Some of these relaxations include the FDA relaxed guidelines around requirements of using HIPAA compliant videoconferencing such as Skype, and reimbursements of audio-only TAC services at the same rate as video and in-person services (Goldman et al., 2020). This change was especially pertinent to clients served in CMHCs, who often have comorbidities that put them at a higher risk for serious COVID-19 complications if infected (de Hert et al., 2011; Firth et al., 2019; Lal et al., 2015; Tam et al., 2016). Already facing myriad challenges including limited financial resources, high caseloads, staff turnover, and long wait-lists prior to the pandemic, CMHCs had to explore innovative ways to meet client needs, with one method being integrating TAC into their services (Kopelovich et al., 2020). Several articles have reported on this transition, but to date have not explored implementation themes in the multidimensional CMHC context, where TAC delivery led to increased productivity amid an exhausted clinician workforce (Couser et al., 2021; Gourret Baumgart et al., 2021; Murphy et al., 2021; Singh Bhandari et al., 2021).

Rapid adoption of TAC during the pandemic constitutes a naturally occurring experiment and an opportunity to examine how CMHCs address longstanding barriers to TAC use in order to implement technology as their primary modality of care delivery. To do so, a mixed-methods study was conducted in partnership with three CMHCs in the state of Washington. All three study sites serve predominantly low-income clients and were selected based on their ability to represent a diversity of locations and size and included one tribal mental health agency, one suburban CMHC, and one urban CMHC. The aims of the study were to 1) understand community provider attitudes and behaviors in using technology to facilitate mental health services, and 2) identify strategies in the implementation environment that assisted CMHCs in continuing to provide services to clients. To accomplish this, the study used a convergent parallel design in which qualitative and quantitative data were collected in parallel, analyzed separately, and merged (see Figure 1; Creswell, 2013; Creswell et al., 2007). Key informant interviews were conducted to explore why and how CMHC policies and procedures changed to accommodate the use of TAC. Online assessment batteries with CMHC clini-

cians were used to examine clinician behaviors and attitudes towards TAC in the context of rapid CMHC implementation. Using the naturalistic experiment of the COVID-19 pandemic and the regulation relaxations, findings and recommendations are presented.

Methods

The study was approved by the University of Washington Institutional Review Board. Researchers provided information about informed consent, and all study participants provided informed consent. Prior to agreeing to participate, leadership at each agency reviewed study protocols, including assessment batteries and interview guides, and were given the opportunity to ask questions before providing approval to participate. Leadership who reviewed materials and provided approval included agency directors, and in one instance, a human resource professional representing the interests of the agency staff. Agency approval was provided before research commenced. Study sites reported no financial conflicts of interest.

Site A is a community mental health agency with two locations in a suburban area, affiliated with a larger healthcare organization. Site A offers a variety of services including individual counseling, crisis services, youth and family services, and assertive community treatment. Site B is a tribal mental health clinic operating in two locations and offers services including individual counseling, marriage counseling, and psychological evaluations. Site C is a large healthcare organization across urban, suburban, and rural areas, and for this study two urban locations participated. Site C provides services including individual counseling, medication-assisted treatment for substance use disorders, and psychiatric evaluations.

A total of six key informant interviews were completed. Interviews were conducted between June and October 2020. All key informants were clinical supervisors, managers, or clinic directors at their CMHCs and supervised the staff who participated in the online assessment battery. A total of 28 staff members completed the full online assessment battery across all sites between June and October 2020. Key informants were provided a $50 e-gift card for their time and survey respondents were provided a $10 e-gift card.

Procedures

Key informant interviews. Sites were asked to nominate 1-2 candidates who were knowledgeable about policy and procedural decisions in March 2020, when the onset of COVID-19 led to a statewide stay at home order, to participate in a semi-structured interview. Author SM completed the interviews and all interviews were conducted via secure videoconfer-

Table 1
Clinician Demorgaphics

Demographics	n	%
Female	24	86%
White	21	75%
Master's degree	18	64%
Works with adult client	28	100%
Therapist or counselor	18	64%

ence system. Interviews focused on practice changes related to COVID-19, specifically how technology was used to deliver clinical services, the process for implementing technology for service delivery, staff interactions with technology, and internal policies related to the use of technology among staff and also with clients. Finally, key informants were asked to rate their agency's familiarity and use of TAC before and during the pandemic on a zero to 10 scale (0= "never heard of TAC" – 10= "TAC used all the time"). Participants were encouraged to explain their rating and discuss what led to changes in scores. Interviews were conducted until thematic saturation was achieved, and lasted between 30-60 minutes (average time was 42 minutes).

Online assessment battery. In addition to interviews with key informants, all oIn addition to interviews with key informants, all outpatient adult clinical staff from each site were invited to participate in a brief online assessment battery about their use of TAC. An online survey was distributed by clinic leadership with a brief description of the study and any interested clinicians were then sent a unique study link to provide informed consent and participate. Participants answered questions about their educational background, clinical populations served, and their use of TAC modalities (e.g., service provision via phone, computer, smartphone, tablet). Assessments took participants on average 12 minutes to complete.

The assessment also included the seven-item training needs subscale of the Organizational Readiness for Change (ORC) instrument (α=.84), adding two additional questions regarding evidence-based practices and specialized mental health smartphone applications (Institute of Behavioral Research, 2009). The nine-items from this subscale were rated using a five-point Likert scale ranging from strongly disagree to strongly agree, where higher scores indicate greater interest in additional training (Lehman et al., 2002). Participants also completed the e-Therapy Attitudes and Process Questionnaire-Therapist Version (Clough et al., 2019). This 12-item measure is rated on a seven-point Likert Scale ranging from one to seven and includes subscales for attitudes, perceived behavioral control, subjective norms, and behavioral intention. The eTAP-T is considered to have excellent internal con-

sistency for the total scale (α=.91) and good to excellent internal consistency for the subscales subjective norms (α=.95), perceived behavioral control (α=.93), attitudes (α=.95), and behavioral intention (α=.86; Clough et al., 2019). In the present study, internal reliability for both the seven-items ORC scale (α=.81) and the eTAP-T (α=.81) were good, with acceptable reliability on all eTAP-T subscales (Tavakol & Dennick, 2011).

Participants

Interview participants were clinic directors, managers, and clinical supervisors and all but one had a master's degree in a relevant field such as counseling and social work. The average length of time each interviewee had been working at their agency was 8.5 years, ranging from two to 30 years. Assessment battery participants were mostly female (n=24, 86%), white (n=21, 75%), held a master's degree (n=18, 64%), and identified as a therapist or counselor (n=18, 64%). Durations of employment at their current treatment agency ranged from less than one year to more than 20 years. Additionally, staff served a diverse client population. All staff reported providing clinical and counseling services to adults. Sixteen participants (57%) also reported serving young adults, 17 (61%) reported serving older adults, and half of respondents reported serving youth under 18 years old. Most respondents (n=26, 93%) worked in an outpatient setting, two respondents worked in an inpatient setting (7%), and three reported also working in outpatient substance use treatment (11%). See Table 2 for report on assessment battery participant demographics.

Data analysis

Interviews were audio recorded, transcribed, and uploaded into Dedoose for analysis using a thematic analysis approach with an inductive coding process (Braun & Clarke, 2019; Dedoose, 2018). Authors SM and JT were coders, and both were trained qualitative researchers with previous experience in qualitative coding. Additionally, coders were licensed clinicians (licensed clinical social worker and licensed mental health counselor, respectively), with experience providing clinical services in CMHCs. Coders first reviewed the transcripts for thematic content, and then identi-

Table 2
Clinician Technology Use by Modality

Technology Modality and Use	*n*	%
Tablets		
...for calling clients	1	4%
…for viewing client data	0	0%
... for emailing clients	2	7%
... for completing video calls with clients	1	4%
...for facilitating app use with clients	1	4%
Computers		
... for calling clients	9	32%
...for viewing client data	23	82%
...for emailing clients	22	79%
...for completing video calls with clients	25	89%
...for facilitating app use with clients	6	21%
Smartphones		
... for calling clients	25	86%
...for viewing client data	2	7%
...for emailing clients	14	50%
...for completing video valls with client	7	25%
...for facilitating app use with clients	5	18%

fied primary themes that were used to create an initial codebook. Next, coders independently applied the codebook to two transcripts, adding new codes as they emerged. The coders met regularly throughout the analytic process to discuss these codes, resolve discrepancies, update code definitions, and finalize a codebook. The coders then independently coded 33% of the transcripts until achieving strong inter-rater reliability (Pooled Cohen's Kappa=.90; de Vries et al., 2008). One coder then applied the finalized codebook to the remaining transcripts and coders met to discuss code applications, reduce data, and summarize the findings. Codes established during thematic analysis and quantitative survey results were organized using a convergent parallel mixed-methods design (see Figure 1; Creswell, 2013; Creswell et al., 2007). Survey data frequencies, means, and standard deviations are reported for the sample with Pearson's correlations used to identify relationships between participant subscale scores of the eTAP-T. A Bonferroni adjustment was applied in order to account for multiple correlations done during analysis. The adjusted probability threshold used was .017 (.05/3; Curtin & Schultz, 1998)
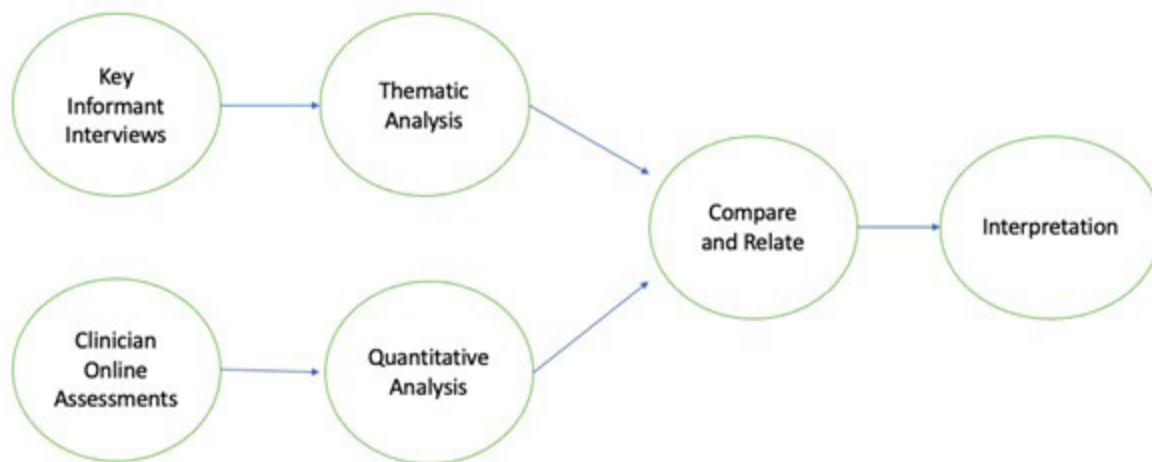
Results

Technology used
Clinicians had an online assessment response rate of 74% (n=14) at site A, 100% (n=7) at site B and 39% (n=7) at site C. Clinicians completed assessment battery questions on their use of specific technologies and how those technologies were used with clients. All respondents except one reported possessing an agency-provided smartphone. Few clinicians (n=5) used tablets to conduct clinical services with just one clinician using a tablet to call clients, one clinician using the tablet to video call with clients, two clinicians using tablets to email with clients, and one clinician used a tablet for facilitating app use with clients. Clinicians relied heavily on computers for calling clients (n=9, 32.1%), viewing client data like assessment scores in the electronic health record (n=23, 82.1%), emailing clients (n=22, 78.6%), video calls with clients (n=25, 89.3%), and facilitating app use with clients (n=6, 21.4%). Additionally, clinicians reported the use of smartphones for calling clients (n=25, 85.7%), texting with clients (n=17, 60.7%), video calling with clients (n=7, 25%), viewing client data like assessment scores (n=2, 7.1%), emailing with clients (n=14, 50%) and facilitating app use with clients (n=5, 17.9%). See Table 2 for details on clinicians technology modality and use in service delivery. Less than half of participants reported using any technology to facilitate service delivery before the pandemic (n=11, 39.3%). More than 60% (n=18) indicated they had less than a year of experience using technology in their work with clients, with 50% indicating that they only started using technology with clients since the beginning of the pandemic (n=14, 50%).

Participants reported a variety of commercially available technologies as helpful including: video and text-based platforms for coordinating care among staff,

Figure 1. The research process in this study using the convergent mixed-parallel design

videoconferencing with clients, and text-messaging with clients regarding scheduling. Key informants reported that clinicians tended to prefer using telephone calls for clinical work with clients as opposed to videoconferencing. Additionally, text-messaging was noted as primarily used for scheduling with clients. Participants noted a lack of available technology to share client documents via electronic platforms as a barrier to fully remote service delivery.

Facilitators and barriers of technology-assisted care

Themes about the use of TAC for the delivery of services during the COVID-19 pandemic were extracted and organized during mixed-methods analysis. Primary themes identified during analysis were related to the 1) policies and resources external to the agency, 2) characteristics of the CMHCs, 3) characteristics of clinicians, and 4) agency implementation processes. Overall, all CMHCs were adopting new technologies into service delivery as a result of the pandemic. The scope of technology use, attitudes towards technology, and perceived success of this adoption varied across individuals and CMHCs.

Policies and client resources

Audio-only parity. One of the most cited facilitators of technology adoption in service delivery was the passing of federal (e.g., CARES Act) and Washington state policies (e.g., Stay Home, Stay Healthy) early in the pandemic (Goldman et al., 2020; State of Washington Office of the Governor, 2020). Especially helpful were changes to laws that enabled clinicians to pro-

vide audio-only mental health services via telephone and reimbursement changes allowing these services to be paid at the same rate as in-person and video-based care. Underscoring the importance of these policy changes, each site noted that between half and three-quarters of all services moved to telephone or video-based care as a result of COVID-19. Concern and uncertainty about how these policies would be maintained in the future, however, were present and influenced clinician commitment and confidence in using technology in routine care. Discussing the influence of this uncertainty on their supervision of staff, a key informant from site C noted "…what I am trying to encourage with staff is to try your best to start moving toward more video telehealth because (funders) are likely going to stop paying for phone." A second key informant from Site C expressed the same uncertainty, indicating "I don't know with the phone, if [funder] is going to allow the phone sessions to happen."

Brief interventions. Another policy change facilitating the adoption of TAC was a provision allowing for reimbursement of clinical services lasting less than 15 minutes. All sites noted policies that promoted flexibility in service delivery were responsible for increases in the number of billable encounters completed after the state stay at home order, an overall increase in utilization productivity across all sites, and significant reductions in client no-shows to scheduled appointments.

Client resources. Flexible policies and reimbursement practices, while helpful, were not sufficient to facilitate technology adoption. Clients' access and ability to use technology also influenced the process. Key informants reported that clinicians felt limited in their

selection of interventions when clients lacked a webcam or were unable to connect to the internet and did their best to accommodate those with limited resources. A participant from Site B emphasized this, stating "…video conferencing is not as popular, because clients rarely have laptops. If they do have a laptop, they may not have WiFi or good WiFi that can actually connect and not break up and seem like you're talking out of sync. Making phone calls is much easier." In other situations, clients' limited access to technology completely eliminated their ability to participate in services. Site C explained, "…we've got 500 clients and probably half of them we've lost contact because they don't have access to telehealth."

CMHC characteristics
Leadership and tension for change. While policies and laws external to the agency facilitated technology adoption, conflict over how to actualize these changes led to tension within CMHCs. Concerns about personal safety were paramount as clinicians continued to provide in-person services. Leadership was credited as having made swift decisions with clear communication, but also recognized that they "were lagging compared to other agencies" and not making decisions "as fast as people wanted" leading to increased clinician anxiety and fears about safety (Site A). To address this, leadership enacted internal policy changes such as easing of rules related to texting clients to facilitate care outreach and more flexibility for clinicians to work from home. Previously encouraged only as a scheduling support, texting was now encouraged across all sites to maintain contact with clients, provide medication reminders, and to identify symptom exacerbation. One participant from Site A justified the shift saying "texting is kind of more allowed because the only way clients can reach a clinician is through their cell phone…" Work from home strategies differed among participating sites with one site leaving supervisors at physical locations to help manage crises, one closing entirely to in-person care, and one reporting a rotation system with 40-60% of staff working in the office each day.
Training and access to resources. Key informants described a workforce that generally lacked the training to prepare them to adopt TAC at the onset of the pandemic. At Sites A and C, key informants described a notable lack of training opportunities for clinicians on how to use the new technologies. Training was identified as important, but confusion about locating qualified training providers and even identifying relevant training topics negatively impacted the feasibility of widespread TAC adoption. Site B was successful in identifying certification programs that could be offered remotely and paying for clinicians to participate in them. Two agencies reported issues with

getting resources to clinicians such as laptop computers, webcams, and smartphones. At Site B, purchasing these items for staff occurred within a few weeks of the stay at home order, however Site C noted they were still working on ensuring all staff had access to these technologies several months into the pandemic. Clinician responses on the ORC training subscale revealed that clinicians were aware of their need for more training and desired it across a number of domains (M=3.14, SD=0.66). Clinicians strongly desired more training about laws and regulations (n=25, 89.2%), new methods of care (n=20, 70.7%), and support in identifying evidence-based practices (n=16, 57.3%). Over half of clinicians desired more training in new equipment and procedures being used in clinical care (n=15, 53.6%) with a third of participants specified a desire for more training in smartphone applications (n=11, 39.3%) and specialized computer applications (n=10, 35.7%).

Compatibility with agency models of service delivery. The decision at Site C to maintain a significant portion of the workforce in the office was driven, in part, by perceived needs of certain clients to receive in-person care and an observed difficulty in adapting treatment interventions to a technology-based modality (e.g., eye movement desensitization and reprocessing therapy [EMDR], art therapy groups, urine drug screens). The perceived reduced quality of care associated with TAC and the brief intervention format led some clinicians to express hesitancy in conducting care for complex issues, such as trauma. One clinical supervisor from Site B described "I certainly don't want to do that work (trauma work) over a telephone or video." Relatedly, all clinics reported difficulty in adapting evidence-based treatments and other clinical tasks to an online or phone-based modality.

Loneliness and isolation. Enthusiasm for digital technologies waned as the pandemic wore on and clinicians reported feeling more isolated in their work environments. Working from home and connecting via videoconferencing appeared to have a negative influence on workplace morale and clinician job satisfaction. Key informants described "a lot of exhaustion, a lot of fatigue" when describing their staff during this period. The use of technology shifted over time with more reliance on phone-based "check-ins" that were described as "easier" than using videoconferencing to conduct more in-depth service delivery. Working from home and communicating with coworkers and clients via technology resulted in feelings of isolation and loneliness, with staff not feeling as connected to their work. One supervisor from Site C stated, "One of the complaints has been that people don't see anybody, and they're really feeling overwhelmed by the work, because they're actually getting more client response from telehealth and telephone calls than they did when they would see

clients in the clinic." Supervisors recognized this and attempted to utilize videoconferencing to improve the feeling of connection with and between staff. One supervisor from Site C commented "I try to ask everybody to turn their videos on when I'm talking with them so I can see eyebrows raised, a little flicker in their eyes when I say something about Grandpa or Grandma or their dog. I need to see a smile." Another supervisor from Site C stressed the value of staff connection making efforts to boost morale and normalize technology use by scheduling informal staff gatherings "We get together for lunch and chat about stuff. We played electronic Scategories, which is really cool."

Characteristics of clinicians

Characteristics of clinicians were found important in efforts to adopt TAC in CMHCs including provider attitudes about the use of technology for mental health care and their beliefs about their own capabilities to use technology in the service delivery process.

Attitudes about technology. Clinician and key informant attitudes about technology were found to be generally positive. Supervisors commented about their attitudes changing about the quality of the clinical interaction in video-based mental health services, such as a supervisor from Site A, "I completely flipped on telehealth. My attitude on telehealth has completely changed." This supervisor was surprised by how much of the integrity of the clinical interaction is maintained. A supervisor from Site B indicated that certain staff really like TAC, "Two of them absolutely love it and don't ever want to go back." These clinicians were able to work from home, however not all sites encouraged all staff providing TAC to exclusively work from home. Key informants from Site C also commented that they wish for certain services to continue virtually like substance use disorder groups because of how much easier it was for clinical operations and for clients to maintain these group appointments while working.

Clinician views about TAC were collected using the eTAP-T and mirrored the generally positive view of TAC expressed in the qualitative interviews. Overall scores reflected positivity about the interventions and the process of using them to support clients (M=5.67, SD=0.67). Attitude subscale scores on the eTAP-T conveyed that clinicians tended to think TAC interventions were pleasant, beneficial, and credible (M=5.57, SD=1.02) while scores on the subjective norm subscale of the eTAP-T further highlighted that clinicians felt their coworkers would support and approve of using digital interventions with clients (M=5.92, SD=0.75). A strong relationship between clinician attitudes about TAC and clinicians' self-efficacy (r=.48, p<.017) and intention to use TAC interventions with clients was found (r=.50, p<.017). This means that clinicians with posi-

tive attitudes were more likely to believe in their ability to use technology for care delivery and plan to do so in the future. Conversely, those who did not perceive themselves to have the skills or knowledge to use technology were less likely to hold positive beliefs about the benefits of these interventions for their clients.

Self-efficacy. Overall, key informants expressed a belief in their ability to learn the skills necessary to use technology to facilitate clinical activities. Initial difficulties in adjusting to technology use were met with self-taught skill development and learning on the job. A supervisor from Site C expressed confidence that developed over time in her ability to navigate video-based platforms, stating "I learned it by myself. I learned it through trial and error…Yesterday I had a situation where my microphone was not working and I had to learn how to go in and fix it, and I did." Clinicians similarly expressed that they were confident and possessed the necessary knowledge to use technology with clients through responses to behavioral control subscale items of the eTAP-T (M=5.67, SD=0.67). Early in the pandemic, supervisors addressed clinician doubts in the use of technology by implementing behavioral modeling of effective technology use in their clinical supervision sessions. A supervisor from site C underscored this point relating, "all my supervision is done virtually ... If there's a clinical issue, I'm able to immediately respond virtually with them." For a summary of these results, see Table 3.

Agency Implementation Process

The agency implementation process refers to the approach in which organizations take to implement TAC. Overall, the processes used to adapt services to social distancing mandates was cited as "chaos" and "scrambling." Processes were reactive to public health guidelines and staff concern for safety, and shaped by resources available as well as leadership.

Engaging relevant parties. Leadership and agency management was credited with swift action and clear communication. Actions taken by leadership to facilitate adoption included maintaining flexibility, such as providing options for different technology platforms and creating services models that allowed staff to work from home. Site A indicated their Information Technology (IT) team was critical to the speed of change, "Our IT director likes to say - and it's true - in the past it would have probably taken six months to a year for (agency) to roll something like this out and they did it in weeks." Additionally, management increased communication to staff to address concerns and communicate rapid policy change. Site A described daily "huddles" throughout the beginning of the pandemic. Lacking in the implementation planning process was the in-kind resources such as Personal Protective Equipment needed to address staff safety concerns such

	M (SD)
Table 3	
Result from the eTAP-T	
Overall Clinician Positivity about TAC	5.57 (1.02)
Behavioral attitude subscale	5.85 (1.04)
Subjective norms subscale	5.92 (0.75)
Perceived behavioral control subscale	5.67 (0.75)

as at Site C which remained open, "The mask thing we could have maybe moved on a little quicker, getting masks on, those kind of things, that policy piece."

Planning & execution. Planning for the adoption of technology for care delivery was described as "chaotic" and "scrambling." Site A described, "So the operational detail of implementing something like going remotely was not planned." Additionally, agencies indicated difficulty in communicating the changes to clients. As Site A described "Reception informed (clients) or the clinicians did themselves. That actually just informationally was quite a chaotic process."

Agency readiness. All sites reported increase in use and perceived sustainability of TAC delivery during the COVID-19 pandemic. Key informants reported that prior to the pandemic they were on average 2.92 (SD=1.07) out of possible 10 ready to implement TAC, and that at the time of interview they were on average 7.83 (SD=1.44) out of 10 ready to implement TAC. Participants commented that before the pandemic, that TAC had been discussed by leadership however they were not able to bill for it, that staff had access to agency cellphones making it mostly possible, and that certain psychiatric services were using telepsychiatry already. Key informants commented at the time of interview that while many services transitioned to be delivered virtually, some had not. A key informant from Site A indicated, "There's a lot of paperwork that needs to be completed, and it's just easier to do in person. So the paperwork is an issue." Despite the rapid uptake of technology in many service areas, barriers and gaps persisted to full adoption of TAC.

Discussion

Implementation of TAC in CMHCs during the pandemic was a complex process and relied on multiple facilitators to aid adoption of technology for service delivery. In order to compare the experiences of clinicians and those in supervisory roles at each participating agency, we utilized a mixed-methods approach to aid in understanding implementation (Albright et al., 2013). Clear from this study was the fact that simply removing previously existing barriers to the use of TAC interventions (e.g., allowing for reimbursement) was necessary but not sufficient to ensure adoption. In general, each site

reported being more adept in their use of technology at the time of interviews than at the beginning of the pandemic and could point to important factors that led to this growth. Facilitators external to CMHCs had to work together with internal CMHC strategies in order to circumvent barriers and overcome challenges associated with the use of technology to maintain care for clients.

Results of our study align well with well-established organizing frameworks of implementation science. Themes mentioned by participants closely aligned with constructs from outer setting, inner setting, characteristics of individuals, and process domains of the Consolidated Framework for Implementation Research (Damschroder et al., 2009). No one domain appeared sufficient to facilitate the use of interventions, however constructs from several domains appeared necessary to address barriers. For example, policy changes that allowed for flexible reimbursement of technology-based and brief care modalities were frequently mentioned by key informants as laying the necessary foundation for CMHC adoption of TAC. Prior to the pandemic, TAC required the use of synchronous video and audio feeds provided using expensive HIPAA compatible software platforms and were not available across all services. In response to the pandemic, federal guidelines for the use of technology to facilitate care were relaxed such that CMHCs could utilize widely available commercial platforms (e.g., Skype, Zoom, Facetime) to conduct services (Goldman et al., 2020). These federal guideline relaxations were temporary. It remains unclear how CMHCs will be supported in moving away from these less secure platforms. A lack of training available combined with relaxed security standards underscores the need for clinician education about providing informed consent about the delivery of services via non-secure channels. Clinical communications were also able to be better tailored to client needs. For example, clients without a stable internet connection could receive services via audio-only phone call or text messages. Unfortunately, while regulation changes allowed services to be delivered via technology, many CMHC clients were cited as lacking access to devices or internet service preventing them from engagement. This finding aligns with current research suggesting that while TAC uptake has increased during the pandemic, socioeconomic and racial disparities among client users persist (Figueroa & Aguilera, 2020).

Key facilitators within CMHCs included flexible policies for technology implementation, provision of training in the use of technology, and intentional efforts of supervisors to improve workplace culture through the use of technology. Each site discussed an implementation environment at the start of the pandemic where their already stressed service delivery models had to rapidly adapt to TAC and were slow to com-

municate changes to clinicians and clients. Supervisors and managers described organizational planning in response to COVID-19 before the statewide stay at home order that was not clearly communicated to frontline staff or clients, impeding changes on the ground. This study revealed a trial-and-error approach to technology selection was necessary and effective in identifying technology platforms compatible with how clinical work was provided in-person. Through this process, leadership utilized a variety of communication strategies such as morning huddles and daily emails to ensure that clinicians were informed about changes. Participating CMHCs described differing levels of success in identifying technology specific trainings for staff to participate in. This appeared to influence clinician perceptions about the utility of technology for care delivery and influenced how efficiently technology was integrated into workflows. The lack of training in TAC available at the start of the pandemic is not surprising given previously identified shortages in training opportunities for clinicians in the use of technology for mental health care delivery (Caver et al., 2020; Perry et al., 2020). To combat a lack of training and hesitance to adopt technology, supervisors in the present study described intentionally trying to use videoconferencing during supervision and team meetings as a behavioral modeling technique and to bring people together.

Our assessment battery and interview findings converged to suggest that clinicians required a significant amount of support to adopt new technologies. Most clinicians in the present study, including counselors, were using technology in the clinical context for the first time. Supervisor interviews highlighting that staff were unprepared to adopt technology mirrored clinician assessment responses indicating a strong desire for more training in the use of technology with clients. This finding seems discrepant with the fact that staff also expressed having the necessary skills and knowledge to conduct services facilitated by technology. While staff felt skilled to facilitate certain services via technology, they may not feel confident in this ability or hold beliefs that TAC yields dissatisfactory therapeutic relationships compared to in-person services. This is consistent with findings from previous research in which clinicians expressed reduced quality of therapeutic relationship with their clients when providing services via technology-based modalities (Cataldo et al., 2021). Supervisors described clinicians and counselors altering services such that less in-depth work was occurring out of a discomfort with technology may have created an environment where clinicians were not being as helpful as they would in in-person service delivery.

Given the challenges CMHCs faced to deliver mental health services before the COVID-19 pandemic, the fact that all participating CMHCs were able to rapidly organize to continue delivering mental health services could be defined as successful implementation. Recent studies of implementing TAC in community health have yielded mixed success (Mahmoud et al., 2021; Sasangohar et al., 2020). While some studies report very favorable views by clinicians of telehealth services (Gentry et al., 2021), the studies that report on community provider use of technology to deliver services reveal a different story (Bommersbach et al., 2021). In comparison to implementation of TAC at institutions that had in-house expertise in remote-based care and capacity, many CMHCs struggled to implement these novel approaches successfully (Yellowlees et al., 2020). This highlights a need for more resources for implementation consultations, training, and guidance for CMHCs hoping to implement and maintain TACs.

A notable absence in the coding themes was characteristics of the technology interventions themselves. Stakeholders appeared to be satisfied with the array of technology that was available to them to use, if not overwhelmed by the task of choosing from many available options. Concerns about adapting current therapy interventions to technology platforms appeared rooted more in beliefs about technology, a need for further training, and the chaotic environment under which implementation took place (rather than the platforms themselves). This suggests that with more training and support, currently available technology platforms may be suitable to fit the needs of most clinical scenarios. Improved development and dissemination of resource guides, decision tools, or clearinghouses to inform clinical stakeholders in choosing from currently available tools will further support implementation and sustainability of TAC in the future (Garland et al., 2021).

Clinicians need to feel confident and competent to engage clinically with technology, in a way that emphasizes their unique skillsets to meet clients where they are. A majority of clinicians in the study were new to using technology to deliver services to their clients and would benefit from ongoing exposure and support to these new modalities of care. While many clinicians were new to technology, a small number noted significant experience with digital mental health tools and could be used to support implementation. Identification of site-level digital mental health "champions" is well documented as a successful implementation strategy for helping diffuse innovations throughout organizations (Miech et al., 2018).

Limitations

This study contained some limitations. Firstly, only three agencies were recruited which represented a diverse sample but does not account for the many agencies running services during this time. One site had a low level of response to the survey and thus responses from that site may be missing key perspec-

tives. Themes drawn from the key informant interviews represent the perspective of supervisors and leadership, not clinicians or clients themselves. Future studies should consider interviewing or conducting focus groups with clinicians themselves and also gathering client perspectives about using TAC during the pandemic and beyond. Lastly, this study captures a specific moment in time during the pandemic, as data were collected between June and October 2020. The course of the pandemic has contained ebbs and flows. Therefore, future retrospective research should consider how policies around social distancing and masking, as well as how severity of COVID cases impacted mental healthcare service delivery.

Conclusion

In the context of a rapid shift to virtually delivered services across the healthcare sector due to COVID-19, barriers remain to implementing TAC in CMHCs. External facilitators such as regulation relaxations together with internal facilitators such as supervisor encouragement of TAC use among clinicians enabled many services to change over to TAC. However, individual clinician beliefs about the quality of the therapeutic relationship and lack of access to resources created a mixed implementation environment that has hampered the roll-out overall. In order for CMHCs to be successful in their implementation efforts, these barriers must be addressed locally and adapted to fit staff and client needs.

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