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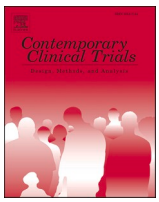

Transition to telehealth: Challenges and benefits of conducting group-based smoking and alcohol treatment virtually

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ABSTRACT

In the midst of the COVID-19 pandemic, many research and clinical teams have transitioned their projects to a remote-based format, weighing the pros and cons of making such a potentially disruptive decision. One key aspect of this decision is related to the patient population, with underserved populations possibly benefiting from the increased reach of telehealth, while also encountering technology barriers that may limit accessibility. Early in the pandemic, our team shifted a group-based, smoking cessation and alcohol modification treatment trial to a remote-based format. Our population included individuals who concurrently wanted to quit smoking and modify their alcohol use. This paper describes technical and logistical considerations of transitioning from in-person to remote-based delivery for group-based treatment, including the impact upon study staff, group facilitators, participants, and the institution. Remotely-delivered group treatment may be valuable not only in response to pandemic-related restrictions, but it may also offer an alternative treatment-delivery modality with independent benefits in terms of population reach, costs, and pragmatics for clients, staff, and institutions.

1. Introduction

The COVID-19 pandemic has presented several challenges for researchers and clinicians regarding the provision of clinical care, and many have transitioned to a remote-based format for treatment delivery. Considerations include whether: (1) the population can feasibly access the treatment via telehealth, (2) staff and clinicians can adequately provide the treatment in this manner, and (3) resources are available to support remote-based delivery. We briefly describe challenges and benefits we experienced when transitioning our pilot, group-based randomized controlled trial (RCT) for smoking cessation/alcohol use to remote-based delivery via the Zoom platform. First, we provide the rationale for the study and population to provide the necessary context for the challenges and benefits encountered.

Cigarette smoking is the leading preventable cause of morbidity and mortality in the U.S. [1,2] and disproportionately effects people with low socioeconomic status (SES; e.g., those with low income or educational attainment) [3–5]. Importantly, low SES is associated with greater difficulty quitting smoking [3–5]. Cessation treatments that address common barriers of such populations (e.g., transportation, insurance coverage, childcare) are needed, and some barriers are more readily addressable by changing the mode of treatment delivery [2]. For example, telehealth treatment essentially removes barriers such as transportation and travel time that could increase access for low SES populations (i.e., expands reach and access) [6,7].

Alcohol use is very common among those who smoke [8,9] and is a potent predictor of smoking relapse [10,11]. Notably, concurrently changing both behaviors can have a positive, reciprocal effect [12,13]. Although a variety of modalities exist for the delivery of smoking cessation and alcohol treatment, group-based treatments have not only demonstrated efficacy [2,14–16], but are also considered cost-effective and less resource-intensive [14,17,18].

To address these needs, we recently developed a group, mindfulness-based intervention for helping individuals who want to quit smoking

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Table 1
Overview of remote-based delivery for group treatment: challenges and benefits.

Study participants	Group facilitators	Study staff	Institutional
		Challenges	
Some participants may not have video-capable equipment (e.g., cameras and microphones) or have WIFI connectivity issues	Skillfully managing children/family members in background of calls	Needed to be on video session calls to serve as tech support	Factoring in time for protocol changes and IRB approvals
Various levels of technology literacy and etiquette to consider	How to best engage participants with both the facilitator and each other during calls (features of video platform software, mute vs unmute)		Procedures for recording, storing, and accessing treatment sessions are needed
Finding a private, quiet location for calls can be challenging for some participants	Video tiles reshuffle on the screen, which can be challenging in recalling who said what in moderate or large groups	Arranging for delivery (and return) of group-related and/or study-related materials and equipment	How to allow access to software programs for external facilitator
Informal chatting, subtle nonverbal cues, and exchange of information with one another is difficult with implications for group cohesion	Arranging to speak with individual participants before or after sessions for specific concerns/questions without calling them out in front of the group		Factor additional time into protocol to sort out unexpected issues with conducting groups via video session
		Benefits	
Increased efficiency regarding time spent arriving/leaving group (e.g., no need to plan ahead to travel to/from; easier to transition from work to group)	Disruptions are minimized during video sessions (e.g., people coming in late)	Increased efficiency regarding communication of adverse events, NRT, etc., as staff are on the calls	Finding space and parking at institution is not required for groups
	Distractions can be easily regulated (e.g., facilitators can turn off participant video or mute/unmute as needed)	Staff have more contact with participants (assessment calls, troubleshooting tech issues, being present during groups), which likely fosters more connection with the study and study staff	
Costs associated with attendance potentially reduced (traveling, childcare)	Because there is more support from staff while on calls, groups can run more efficiently	Recruitment more feasible, as it is no longer limited geographically Staff and facilitators do not need to be at the same location	Security at institution for evening groups not necessary

and modify their drinking (e.g., reduce alcohol use; implement safe drinking practices; abstinence). The intervention was derived from Mindfulness-Based Relapse Prevention (MBRP; [19]). MBRP is a group-based treatment for substance use that has demonstrated efficacy in reducing alcohol craving, alcohol use, and substance use; [20–23] but it has not been tested as a primary treatment for smoking cessation. The name of the intervention used in this study was MBRP for Smoking and Alcohol (MBRP-SA). The primary aim of the trial was to assess the feasibility and acceptability of MBRP-SA when compared to cognitive behavioral therapy (CBT) in a pilot RCT.

Prior to the pandemic, we conducted a pilot, single-arm study in-person to modify and finalize the treatment and study protocol for the RCT [24]. The entire pilot study took place pre-pandemic. In February 2020, we began recruitment for the RCT, but once the pandemic began, we converted all study procedures to remote-based delivery. None of the participants recruited for the RCT received treatment in person; the few that were recruited in February were invited to take part in the remote-based study. The study was paused starting in March 2020 and began recruitment again in August 2020 with revised procedures. Two primary changes included (1) delivering all treatment sessions via Zoom, and (2) geographically expanding recruitment beyond our immediate area. Our team addressed anticipated potential problems with proactive procedures (e.g., provision of tablets with a data plan for participants who did not have such a device; creation of simple documents with important study-related information, such as the study schedule and how to troubleshoot technology issues). Despite our efforts, we encountered additional challenges that were either unforeseen, or, anticipated but without clear solutions (e.g., how to empathetically address children appearing during the group sessions; facilitator Zoom issues).

To our knowledge, there have been no published papers to help guide the *development of* remotely delivered, group-based treatments for smoking cessation and alcohol modification, although various papers have reported on *outcomes for* such groups [14,25,26] and on other aspects of telehealth delivery (e.g., one-on-one telehealth treatment for substance use disorders; assessment of substance use behavior [7,27,28]). We believe this manuscript will help other researchers and clinicians transition to remote-based delivery, as many of the issues we describe are likely broadly relevant to low SES and other populations who use substances (i.e., not just those quitting smoking/modifying drinking).

The remaining sections of this paper describe both the challenges and benefits of delivering group-based smoking cessation and alcohol treatment remotely (see Table 1 for a complete summary), with a focus on our experiences with study participants, group facilitators, and study staff. We also briefly mention some institutional considerations. Table 2 provides a summary of our recommendations for other teams who are delivering group-based treatment remotely.

2. Study participants

Primary eligibility criteria were: 18 years of age or older, daily cigarette smoker for the past year, at least one binge drinking episode (for men $\geq$5 alcoholic drinks and for women $\geq$4 alcoholic drinks) in the past month, [29,30] and motivation to quit smoking and modify alcohol use in the next 60 days (alcohol modification goals were set by the participant). Participants also needed to be available to attend evening sessions (5:00–7:00 pm). There were four cohorts, and in each cohort, participants were randomized to either the MBRP-SA or CBT group; each group attended weekly meetings over 8 consecutive weeks, meeting once per week. There were 8–11 study participants consented to each treatment group. The study received approval from the Advarra institutional review board, and informed consent was completed for all participants. Data were primarily collected via REDCap, but some were collected by phone (e.g., post-treatment interview) or mail (e.g., saliva cotinine to confirm tobacco abstinence at follow-up). The study was registered on clinicaltrials.gov (NCT03734666). For additional details on eligibility criteria and procedures, see [24].

Sixty-nine participants attended the orientation session and consented to participate (35 MBRP-SA and 34 CBT). However, two participants (both CBT) did not complete any of the baseline measures post-consent session, leaving a sample size of 67. The average age of the sample was 45.5 (SD = 10.0), 69% were female, and 13% were Hispanic

with 26% Black/African American, 65% White, and 9% Other. Regarding annual household income, 39.4% reported less than $20,000, 33.3% reported $20,000–$49,999, and 27.3% reported greater than $50,000. For education, 30.6% reported receiving a high school education or less, 25.8% reported some college, 33.9% reported an associate's or bachelor's degree, and 9.7% reported a graduate degree.

2.1. Potential challenges and steps taken

Given that cigarette smoking disproportionality effects those of low SES [3–5] and to maximize inclusivity, we loaned tablets (which included a camera and data plan) to any participant who requested one. Although many had smartphones that would have allowed participation, we were concerned that participating in a group-based treatment on such a small screen could be challenging and discouraging. Zoom was pre-loaded onto the home screen of the tablets, and we created an instruction packet that was mailed with the tablet and included specific directions unique to the provided devices. Participants could use the tablet for non-study related purposes as desired. Tablets were mailed to consented participants who needed them. We sent a return box with a pre-paid label to participants the same week as their final treatment session, with instructions on how to return it to the study team (e.g., bring to FedEx location, schedule FedEx pickup). On the baseline survey, 97% ($N = 63$ [two participants did not complete this item]) stated that they had used a tablet before. Nonetheless, 29% ($N = 20$) of the 69 consented participants needed a tablet. We had 85% ($N = 17$) of tablets returned.

To ensure familiarity with video conferencing, we scheduled a group Zoom orientation one week prior to the first treatment session. Of the 69 consented participants, 48 (70%) completed the Zoom orientation. Prior to the orientation session, participants were mailed a packet with Zoom instructions, including specific directions for tablets versus computers (see Fig. 1 for screenshots of instructions). This session not only served as an orientation to using Zoom (e.g., entering their names, using a background, mute/unmute, camera on/off), but it also allowed the participants to meet one another, meet the study team, and ask questions. Zoom etiquette (e.g., when to mute and turn off camera; privacy rules) were also presented, practiced, and/or discussed. Although we did not disable the chat feature, we chose not to include it in training because it was not part of the interventions themselves, and we were concerned that it could distract participants during sessions. If needed, staff were available for one-on-one meetings for additional Zoom training. Of those completing baseline measures, 97% reported having used a video conferencing app before, with 54% using a video app more than 20 times, 32% having used 5–20 times, and 14% less than 5 times.

At the end of the study, we asked participants questions related to the technology used during treatment. Overall, 55% of participants reported contacting study staff for help with Zoom at least once. Comfort with using Zoom at the beginning and end of treatment was evaluated using a 6-point Likert scale (1 = very difficult, 6 = very easy). The average ratings at the beginning and end of treatment were 4.8 (SD = 1.5) and 5.5 (SD = 1.1), respectively. The majority of the sample (83%) reported that it took 1–2 sessions to become comfortable with Zoom. Participants were asked which Zoom features they found most useful and best for learning. In both conditions, screen sharing by the facilitator was the most useful (endorsed by 51%), followed by answering poll questions (35%). For learning, both conditions indicated that screen sharing was most beneficial (61%), followed by breakout rooms for CBT (25%) and poll questions for MRBP-SA (26%). Finally, there was a study webpage that housed treatment handouts, contact information, and audio meditation recordings (for the MBRP-SA condition only). Overall, 51% reported accessing the website. All participants in MBRP-SA also received CDs with the audio meditation recordings; 44% endorsed using the CDs to listen to meditations.

We expected some participants would find it challenging to secure a quiet, private location for 2-h sessions. Given the confidential nature of the conversations that take place during group treatment, we facilitated this process in several ways. First, during the screening phone call, we assessed whether participants thought it would be feasible to be in a private location during group sessions. Second, upon connecting to the Zoom orientation meeting, staff admitted participants into a separate, private breakout room to ensure that their environment was private. Third, while participants waited to be admitted to the session, several reminders appeared on the waiting room screen, including a reminder to be in a private location (see Fig. 2 for screenshot). Fourth, if needed, participants were asked to relocate to another location where no household members were present. Fifth, when necessary, study staff contacted participants between sessions to problem solve how to maintain a private location during group sessions. We encouraged the use of the Zoom background feature if participants did not want the group to see their location (e.g., car, bathroom) or if inappropriate material appeared in the background. Finally, many of our participants

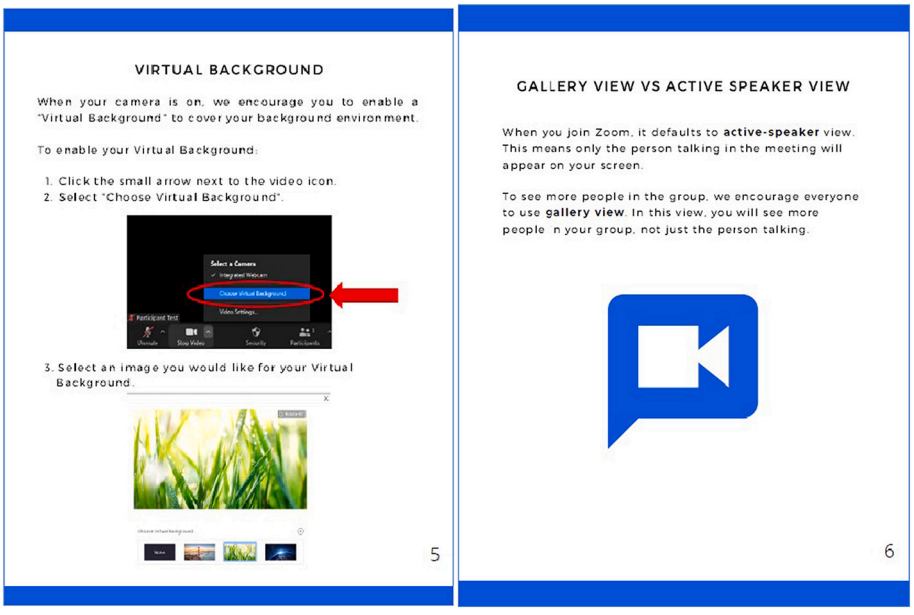

Fig. 1. Sample pages from the zoom instruction packet.

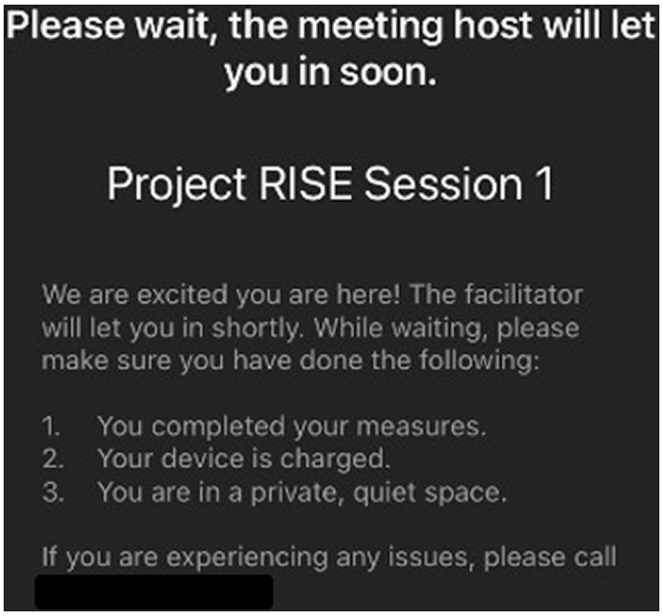

Fig. 2. Sample zoom waiting room screen.

had young children and struggled to arrange childcare during group sessions. Although we recommended a babysitter to watch the children in the home, this was not an option for all individuals and/or their home was not conducive to this setup (e.g., limited number of bedrooms).

Another challenge involved limited verbal and nonverbal interactions between participants with a remote-based format as compared to an in-person format. Informal interactions before, during, and after sessions likely facilitate group cohesion [2,31]. To foster this via Zoom, we suggested that participants login a few minutes early to get to know one another better (although this was rarely done by participants). Subtle verbal (mm-hmm, sighs) and non-verbal cues (handing someone a tissue, picking up a dropped item for someone, hand shaking) that occur in-person are not possible via video call. Although more challenging to address, we encouraged people to stay "un-muted" throughout the session (unless there was excessive background noise), to facilitate the natural flow of conversation and subtle verbal cues.

2.2. Potential benefits

Perhaps two of the greatest benefits of delivering group-based treatment remotely are the reduced time and costs associated with attending the group. Indeed, barriers to accessing in-person treatment, including cost and time, have been previously identified [2]. Participants in our prior, in-person studies often encountered transportation challenges coming to/from our facility including inconsistent public transportation and inclement weather. Unlike individual treatment, group-based treatments cannot easily be rescheduled, making transportation barriers even more relevant. Many individuals also need to secure childcare and change their work schedules to attend group. Telehealth eliminates transportation time and cost, as well as the cognitive effort of planning travel and locating the facility. Also, with participants who use substances, as in our study, concerns about traveling to sessions while intoxicated are avoided. For in-person groups, a participant would occasionally arrive intoxicated, meaning they were unable to attend the session and that staff had to ensure the participant did not leave the facility until blood alcohol levels were minimal. Therefore, the potential benefits garnered from reduced time, costs, and planning by delivering group-based treatment remotely are substantial.

3. Group facilitators

Group facilitators included two clinical psychologists with strong backgrounds in the delivery of behavioral interventions for addiction, particularly smoking cessation. Both were experienced in delivering treatment in a group setting, albeit in-person. Thus, training in the delivery of group treatment via Zoom took place with the larger study team. Facilitators and study staff attended a Zoom training offered by the institution to learn the basic elements of Zoom. From there, internal meetings with the study team were conducted to ensure the facilitators were comfortable with all Zoom features. At the end of each treatment cohort, the facilitators and study team met to determine how to better address technology issues with the incoming cohort.

3.1. Potential challenges and steps taken

Although we took several steps to ensure that our group members were in a private location, it was not uncommon for family members (usually children) to show up briefly in the video calls. This required the group facilitators to skillfully balance the needs of that participant (and family) with the needs of the group (privacy and focus). This issue may be handled in a variety of ways. Often the participant quickly removed the family member. However, there were cases when the facilitator had to intervene by asking the participant to remove the family member or log off the call until the situation was resolved. If this was a recurring problem, we had a staff member contact the participant outside of group to problem-solve the issue.

Providing group treatment via a remote-based platform requires the facilitator to be well skilled at using the features of the program (e.g., whiteboard, breakout rooms, polls, sharing the screen, mute/unmute), and our facilitators completed a brief Zoom training with institution staff to learn the basics as noted above. Two hours in front of a computer screen is taxing, but fatigue can be mitigated by offering a brief break mid-group and using Zoom to facilitate engagement with the treatment and group. For instance, poll questions unique to each session were preloaded. The whiteboard (blank screen that facilitator can write/type on in Zoom) and screen sharing features were used, although sparingly, as we were mindful that these features blocked the participants from fully seeing all group members. Breakout rooms allowed participants to engage with one another in pairs or smaller groups. Finally, the participant tiles on Zoom would reshuffle whenever someone turned their camera on/off, resulting in the facilitators struggling to recall who said what, especially with a larger group during the first few sessions. Similarly, because the facilitator's view of the group is limited to tiles, noticing nonverbal cues from participants that indicate confusion, disagreement, or disengagement that may require facilitator response can be challenging.

In-person sessions allow facilitators to briefly talk with participants before or after group about unique, personal issues (e.g., medication concerns, consistently arriving late to group, interpersonal issues that could be disrupting the group process). Usually, these conversations seem quite natural and are easy to coordinate in-person. With video sessions, this process becomes a bit more complicated, as either (1) the participant is called out during group to stay afterwards (which can be awkward) or (2) a separate phone call needs to be made to the participant (although the Zoom chat feature could be an option). One way to proactively address this issue is to let all participants know, at the very first treatment session, that facilitators may ask participants to stay after session to address unique issues that arise, or, to check in privately. Communicating this structure at the beginning of treatment may avoid awkwardness and ultimately be a more efficient way to handle sporadic issues.

3.2. Potential benefits

Remote-based treatment offers more efficient ways to manage

various group disruptions. A late arrival or early departure does not disrupt the group in the same way it does in-person. Distractions can be easily regulated via the mute button (e.g., if someone is eating noisily) or by turning off the video feature. We found it necessary to have a staff person present in each group to address technology issues so the facilitator could fully focus on treatment delivery. This allowed groups to run more efficiently. Non-treatment questions specific to the study (e.g., compensation amount) or technology questions can be quickly answered by staff with minimal disruption to the session.

4. Study staff

4.1. Potential challenges and steps taken

As mentioned above, we found it necessary to have staff present to address technology issues (e.g., connection issues) during sessions. Because facilitators are focused on session content and interactions, staff were in charge of recording the session, per the study protocol. Staff also set up the Zoom calls to activate desired features (e.g., waiting room messages, breakout rooms, polls), and they called participants as needed to problem-solve issues, which occurred more frequently in the first several sessions. These calls would often occur during the group session itself, and staff were able to promptly address technical issues via phone call as to not disrupt the flow of the session and allow the participant to rejoin group participation as quickly as possible. The roles of staff (vs facilitators) during treatment sessions were clearly outlined to participants during the Zoom orientation session.

Staff coordinated the delivery of all study-related materials. Mailouts become a much more time-intensive component of a remote-based study, and we recommend developing a specific timeline for when various study-related materials need to be mailed out. We primarily utilized overnight delivery to ensure mailouts arrived promptly, and this can be an additional cost. Recruitment for each cohort in our study began about 6 weeks prior to the first group session, and several mailouts were timed to arrive to participants throughout that time period to maintain a connection to the study and staff. Motivation to change substance use can vary greatly from day-to-day, and we wanted to support participants' motivation to quit as much as possible while waiting for the treatment to begin. Clear, concise instructions were included with all mailouts. Fig. 3 shows one example of our study schedule that allowed participants to see the entire study timeline in one place. Given the wide range of literacy levels, our team aimed to make all written materials easy to read and visually appealing. Because we conducted this study during the COVID-19 pandemic, additional planning due to work-from-home requirements of our institution was required for staff (i.e., staff going into the office on specific days to assemble mailouts; printing all materials in advance).

4.2. Potential benefits

Because staff are present during the sessions, communication of various study-related issues can be more efficient. For instance, if an adverse event arises due to the nicotine patch, staff can easily take note and follow up appropriately. Whereas in-person, this required the facilitator to communicate the issue to staff after group, which took more time and left room for errors. Being present during sessions may also allow for more rapport building between staff and participants. Outside of the group sessions, staff communicate about assessments and tech-related issues more frequently than would occur in-person, which may foster a greater connection to staff, ultimately helping to build rapport and support retention.

Fig. 3. Sample study timeline provided to participants.

Table 2
Summary of recommendations for remote-based delivery for group treatment.

Study participants	Group facilitators	Study staff	Institutional
1. Provision of tablets (or other study devices) to ensure everyone has access to needed technology a. Provide instructions on how to use study devices b. For return of devices, include instructions and pre-paid labels 2. Group video orientation session to familiarize participants with platform, facilitators, staff, and other group members 3. Assess and provide support in helping participants secure a private, quiet location for sessions 4. Encourage participants to stay "un-muted" to facilitate natural flow of conversation and subtle verbal cues	1. Ensure facilitators are fully trained on the video conferencing platform with numerous opportunities to practice prior to meeting with participants 2. Use of creative video platform features that facilitate engagement with treatment content 3. Prepare to problem-solve when other, non-participants appear in video call (e.g., children) 4. Let participants know that the facilitator may ask some individuals to stay on the call after group to address unique issues	1. Have at least one staff member present during group sessions to address technology issues as they arise 2. Prepare ahead for when participant mailouts will need to be sent, including a detailed timeline that corresponds with study needs 3. All mailouts should include clear, concise instructions written for a wide range of literacy levels that are visually appealing	1. Allow time for the modification of study procedures (including IRB approvals) if transitioning from in-person to remote-based delivery 2. If recording sessions, understand the platform and institutional requirements regarding how to record, store, and access content 3. If facilitators are external to the institution, ensure they can access all necessary software programs, recordings, etc.

An inherent component of remote-based treatment is that there are no geographical constraints. This allows more efficient recruitment, as there are theoretically no geographic limitations (although lack of connectivity in rural areas, or funding-related restrictions may apply). Additionally, staff and group facilitators can be in different locations, which can make coordinating meetings and group sessions much easier (albeit time zone differences need to be considered).

5. Institutional considerations

5.1. Potential challenges and steps taken

Institutions or clinics may have requirements regarding the delivery of remote-based treatment, and here we describe a few we encountered. When redesigning a protocol to be delivered remotely, submitting numerous IRB protocol amendments is unavoidable. This process took several months for our team, including determining changes and updating all study documents accordingly. Our experience receiving IRB approval for these changes was relatively smooth, likely because many other research projects were making similar changes due to COVID-19 at the same time and the videoconferencing platform used encryption for privacy and security. One recommendation to researchers is to make all changes to study documents at the same time for IRB submission. This approach avoids numerous back-and-forth IRB submissions, which can save time.

We recorded our sessions both for treatment fidelity and make-up sessions. Thus, it was important to receive approval from our institution's IT and cybersecurity divisions in advance, as well as needing to determine how to record, store, and later access our sessions. We had to ensure our contracted group facilitator could access all software programs, recordings, etc., as not being an employee of the institution limited her access. Factoring in additional time to coordinate these efforts and make sure study staff are efficient at conducting them was necessary. We found it took more time than we expected to work through these issues, factoring in potential unexpected challenges (e.g., software updates, changing institutional guidelines).

5.2. Potential benefits

Remote-based treatment easily resolves common challenges for in-person group treatments such as finding an appropriate space/room to hold the groups and parking issues. Similarly, our in-person groups were held in the evening to accommodate participant schedules, and we would often have security present, which was no longer necessary with remote-based treatment.

6. Conclusions

There are several considerations when transitioning a study to remote-based treatment, especially with unique populations. Here we outlined our experiences and subsequent recommendations for interacting with participants engaged in smoking cessation/alcohol use treatment (see Tables 1 and 2). Our participant population was primarily low SES, and much of what we have described reflects our decisions as related to this population (e.g., loaning out tablets for group sessions; wide range of reading and technology literacy; challenges of private space). Nonetheless, we believe that providing group-based treatment for smoking cessation and alcohol modification remotely may ultimately allow more individuals to access treatment, as the barriers consistently identified for in-person treatment are removed (e.g., cost, time, and effort to attend group sessions). Of note, we used Zoom because it was the platform supported by our institution, whereas other teams may need to use other platforms (e.g., Microsoft Teams). Some of the challenges we encountered will cut across different platforms (e.g., the need for staff support), and others may be unique to the platform itself (e.g., specific engagement features such as the chat or whiteboard functions). Individual teams will need to weigh the pros and cons for their study population, staff, and group facilitators, all while considering whether their clinic/institution is able to support such a shift in the delivery of treatment.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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