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METelemedicine: A Pilot Study With Rural Alcohol Users on Community Supervision

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Abstract

Purpose—This pilot study examined a telemedicine-based intervention using motivational enhancement therapy (METelemedicine) to reduce alcohol use among a sample of at-risk, rural alcohol users.

Methods—A total of 127 rural alcohol users were recruited from community supervision offices and engaged in brief intervention sessions using telemedicine. Analysis examined alcohol outcomes at 3 months postbaseline.

Findings—Findings indicated that although there were no overall differences between comparison groups on alcohol outcomes, 3+ sessions of METelemedicine significantly reduced the likelihood of any alcohol use by 72% ($P < .05$). In addition, 3+ sessions of the intervention predicted fewer days of drinking in the follow-up period, fewer drinks per week, and fewer days experiencing alcohol problems.

Conclusions—Findings demonstrate that telemedicine may be a promising approach to deliver interventions with alcohol users who may not utilize formal treatment services. This method has potential to decrease some of the barriers to access and use of evidence-based treatment for populations in need of services.

Keywords

alcohol; AUDIT; motivational enhancement therapy; rural treatment; telemedicine

Screening and Brief Intervention for Alcohol Use

Screening for at-risk alcohol use in health care settings and subsequent delivery of brief intervention has received increased attention in the clinical and empirical literature in recent

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years. Studies have shown that identifying at-risk alcohol users using assessment tools such as the Alcohol Use Disorders Identification Test (AUDIT)¹ in health care settings like emergency rooms,² inpatient hospital care units,³ and outpatient clinics⁴ has been successful in reducing drinking. In addition, large-scale trials of the Screening, Brief Intervention, and Referral to Treatment (SBIRT) model suggest reductions in alcohol use in health care settings where individuals are screened, engaged in a brief intervention, and referred to specialty services.⁵⁻⁷ One study examined SBIRT outcomes in multiple health care settings in 6 states and found that nearly one-quarter of those screened engaged in at-risk or abuse levels of alcohol and other drug use (23% of 460,000), with the majority meeting criteria for brief intervention and a smaller percentage meeting criteria for brief treatment and referral to specialty services.⁷

Screening and brief intervention in health care settings is important because according to the 2010-2011 National Household Survey on Drug Abuse, about 24% of adults engage in binge drinking and about 7% report heavy drinking,⁸ yet only about 1 in 14 seek formal alcohol treatment.⁹ With the effectiveness of screening and brief interventions to reduce at-risk alcohol use, technologies have also been examined as delivery strategies which can further increase treatment access and cost-effectiveness. For example, effective alcohol and other behavioral health interventions are now delivered with positive results using the Internet,^{10,11} smartphones,¹² computer standalone programs,¹³ and phone-based interactive voice-response programs.¹⁴ Thus, the use of technology to deliver behavioral health interventions to at-risk populations has been shown to increase access to services and improve outcomes for individuals who may not have otherwise engaged in treatment. When technology is used to exchange important information about an individual's health or medical situation—including behavioral health—that technology can be referred to as “telemedicine.”¹⁵

Telemedicine and Behavioral Health

Telemedicine has been commonly used as a service delivery approach with rural populations because it addresses barriers including availability, accessibility, and affordability of treatment services.¹⁶⁻¹⁸ Although commonly used for health care services, telemedicine also has been used for behavioral health services with favorable outcomes. Although telemedicine literature is generally focused on psychiatric counseling, it has also been used to deliver evidence-based practices.^{19,20} For example, a recent study examined using telephone-based interactive voice response to deliver a brief motivational interviewing intervention to reduce drug use among HIV patients.²¹ Another study using telephone delivery of motivational interviewing found significant reductions in risky sexual activity and increased motivation for reducing risky behavior.²² Another example is advances with computerized cognitive behavioral therapy which significantly reduced symptoms of depression among adolescents over an educational comparison group.²³ Studies have examined the clinical efficacy of telemedicine compared to same room face-to-face sessions with no differences reported in treatment outcomes.^{24,25} Thus, these studies suggest that telemedicine is a feasible and viable method of evidence-based, behavioral health service delivery.

Telemedicine Interventions in Nontherapeutic Environments

Although use of technology has been successful to deliver behavioral health treatment interventions and evidence-based practices in health care settings,¹⁴ treatment facilities,¹¹ and other behavioral health environments,²⁶ its use in nontherapeutic settings is less investigated. In treatment-based settings—such as a hospital or a residential care facility—telemedicine-driven evidence-based practice can supplement or enhance care. However, in settings where the primary focus is not treatment but public safety—like criminal justice environments—the feasibility of technology-based services (despite the needs of the population) may be much more challenging due to the need to engage clients in the therapeutic process, as well as gaining support from criminal justice administrators.

Criminal justice venues can provide ideal settings to target screening and brief behavioral health interventions. Although rates of alcohol abuse and dependence have been estimated at 4.7% and 3.8% among the general population,²⁷ they are considerably higher among the correctional populations. Specifically, one review indicated that rates of alcohol abuse and dependence among offenders ranges from 18% to 30%, depending on sampling and custody status.²⁸

Despite high prevalence of alcohol use among offenders, alcohol use often does not receive the same degree of attention in the criminal justice system as illicit drug use unless the crimes lead to a public health or public safety concern, such as drinking and driving or abuse of a partner and/or children. Thus, offenders' at-risk alcohol use may be overlooked in public policy priorities for substance abuse treatment.²⁹ This is evidenced by the small numbers of offenders with substance abuse problems who receive treatment during incarceration in general, and even fewer who receive treatment specifically for alcohol-related issues.³⁰ Therefore, it is possible that a large number of individuals who have a history of at-risk alcohol use before their incarceration were not identified as needing services, and they did not receive services while incarcerated. This problem is compounded when these at-risk alcohol users are paroled to rural communities where services are extremely limited.

Given the challenges faced by rural at-risk alcohol users and the limited services, this study addresses a significant gap in the literature by examining outcomes associated with the implementation of telemedicine-based videoconferencing to deliver an evidence-based alcohol intervention in rural areas. The telemedicine approach was examined for feasibility, which was established with preliminary data showing that the majority (more than two-thirds) of randomized participants engaged in motivational enhancement therapy (MET) sessions.³¹ In addition, the majority of those who engaged in sessions completed at least 3 intervention sessions, suggesting involvement beyond assessment using feedback to work toward a therapeutic change process. The innovation of this approach is that telemedicine videoconferencing was utilized in a real world, nontherapeutic setting (community supervision offices) to be accessible and convenient for a rural, at-risk population of alcohol users in critical need of services (those on community supervision—probation or parole).

This study focuses on understanding outcomes associated with the MET intervention participation in a non-therapeutic environment (rural community supervision offices) delivered via telemedicine (METeTelemedicine). Specifically, in addition to differences between experimental and comparison group in alcohol outcomes, analysis will also examine the effects of METeTelemedicine among participants who engaged in differential doses of the intervention on alcohol outcomes at 3 months post-baseline. It is hypothesized that those who received 3 or more doses of the intervention would have greater reductions in alcohol use at follow-up due to increased introspection into the change process achieved through the therapeutic approach beyond assessment and feedback (sessions 1-2).

Method

Participants

Participants were 127 rural at-risk alcohol users (81% male) who were screened and recruited from 4 rural community supervision offices. Participants were recruited from community supervision offices located in 4 Kentucky counties designated as Appalachian with Beale Codes of 6 and 7 according to the Appalachian Regional Commission (<http://www.arc.gov>). All supervision offices served offenders from surrounding counties with Beale codes ranging from 7 to 9.

All study participants were referred to the study through a Social Service Clinician (SSC), a clinical liaison within the community supervision office assigned to conduct assessments for substance use and subsequent referrals to treatment at the request of the community supervision officer. SSCs provide referrals for local treatment based on assessment, needed level of care, and availability of care in the local community. Officers made referrals to the SSC based on a number of reasons including past charges related to drug use, offenders' self-reported problems with drugs, or evidence in the case file that drugs were in some way related to the crime (ie, theft/forgery to obtain money for drugs). Eligibility criteria for study intake is described elsewhere³¹ and included an AUDIT score of 8+, which is indicative of at-risk drinking during the year before incarceration.

Measures

Alcohol Use

Follow-up alcohol use at 3 months postbaseline was from the Alcohol Use Subscale of the Addiction Severity Index³² and was based on self-report during the last 3 months. Despite the fact that alcohol use is a violation of the conditions of community supervision and could potentially result in a return to custody (Offender Handbook, corrections.ky.gov), studies have shown that individuals on community supervision may still engage in at-risk substance use including alcohol,³³ which is more difficult to monitor. Participants were asked about (1) any alcohol use in the past 3 months (yes/no); (2) number of days of alcohol use in the past 3 months (range 0-90); (3) number of drinks on average per day when drinking (range); (4) number of days per week drinking (range 0-7); and (5) number of days in the past 30 experiencing any problems with alcohol (range 0-30). Total AUDIT score (ranging from 8 to 40) was also used as a control variable for baseline drinking.

Intervention Dose

Dose of MET was examined categorically in the following way: (1) 0 sessions (includes both those randomized who did not participate and those who were not randomized to METeTelemedicine); (2) 1-2 sessions—participated in only the assessment (session 1) and/or assessment and feedback sessions (sessions 1 and 2) as part of the MET therapy; (3) 3-5 sessions—participated in assessment, feedback, and motivational interviewing sessions (up to 5 contacts total with the therapist).

Procedures

Offenders on community supervision were identified for study screening after their initial visit with their supervision officer if they received a referral for a substance abuse assessment with an SSC. Once the individual indicated interest in participating, he or she was asked to complete a face-to-face screening session with the study research coordinator. The research coordinator met with potential participants in a private room at the rural community supervision office to conduct a screening session. Following informed consent, the 20-minute screening session included the AUDIT, Global Assessment Individual Needs cognitive impairment scale,³⁴ and a short mental health screener including 3 questions about current hallucinations, medications for hallucinations, and diagnosis specific to schizophrenia-related disorders. Information about all participants was kept confidential, and supervision officers were not notified of decisions related to study participation. A federal Certificate of Confidentiality was also obtained to protect participants' information.

Of those screened for the study ($n = 175$), 127 participants were identified as meeting eligibility criteria and completed a baseline interview. Reasons for noneligibility included AUDIT scores less than 8 ($n = 21$), mental health issues ($n = 7$), and other concerns including transportation issues, time commitment, and referral to inpatient treatment ($n = 20$). With University IRB and Department of Corrections approval, all participants were paid \$20 for completing a face-to-face baseline interview in a private, confidential office setting in the supervision office. The baseline interviews targeted alcohol use, treatment history for alcohol use and barriers, other drug use, and criminal justice involvement. Participants were then randomly assigned to 1 of 2 groups using Research Randomizer, a web-based program (www.randomizer.org): (1) MET via telemedicine (METeTelemedicine) in combination with services as usual or (2) services as usual (assessment and referrals from the SSC).

A description of the telemedicine delivery approach has been described in detail elsewhere.³¹ In summary, the METeTelemedicine condition included up to 5 sessions in the rural community supervision office using desktop videoconferencing equipment (Tanberg MXP150, Cisco Systems Inc., San Jose, CA, USA). The participant was in 1 of 4 rural community supervision offices and the therapist was in the main study research office at the University. Technical assistance was provided for equipment setup by either the research coordinator or the SSC, but they left the room for each counseling session to allow for privacy. To facilitate the videoconferencing sessions, Polycom PVX (Polycom Inc., San Jose, CA, USA) software was used on a regular PC in the University office. The PVX software was used because it provided the opportunity for connections with different units (Tanbergs) in the different rural offices.

Once remotely connected, the intervention approach included MET. MET is a therapeutic approach grounded in key principles of motivational interviewing with the overall goal of motivating a client to move through the process of behavioral change.³⁵ Therapists aid the participant in achieving change and creating an environment in which self-efficacy is supported rather than resistance and argumentation.³⁶ MET was selected for this study because it has been identified as an evidence-based practice for substance users involved in the criminal justice system,³⁷ it has a significant research base for effectiveness in reducing at-risk alcohol use,³⁸⁻⁴¹ and it allows for an individualized and targeted approach to working with a client to draw upon his or her own internal resources for change³⁵—an approach that fits well with individuals reentering the community from prison with different recovery needs and reentry challenges.

The intervention included an initial assessment using the computerized version of Drinker's Checkup (DCU)⁴² to collect information about the participant's level of drinking risk behavior, identify the participant's concerns about drinking behavior, and potential risks for relapse. During this initial session (or session 2 depending on time and content discussion) the therapist provided feedback to the participant about risk behavior to see if there were any particular areas of concern that he/she would like to discuss during the sessions. Subsequent MET sessions (3-5) focused on the client's motivation for staying sober and attempted to work with the client to progress through a series of stages to reduce relapse stressors.³⁵ For travel convenience, telemedicine intervention sessions were scheduled monthly on the same day as the client's visit with his or her community supervision officer and were coordinated with the University field office by the SSC.

All study participants were followed up at 3 months postbaseline to examine the changes in alcohol use. Research staff achieved a 90% follow-up rate (111 of 124 who were eligible for follow-up) by utilizing locating and tracking methods to find eligible participants for interviews including phone calls, flyer mailings, and Internet searches. The follow-up approach also included a face-to-face interview and participants were paid \$20. The 3 individuals who were not eligible for follow-up included 1 study withdrawal and 2 deaths. The follow-up sample consisted of 48.6% MET group and 51.4% comparison group, which was proportionate to randomization. In addition, the demographic composition of the follow-up sample was representative of all study participants as no descriptive differences were found between the follow-up sample and the overall original study sample.

Analytic Plan

Univariate and descriptive analyses were conducted to describe the overall sample on measures of alcohol use at baseline and 3 months and intervention participation. Intent-to-treat analyses were examined. To examine the effects of METelemedicine among participants who engaged in differential doses of the intervention on alcohol outcomes at 3 months postbaseline, both ITT and a per-protocol analysis were used.^{43,44} The per-protocol analysis allowed for an examination of dose effects, particularly among those who completed the intervention compared to those who did not. Specifically, sessions 1 and 2 were focused on assessment and feedback, whereas sessions 3-5 focused on change plans

and behavioral change, consistent with MET. Therefore, the predictor variable of interest was intervention dose, which was categorized as 0 doses, 1-2 doses and 3-5 doses.

The primary outcomes for this study were any alcohol use, number of days drinking alcohol in the past 3 months, number of days drinking per week on average, and number of days experiencing alcohol problems. Apart from the “any alcohol use” outcome which was dichotomous, the other 4 dependent variables had a count distribution and a large number of zero values. Therefore, zero-inflated negative binomial regression (ZINB) models were initially utilized, which is consistent with other behavioral studies.⁴⁵ However, in conducting the Vuong goodness-of-fit tests⁴⁶ for each of these models, it was discovered that the ZINB models did not improve model fit over negative binomial models. Therefore, for ease of interpretation, negative binomial regression was used for analyses examining the effect of the intervention dose on targeted outcome variables, while controlling for baseline alcohol use (via the continuously distributed AUDIT score). For each dependent variable, 2 models were fitted; a per-protocol model and an ITT model. For the per-protocol model (N = 111), the intervention dose (categorized as 1-2 doses, 3-5 doses, and zero doses [referent group]) was analyzed, controlling for baseline alcohol use (AUDIT score). In the ITT model, the primary independent variable was intervention group (n = 54 for MET group; n = 57 for control group), adjusting for baseline alcohol use via AUDIT scores. Both the per-protocol and ITT estimates are presented in Table 2. Results of the negative binomial regression models are reported including the adjusted incidence rate ratios (AIRR) and 95% CI for both the dose analysis and ITT. Logistic regression was utilized to examine the effect of dose and intervention group on alcohol relapse, controlling for baseline alcohol use. Adjusted odds ratios (AOR) and 95% CI are reported. Data analyses were conducted using STATA version 12.0 (StataCorp, College Station, Texas).

Results

Overall, the sample was mostly male (81%), mostly white (98%), and had a median age of 30.5 (Table 1). The majority of individuals in the study were reentering the community from prison and considered to be on parole status in the community (72.4%). About half of the participants reported working full-time during the year before incarceration (49%), with an average of about 35 days working during the 3 months before incarceration. They self-reported a median of 11 years of education.

At study intake, participants (N = 127) self-reported 45.0 (median) days of alcohol use in the past 3 months before incarceration. The sample reported 12.0 (median) drinks per day and 3.0 (median) days per week of drinking to intoxication (feeling the effects of alcohol). They also reported an average number of 8.2 years of regular alcohol use. The AUDIT score among rural offenders on community supervision in this study was 24.0 (median). About one-third (34.0%) indicated that they had ever been in treatment for alcohol use.

As shown in Table 1, across study condition, alcohol use was reduced at 3 months postbaseline compared to baseline, as indicated by the 4 selected outcomes. Specifically, only about one-third of the sample reported any alcohol use in the 3 months postbaseline. Among those who did drink, they reported using significantly less than preincarceration

levels. There were no differences between the intervention group and control group on any of the primary study variables.

Intent-to-Treat Analysis

Of the 127 participants who completed a baseline interview, 61 were randomized into the MET telemedicine condition. Of the 61 randomized to receive MET sessions, 38 participants (62%) successfully engaged in the intervention by completing a minimum of 1 or 2 sessions consisting of the DCU and feedback sessions. Of the participants who did not engage in the intervention, reasons included transportation concerns, securing employment, returning to custody, and unknown/lost contact. The mean number of sessions attended was 2.0 (range 0-5; SD = 1.9). More than one-third of participants (37.4%; n = 23) randomized to METelemedicine completed the assessment, feedback, and additional motivational interviewing sessions (3 + sessions), which is a completion rate similar to other motivational interventions with problem alcohol users.⁴⁴

Across each of the alcohol outcomes at 3 months, there were no significant differences by study condition.

Intervention and Dose-Related Effects

Two analyses are presented in Table 2. The per-protocol analysis examined intervention dose effects on alcohol use at 3 months among participants who engaged in differential doses of the intervention (Model 1). The ITT analyses are also presented. The ITT analyses examined group differences in outcomes based on enrollment in the intervention group versus the comparison group (Model 2). Findings indicated that, controlling for baseline alcohol use (AUDIT total score), participation in 3-5 sessions of METelemedicine significantly reduced the likelihood of any alcohol use during the 3-month follow-up period by 72% (AOR: 0.28; 95% CI = 0.08-0.97). In addition, METelemedicine participation in 3-5 sessions was predictive of fewer days of drinking in the 3-month follow-up period (AIRR = 0.19; 95% CI = 0.05-0.74), fewer drinks per week during the 3-month follow-up period (AIRR = 0.09; 95% CI = 0.02-0.42), and fewer days experiencing alcohol problems in the past 30 days at follow-up (AIRR = 0.04; 95% CI = 0.01-0.51) compared with those receiving no intervention exposure. There were no significant differences in outcomes among those randomized to the MET group versus control.

Discussion

Telemedicine Intervention Outcomes

The purpose of this study was to examine the effects of a pilot study using METelemedicine among a high-risk sample of rural alcohol users. Although there were no significant differences in the intent-to-treat model, we hypothesized that those who received 3 or more doses of the intervention would have greater reductions in alcohol use at follow-up. This hypothesis was supported for completion of 3-5 sessions of the intervention. Findings indicated that receiving 3-5 sessions of METelemedicine was associated with decreased likelihood of relapsing to alcohol, fewer days of drinking alcohol, fewer drinks during a

drinking day, and fewer days experiencing alcohol problems compared to those who did not engage in the intervention. These findings are reflective of both reductions in frequency and intensity of alcohol use, as well as problems associated with alcohol use. This effect is likely due to the variations in both time and content between 1-2 sessions and 3-5 sessions. Specifically, not only did participants in the 3-5 session category participate in increased exposure to the motivational interviewing (MI) therapy sessions and more time with the therapist, they also had more focus on behavioral change using motivational interviewing techniques that extend beyond the assessment and feedback sessions. This finding is important, particularly in light of findings which suggest an overall decrease in alcohol use across groups.

Although the study of dose-effects for motivational enhancement therapy (MET) are limited in the clinical and empirical research, anecdotal information suggests that higher doses of MET are likely to be more beneficial for clients due to the severity of problems that many of them bring to treatment. In addition, the MET approach is client centered, which can take a considerable amount of time to build adequate rapport.⁴⁷ Empirical studies have been conducted on other brief behavioral interventions for substance use including cognitive behavioral therapy, with findings suggesting that longer-term interventions (6 sessions compared to 1 session) lead to better outcomes with regard to reduced drug use.⁴⁸ The findings from this study appear to be consistent, as they showed promising effects across all alcohol outcomes at 3 months for those who completed 3 or more sessions of MET.

These findings have important implications for delivery of interventions with at-risk alcohol users through non-traditional and nontherapeutic venues—not only for the benefits of an evidence-based intervention, but also for the delivery mechanism using telemedicine videoconferencing. For example, identifying at-risk or high-risk alcohol users for intervention through community supervision offices has received limited attention in the research literature.^{49,50} This is somewhat surprising because data from the Bureau of Justice Statistics annual surveys of probationers and parolees indicate that more than 5.1 million adults in the United States are being supervised in the community,⁵¹ and the data, much like that from prisons and jails, show that the majority of these individuals have alcohol and other drug problems.⁵² Our earlier work indicated that telemedicine videoconferencing could be implemented into rural community supervision offices and used as a means to engage individuals in need of services in an evidence-based intervention.³¹ The intervention was voluntary, participants were not mandated to the intervention by their supervision officer, and the officer did not know if the participant enrolled in the study or in the intervention sessions. The technology worked well to deliver the sessions with minimal implementation challenges, which were primarily related to finding confidential space within the office for the participant to sit. Participants expressed interest in the study, maintained enrollment, nearly 38% completed sessions, and 90% completed follow-up measures—all of which are indicators of feasibility in behavioral trials⁵³ and supported preliminary work.³¹

Study Limitations

This study does have noteworthy limitations. The follow-up sample size was small ($n = 111$, with 54 and 57 in the treatment and comparison group, respectively). Although this sample did represent 90% of the eligible baseline sample to be followed for the 3-month interview, it limited statistical power for complex multi-variate models to test subgroup effects within a larger analysis. The sample size also possibly limited statistical power to detect differences in the intent-to-treat analysis. Although the purpose of this analysis was to better understand the impact of the intervention among those who participated in a differential number of sessions, future research should attempt to build on these findings through trials with larger sample sizes and longer-term follow-up periods. Second, it is possible that the community supervision office could be considered a threatening environment for the intervention sessions, which may have impacted engagement. Although nearly two-thirds of the sample participated in at least one intervention session, future research should examine ways to increase engagement within this population. To increase participant confidentiality, each screening session, data collection interview, and intervention session took place in a private, confidential office (usually a group room or conference room). Community supervision offices served a large enough number of offenders that the intervention group status was not apparent based on additional visits by intervention group participants. A federal Certificate of Confidentiality was also obtained to further ensure participant protection. Although we do not have any empirical or anecdotal evidence to suggest there was an engagement effect, future research should consider how the criminal justice environment may differentially affect certain individuals and their ability to engage in the intervention. In addition, because alcohol use (and other substance use) violates the conditions of community supervision, future research should also examine the sustainability of interventions if delivered by individuals in criminal justice settings.

A third limitation is that the study did not compare METeTelemedicine with face-to-face sessions of MET, which might have been able to speak to issues related to engagement in the community supervision office. Although the evidence for the equivalence of telemedicine approaches with face-to-face delivery is fairly consistent, a face-to-face mode of delivery might have provided additional data on the MET approach with this population. An additional limitation is that the study sample included primarily white males. Although this is reflective of the community supervision demographic in the 4 offices targeted for recruitment for this study, generalizability of study findings may be limited. Future research should pay particular attention to how other subgroups—particularly rural women—may engage in the intervention using videoconferencing technology. Finally, the dose-effect analysis does not include the potential for motivation for treatment as a moderator of intervention success. In this pilot study, individuals were not randomized to intervention doses, but rather it is plausible that those who engaged in 3+ sessions were more motivated for treatment and for change. Future research should also include critical measures of motivation and intention for change, as well as analysis to understand their roles as mediators and moderators of intervention outcomes.

Implications for Rural Treatment

Despite these limitations, these findings have some important implications for alcohol treatment interventions with hard-to-reach, at-risk rural populations. Engaging at-risk alcohol users in formal treatment services has been shown to be difficult.^{9,54,55} Among rural at-risk drinkers, studies have demonstrated that rates of alcohol problem severity and related medical conditions are high and access to services is limited.^{56,57} Rural at-risk alcohol users who are willing to engage in services or who initiate the help-seeking process anticipate having to travel long distances for formal services and for self-help groups,^{58,59} which can also be huge barriers—especially if transportation options are limited. Thus, this is clearly a population in critical need of more accessible treatment options.

This study focused on examining the effects of MET delivered via videoconferencing in a convenient and accessible location for rural at-risk alcohol users to receive treatment. By screening for at-risk alcohol use among a sample of individuals on community supervision, a population that has been identified in the research literature as engaging in increased alcohol use and vulnerable to its effects due to illegal consequences,⁴⁰ rural at-risk alcohol users—who may not have otherwise received services—were able to participate in an evidence-based intervention during a risky and vulnerable time (community reentry).

The need for intervention was apparent when examining the alcohol use history. Despite being screened in as “at-risk” drinkers, rural offenders on community supervision reported an average of 48.2 days of alcohol use in the past 3 months before incarceration—meaning that they consumed alcohol on 54% of the available drinking days during that time. They also reported an average of 14.3 drinks per day when they were drinking. In addition, their average AUDIT score, 23.2, was higher than other reported criminal justice samples (ie, 19.9 average reported in Coulton⁴⁹) and consistent with other studies of individuals identified as alcohol dependent entering outpatient treatment⁶⁰ and psychiatric inpatient treatment.⁶¹ It is possible that these high rates of alcohol use also contribute to limited differences between the intervention and control as MET is intended to be a brief, low-intensity intervention. However, considering this profile of problem severity and the finding that only about one-third reported ever engaging in treatment for alcohol use services, examining the outcomes associated with this study has significant implications for the field. As a service delivery approach, telemedicine has demonstrated successes for delivery of alcohol and other behavioral health interventions. As a venue for services, the criminal justice system—particularly in-custody environments like prisons and jails—has provided ideal locations to target at-risk substance users for treatment interventions.^{62,63} To our knowledge, this was the first study to deliver an evidence-based alcohol intervention in a community supervision office to reach at-risk rural alcohol users.

Conclusions

This study presents promising findings for at-risk rural alcohol users: telemedicine in community supervision offices. This approach has potential to decrease barriers to access and increase utilization of evidenced-based treatment for rural alcohol users because it can be done in a low-cost, efficient manner in a venue that is easily accessible. Because this is a population that is difficult to engage in formal treatment services due to both limitations

within the rural service delivery system as well as individual motivation for change, METeTelemedicine is a viable approach to reach individuals at high risk for relapse and related consequences of alcohol use.

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Table 1

Sample Descriptive Information

Study Variable	Median (Range/SD) or Percentage
Demographics (N = 127)	
Age	30.5 (range 19-57, SD = 8.8)
Gender	81% male
Race	98% white
Years of education	11.0
Self-reported working full-time before incarceration	49%
Community supervision status	72.4% parole 27.6% probation
Length of most recent incarceration	13.0 months (range 0-96; SD = 19.4)
Baseline alcohol use (3 months before incarceration), N = 127	
Total AUDIT score	24.0 (range 3-40; SD = 8.8)
Used any alcohol in 3 months before incarceration	100%
Number of days of alcohol use in 3 months before incarceration	45.0 (range 0-90; SD = 34.0)
Number of drinks per day on average in 3 months before incarceration	12.0 (range 0-48; SD = 10.7)
Number of days per week on average drinking in 3 months before incarceration	3.0 (range 0-7; SD = 2.5)
Ever received treatment for alcohol use?	34.0%
Alcohol use outcomes—3 month follow-up	
Used any alcohol in past 3 months (n = 111)	35.1%
Number of days of alcohol use in past 3 months (n = 39)	7.0 (1-90; SD = 20.1)
Number of drinks per day on average in past 3 months (n = 39)	3.2 (1-40; SD = 8.0)

Table 2

Summary of Intervention Outcome Models

	Any Alcohol Use Model 1 ^a OR (CI)	Days of Drinking Model 1 AIRR (CI)	Drinks per Week Model 1 AIRR (CI)	Days Exp Alcohol Problems Model 1 AIRR (CI)
Dose 1-2 ^b	1.97 (0.55-7.04)	2.30(0.47-11.19)	1.01 (0.21-4.84)	0.47 (0.02-8.72)
Dose 3-5	0.28 (0.08-0.97) *	0.19 (0.05-0.75) *	0.09 (0.02-0.42) **	0.04 (0.00-0.52) *
AUDIT	1.10(1.05-1.17)	1.13 (1.05-1.22)	1.14(1.06-1.22)	1.20(1.03-1.39)
R ²	0.13	0.03	0.05	0.04
	Model 2 ^c	Model 2	Model 2	Model 2
MET	1.29 (0.55-2.99)	1.11 (0.41-2.99)	1.76 (0.48-6.46)	22.8 (0.91-5.69)
AUDIT	1.09(1.04-1.15)	1.10(1.03-1.17)	1.15(1.05-1.25)	1.33 (1.09-1.64)
R ²	0.09	0.02	0.03	0.05

^aModel 1 = per-protocol analysis (N = 111).

^bReferent group—0 sessions (dose).

^cModel 2 = ITT analysis (N = 111[n = 54 randomized to MET; n = 57 randomized to control condition]).

* P < .05,

** P < .01.

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