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Telephone veteran peer coaching for mental health treatment engagement among rural veterans: The importance of secondary outcomes and qualitative data in a randomized controlled trial

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Abstract

Purpose: To determine the effectiveness of telephone motivational coaching delivered by veteran peers to improve mental health (MH) treatment engagement among veterans.

Methods: Veterans receiving primary care from primarily rural VA community-based outpatient clinics were enrolled. Veterans not engaged in MH treatment screening positive for ≥ 1 MH problem(s) were randomized to receive veteran peer-delivered feedback on MH screen results and referrals plus 4 sessions of telephone motivational coaching (intervention) versus veteran peer-delivered MH results and referrals without motivational coaching (control). Blinded telephone assessments were

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conducted at baseline, 8, 16, and 32 weeks. Cox proportional hazard models compared MH clinician-directed treatment initiation between groups; descriptive analyses compared MH treatment retention, changes in MH symptoms, quality of life, and self-care.

Findings: Among 272 veterans screening positive for ≥ 1 MH problem(s), 45% who received veteran peer telephone motivational coaching versus 46% of control participants initiated MH treatment (primary outcome) (hazard ratio: 1.09, 95% CI: 0.76-1.57), representing no between-group differences. In contrast, veterans receiving veteran peer motivational coaching achieved significantly greater improvements in depression, posttraumatic stress disorder and cannabis use scores, quality of life domains, and adoption of some self-care strategies than controls (secondary outcomes). Qualitative data revealed that veterans who received veteran peer motivational coaching may no longer have perceived a need for MH treatment.

Conclusions: Among veterans with MH problems using predominantly rural VA community clinics, telephone peer motivational coaching did not enhance MH treatment engagement, but instead had positive effects on MH symptoms, quality of life indicators, and use of self-care strategies.

KEYWORDS

health services research, mental health, motivational interviewing, peer interventions, rural veterans

Disproportionately more rural veterans (57%) are enrolled in Department of Veterans Affairs (VA) healthcare than their urban counterparts (37%).¹ Most rural veterans receive care from smaller VA community-based outpatient clinics established by VA expressly to improve access to care, including mental health (MH) care.^{2,3} Rural veterans who utilize VA community-based clinics are typically older, sicker and poorer, and experience significantly greater MH burden and poorer clinical outcomes than their urban counterparts receiving care at VA medical centers.^{1,4,5}

VA mandates that all veterans, including those receiving care at VA community-based clinics, have access to evidence-based MH treatments. Minimally adequate MH treatment has been defined as ≥ 8 MH treatment sessions or receiving ≥ 2 months of psychiatric medication plus > 4 visits within 1 year.⁶ Nevertheless, despite access to VA community-based clinics, rurality remains one of the strongest predictors of poor MH treatment engagement. Roughly, only 20% of rural veterans with MH conditions initiate any MH treatment and even fewer ($< 10\%$) complete a full course of evidence-based MH treatment.⁷⁻¹⁰ Rural veterans' lack of engagement in MH treatment reflects a myriad of logistical barriers, paramount among them geographical distance, and lack of access to consistently available MH services.⁹ Other barriers are cultural norms in rural communities, including negative beliefs surrounding MH treatment, stigma against needing or seeking MH treatment, and stoicism, with rural veterans preferring to address MH and emotional problems within their own communities, families, and religious organizations.¹¹⁻¹³

Motivational interviewing (MI) is an evidence-based approach to facilitating behavioral change,¹⁴ and multiple studies over decades have demonstrated MI's effectiveness for MH treatment engagement among veterans.¹⁵⁻¹⁸ One pilot trial of 73 younger Iraq and Afghanistan veterans who screened positive for MH symptoms (i.e., posttraumatic stress disorder [PTSD], depression, anxiety, etc.) demonstrated that 4 brief sessions of telephone MI conducted by trained research staff resulted in 62% initiating MH treatment versus 26% assigned to receive 4 brief neutral telephone sessions (relative risk = 2.41, 95% confidence interval [CI]: 1.33-4.37; Cohen's $h = 0.74$).¹⁷ Of note, this trial was conducted in younger, urban veterans by research staff with backgrounds in psychology.¹⁷

These prior studies suggested that MI can improve MH treatment initiation in veterans. However, none of these trials were conducted among rural veterans who might experience greater barriers to MH treatment engagement. In addition, most prior trials have used MH clinicians to deliver MI. There is emerging evidence that peers who may have shared experiences and "speak the same language" as the populations they serve may encounter less resistance and be more effective in promoting positive change, including engagement in MH care, especially in rural populations.¹⁹⁻²²

Here, we describe the results of a multisite pragmatic randomized controlled trial (RCT), "Motivational Coaching to Enhance Mental Health Engagement in Rural Veterans," hereafter abbreviated as "COACH." The trial tested a veteran peer-delivered telephone motivational coaching intervention for veterans receiving care at

predominantly rural VA community-based clinics in either Northern California or Louisiana who had screened positive for ≥ 1 MH symptoms but were not engaged in MH treatment. We hypothesized that veterans who received MI-consistent feedback about MH screen results and MH referrals plus several sessions of veteran peer-delivered telephone motivational coaching (intervention) would be more likely to engage in clinician-directed MH treatment than veterans who received MH screen results and a referral without motivational coaching (control). Secondly, we hypothesized that veterans assigned to veteran peer-delivered telephone motivational coaching would experience improvements in MH symptoms, quality of life indicators, and self-care as a direct effect of peer coaching itself compared to those randomized to the control condition. Qualitative exit interviews of participants in the intervention arm were conducted to better understand trial results.

METHODS

Participants and setting

Recruitment and enrollment

VA administrative databases were used to identify veterans with the following criteria: (1) had received primary care within 1 year of study enrollment at 1 of 8 participating VA community-based outpatient clinics: 4 facilities in Northern California (of which 3 were rural and 1 was suburban) and 4 in Louisiana (of which 3 were rural and 1 was urban); and (2) had screened positive on ≥ 1 VA MH screens or had received ≥ 1 MH diagnosis(es), but had never attended an MH visit (treatment naïve), or had attended up to 2 MH visits (within VA or the community reimbursed by VA), but without follow-up within 90 days of recruitment.

Veterans identified through VA administrative data were mailed a study information sheet and a postcard they could mail back to indicate interest in study participation. If participants indicated interest or if no postcard was received after 2 weeks, study staff attempted to contact veterans by phone. In addition, VA community-based outpatient clinic providers were encouraged to refer patients to the study and flyers were posted in their clinics. Veterans deemed eligible and interested on initial telephone screening underwent informed consent prior to enrollment. Participants were enrolled from October 29, 2015, to October 19, 2017, and the study concluded June 1, 2018. The study protocol was approved by the VA Central Institutional Review Board and the local Research and Development Committees at the participating VA enrollment sites.

Eligibility criteria

Inclusion criteria for enrollment were confirmed at baseline assessment and included: (1) being a veteran of military service, over age 18 years; (2) residing within 100 miles of 1 of the 8 VA community

clinics in Northern California or Louisiana with no plans to relocate within 8 months of enrollment; and (3) screening positive on baseline assessment for ≥ 1 MH conditions: PTSD, depression, generalized anxiety disorder, panic disorder, high-risk drinking, and/or illicit substance use. Exclusion criteria included: (1) lacking access to a working phone, severe hearing impairment or poor English comprehension; (2) having a diagnosis of schizophrenia, psychosis, or bipolar disorder; (3) having received MH treatment within 60 days of eligibility screening or having a scheduled MH appointment in the future; (4) active suicidality or homicidality by chart review or self-report; (5) being incarcerated; and (6) impaired cognitive function as documented in the medical record or apparent during screening.

Baseline assessment

After study enrollment, a veteran peer (defined below) administered a 60-min baseline assessment by telephone to collect baseline data and verify trial eligibility. Information was collected on sociodemographics, VA service connection/disability status, and prior VA and non-VA mental health treatment experiences in the past 5 years and past 60 days. Psychometrically valid assessment instruments with published cut-points were used to determine participants' symptom status for 5 target MH disorders: posttraumatic stress disorder (PTSD) (PTSD checklist for DSM-5, PCL-5²³), depression (Patient Health Questionnaire-9, PHQ-9²⁴), anxiety (Severity Measure of Generalized Anxiety Disorder-Adult²⁵), panic disorder (Severity Measure for Panic Disorder-Adult²⁶), and alcohol and illicit substance use (WHO-ASSIST V3.0).²⁷ Additional instruments were used to assess: (1) quality of life across 4 domains: physical health, psychological health, social relationships, and environment (WHOQOL-BREF)²⁸; (2) importance, confidence, and readiness for MH treatment (Readiness Ruler)¹⁴; and (3) logistical, stigma- and beliefs-related barriers to MH treatment (Hoge Perceived Barriers to Seeking Mental Health Services scale).¹²

Results from the telephone baseline assessment were entered directly into a web-based data collection system (Qualtrics International Inc., Provo, UT) and scored in real time to verify non-MH treatment-engaged participants who screened positive for ≥ 1 MH problems, thereby confirming trial eligibility. This was defined as: (1) scoring in the "mild" range on at least 2 MH screening instruments (depression, anxiety, panic, or PTSD); or (2) scoring in the "moderate" range on at least 1 MH screening; or (3) scoring in the "mild" range for at least 1 substance (alcohol or other substance; excluding tobacco) and in the "mild" range on at least 1 MH screen.

Procedures

Trial design

The study was a single-blind, 2-arm pragmatic effectiveness RCT comparing MI-styled veteran peer-delivered feedback on MH screen results and referrals plus 4 sessions of telephone motivational

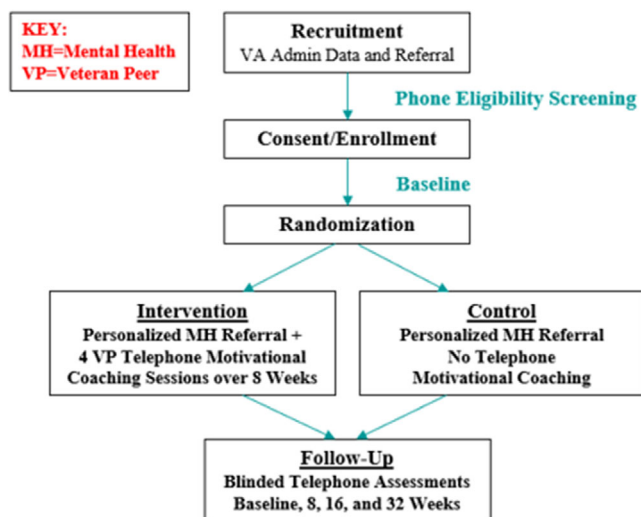


FIGURE 1 Coach trial flow diagram

coaching (intervention) versus veteran peer-delivered MH results and referrals without motivational coaching (control) (Figure 1). The study was designed as a Hybrid Type 2 pragmatic implementation-effectiveness study,²⁹ in which the implementation of the trial intervention (ie, recruitment methods, intervention delivery, and clinical endpoints) was tailored to meet the needs, resources, and preferences of stakeholders at each VA community-based clinic study site. Thus, prior to trial implementation, a formative evaluation was conducted at each of the 8 VA community-based clinic sites, beginning with qualitative interviews with study stakeholders—veterans and VA staff—to understand barriers and facilitators of MH treatment for veterans at the clinic and in the local communities. Subsequently, the study team convened lunchtime meetings with study stakeholders at each of the VA community-based clinics to review evidence for the motivational coaching intervention, provide feedback from the qualitative interviews, and to engage study stakeholders in decision making about flexible components of the trial. For instance, some clinic stakeholders preferred to be more involved with recruitment efforts than others. Also, in this formative stage, the study outcomes related to MH treatment engagement were broadened to reflect rural veterans' preferences for self-care activities based on input from VA stakeholders at the 8 participating VA community-based outpatient clinic sites.³⁰

Randomization

Participants who remained eligible following baseline assessment were randomized using a block randomization scheme stratified by: (1) MH treatment history within the last 5 years (treatment-naïve or treatment-experienced), (2) MH disorder severity (yes/no) with "severe" defined as having ≥ 2 MH problems with at least one of the MH problems in the severe range, and (3) participant's community-based clinic location—either Northern California or Louisiana.

Telephone MI coaching intervention by veteran peer

Trial interventionists were 2 veterans of the armed forces with some prior exposure to counseling, hereafter referred to as "veteran peers." Of note, in this study, veteran peers were different from VA-employed Veteran Peer Specialists, who are also considered peers, not only because of their prior military service, but also because they are in MH recovery themselves.³¹ Veteran peers for this study were trained by psychologists at their respective study sites to use MI techniques, such as open-ended questions, affirmations, reflections, and summary statements, as well as key MI principles, such as expressing empathy and rolling with resistance with the goal of having veteran peers conduct MI-informed coaching rather than formal MI. Veteran peers were encouraged to relate to study participants as veteran peers and potentially disclose more personal information than is typical when using manualized MI. Psychologist supervisors also trained the veteran peers in how to address potential suicidal and homicidal ideation and race/ethnic and sexual orientation and identity issues. During the trial, with participant consent, motivational coaching sessions were audio-recorded for fidelity monitoring (see below). Psychologist supervisors reviewed the audio-recordings and provided feedback to veteran peers at weekly group supervision meetings.

For participants assigned to the intervention arm, veteran peers started by providing participants feedback on each of their baseline MH screens and used MI-informed, open-ended questions to elicit participants' reactions to their MH screen results. For example, a veteran peer coach would inform a veteran participant of their PHQ-9 score and explain the meaning of a positive score for depression as either mild, moderate, or severe, asking veterans to share their thoughts or feelings on hearing this information, using psychoeducation and normalizing data as appropriate. Veteran peers then explored participants' readiness for MH treatment, reminded veterans that they themselves were not licensed practitioners and, based on their location and preferences, asked permission to provide a customized list of MH treatment and self-care options. Subsequently, participants received up to 3 additional 20- to 30-min motivational coaching calls at 2, 4, and 8 weeks to encourage MH treatment initiation using MI principles as described above. For example, a veteran peer coach attempting to elicit change talk and motivation for MH treatment might use the Readiness Ruler to ask a participant how ready they were to receive MH treatment and would reflect back to them, "You gave yourself a 4 out of 10, why not a lower number? What would need to happen to move you up one or two numbers?" Because veteran peers were trained in coaching in addition to MI, they might add additional coaching language, such as: "If you decided to start receiving outside help, what kind of help do you think would work the best for you?" and, "If we take a step back and think about the big picture, what really matters in your life?"

During the 8-week motivational coaching intervention, if a participant scheduled or engaged in clinician-directed MH treatment (reported to the veteran peer coach, determined through blinded assessment or VA administrative data [see below]), the peer-delivered coaching intervention shifted to treatment retention. Treatment retention calls consisted of 20- to 30-min calls at 2 and 6 weeks after MH

treatment initiation. During retention calls, veteran peers focused on eliciting the benefits of sustained MH treatment engagement, that is, *"Now that you are receiving outside help, how do you see your life getting better?"*

Control arm

For participants randomized to the control condition, following baseline assessment, veteran peers provided neutral MH screen results (without eliciting participants' reactions) and generated a short list of MH referrals, including self-care options, primarily based on local community resources, participants' location, and treatment preferences. Thereafter, control participants did not receive coaching calls from the veteran peers but did participate in the blinded telephone assessments (see below).

Mental health treatment referrals

VA and non-VA community MH services in Northern California and Louisiana were identified and vetted to create a comprehensive annotated list of MH treatment referrals for veterans. As described above, MH treatment referrals were provided to veterans with positive MH screens in both study arms following the baseline assessment and were grouped as follows: (1) clinician-directed MH treatment either within VA or in the community reimbursed by VA, or through a non-VA community MH facility; (2) nonclinician-directed MH care either through VA or in the community (eg, self-help groups and yoga classes); and self-care (eg, gardening and deep breathing). For participants in both arms, veteran peers provided contact information for referrals by phone and letter but did not schedule referrals for veterans.

Fidelity monitoring of intervention

Fidelity monitoring of the intervention was conducted by 2 trained coders using the Motivational Interviewing Treatment Integrity (MITI 4).³² The MITI consists of global ratings, measured on a 1-5 scale, and behavior counts that capture the frequency of MI consistent and inconsistent behaviors. Of the total pool of audio-recorded telephone MI coaching sessions ($N = 608$), 15% ($N = 93$) were randomly selected for coding and from this sample of coded sessions, 31% ($N = 29$) were randomly selected for double-coding. Inter-rater reliability for MITI coding was assessed via percent exact coder agreement for global ratings and intraclass correlation (ICC) coefficients for behavior counts (Table 8).

Primary and secondary outcome ascertainment

All primary and secondary study outcomes were assessed by blinded research staff at 8 and 16 weeks using the same battery of items

administered at baseline (see above) and only MH treatment engagement was assessed at 32 weeks. The primary outcome was initiation of clinician-directed MH treatment, and among participants who initiated treatment, retention in MH treatment for ≥ 2 visit(s), as determined by self-report, VA administrative data, or both (secondary outcome). Any new VA or non-VA MH appointment during follow-up between participants' baseline assessment to 60 days after the final 32-week timepoint was counted as MH treatment engagement. An MH treatment experiences self-report questionnaire¹⁷ was used to identify categories of clinician-directed VA or non-VA MH treatment. Only MH treatment encounters at VA or in non-VA community settings reimbursed by VA are included in VA administrative data. (See Table 4 for a complete list of categories of clinician-directed MH treatment.)

Secondary outcomes included: (1) nonclinician-directed MH care at VA or in the community (Table 6) and (2) engagement in self-care activities (Figure 3), defined as activities that reduce stress and promote well-being, which can be particularly important for rural veterans and influenced by location.^{33,34} Other secondary outcomes included MH symptoms (PTSD, depression, anxiety, panic, and substance use) and quality of life domains (ascertained at 8 and 16 weeks and described in detail above).

Implementation-focused evaluation using qualitative methods

Maximum variation sampling was used to identify 25 participants in the motivational coaching intervention arm who either did or did not engage in MH treatment. A qualitative interview was conducted to better understand participants' experiences with the intervention and reasons for MH treatment engagement or not. Interviews were audio-recorded with participants' permission and professionally transcribed. Two separate qualitative analysts used rapid analytic techniques to analyze interview content for key points.³⁵

Statistical methods

Of the 280 randomized participants, 1 from the intervention arm withdrew and was not willing to contribute data; 7 other subjects did not have primary outcome data (5 from control and 2 from intervention) (Figure 2, CONSORT diagram under "Analysis"). Thus, the analytic cohort included 272 participants who provided at least 1 observation of the primary outcome (clinician-directed MH treatment initiation), either via self-report and VA administrative data ($n = 235$) or via the VA administrative database only ($n = 37$). Consequently, a per-protocol analysis was performed that included participants who provided data for the primary outcome under a missing-at-random assumption.

First, the 2 groups were compared on baseline measures, including sociodemographics, MH symptoms, quality of life, prior engagement in MH treatment, readiness, and barriers to MH treatment. Between-group differences were tested using t test or Mann-Whitney U test for continuous variables and chi-square or Fisher's Exact test for

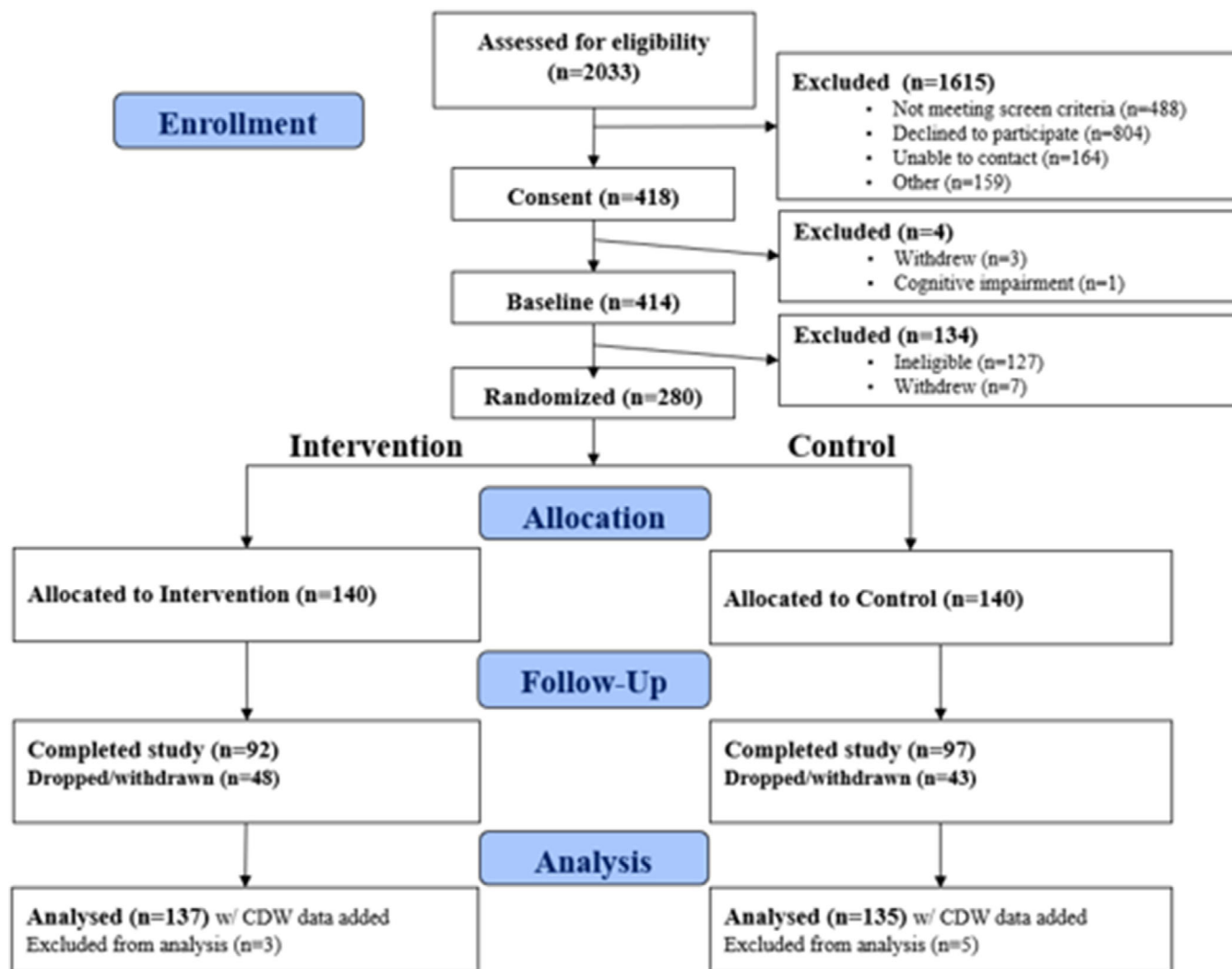
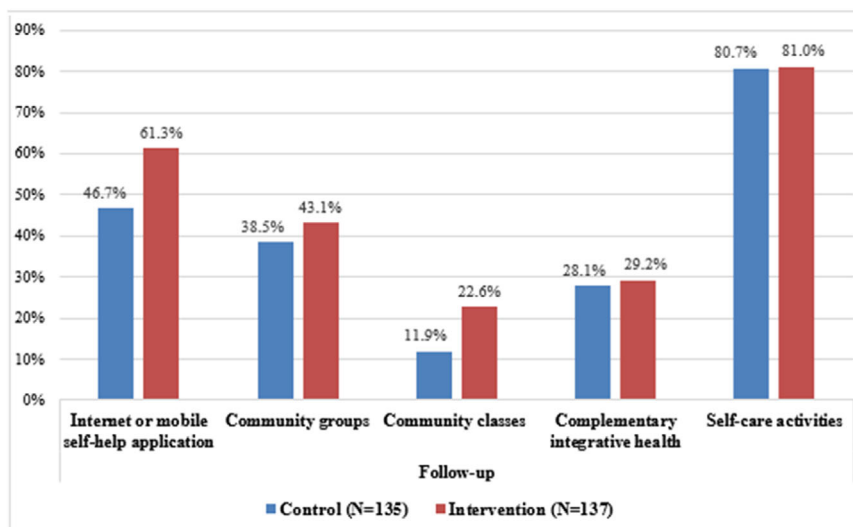


FIGURE 2 Coach trial CONSORT diagram

FIGURE 3 Self-care for mental health (MH) symptoms. Statistically significant between-group differences during follow-up are in the self-care categories of internet or mobile self-help applications ($P = .002$) and community classes ($P = .02$). The following are examples of each category of self-care: internet or mobile self-help applications (eg, PTSD coach; meditation applications); community group (eg, church hiking); community classes (eg, dancing and cooking); complementary integrative treatment (eg, acupuncture and massage); self-care activities (eg, deep-breathing and fishing). Subjects with missing values range from 11.1% to 16.1%.



categorical variables. Descriptive analyses were conducted for all primary and secondary outcomes during follow-up. Next, the difference between groups from baseline to first clinician-directed MH treatment visit (MH treatment initiation and primary outcome) was assessed using Cox proportional hazards regression, adjusted for stratification variables including site, baseline MH treatment history, and MH symptom severity, as well as the baseline amphetamine scores, opioid score, and readiness to receive MH treatment, which were found to differ significantly between groups. Given the relatively small sample size and missing outcomes data (see below), we considered results statistically significant at the 0.05 level. Data analyses were performed using SAS (SAS Institute Inc., Cary, NC, 2013) and Stata (StataCorp LLC, College Station, TX, 2015).

RESULTS

At baseline (Table 1), following randomization, the 135 controls and 137 telephone motivational coaching participants did not differ in terms of sociodemographics. Overall, the majority was male (16% females) and middle-aged (mean age = 50 years, SD+/-13). Although most participants were White, racial minorities were over-represented (42%) compared to the US population. The majority earned < \$50,000/year; 72% had a military service-connected disability (providing them VA care at no cost for that disability); 14%-26% enrolled in VA health care had used private insurance or Medicaid/Medicare within the past 6 months; and the majority (59%) received care at rural VA health care facilities.

As shown in Table 2, the 2 groups also did not differ at baseline in terms of quality of life measures, MH symptoms (depression, anxiety, panic disorder, and PTSD), as well as most substance use scores (alcohol, cannabis, cocaine, and other substances). Overall, most participants screened positive for MH symptoms, including depression (87%) and anxiety (87%), followed by PTSD (69%), and roughly one-quarter (24%) screened positive for high-risk drinking. Controls demonstrated significantly higher baseline opioid and amphetamine use than intervention participants (0.9 vs 0.2, $P = .009$ and 0.5 vs 0.2, $P = .042$, respectively), although use of both was extremely low. The 2 groups did not differ in terms of barriers to MH care, but at baseline, controls were significantly more ready than intervention participants to obtain MH treatment. At baseline, the 2 arms did not differ regarding past 5-year MH treatment or self-care activities (Table 3).

In the intervention arm, of 4 possible motivational coaching sessions for MH treatment initiation, participants completed a mean of 2.6 (SD = 0.64) sessions, and of 2 possible MH treatment retention sessions (for those initiating MH treatment), a mean of 1.72 (SD = 0.46) sessions were completed. As shown in Table 4, a similar number of controls (46%) and intervention participants (45%) initiated clinician-directed MH treatment during follow-up ($P = .82$) (primary outcome). Of those initiating MH treatment, a similar proportion reported ≥ 2 MH visits: 41% of controls reported a mean of 6.6 visits, SD = 9.6, and 37% of intervention participants reported a mean of 4.4 visits, SD = 4.6. While there were no between-group differences in type of clinician-directed

TABLE 1 Sociodemographic characteristics at baseline by treatment group

	Control N = 135 (%)	Intervention N = 137 (%)	P value
Age (mean, standard deviation, SD)	51.1 (13.7)	49.8 (13.0)	.45
Female	17 (12.6)	27 (19.7)	.11
Race ^a			.32
White/Caucasian	73 (54.1)	86 (62.8)	
Black or African American	34 (25.2)	27 (19.7)	
Other ^b	28 (20.7)	23 (16.8)	
Ethnicity ^a			.23
Hispanic or Latino	13 (9.6)	7 (5.1)	
Not Hispanic or Latino	122 (90.4)	129 (94.2)	
Education			.30
Some high school	8 (5.9)	3 (2.2)	
High school graduate/GED	16 (11.9)	18 (13.1)	
Some college, college graduate, or post-graduate	111 (82.2)	116 (84.7)	
Marital status			.77
Married	66 (48.9)	61 (44.5)	
Single, never married	23 (17.0)	26 (19.0)	
Divorced/separated/ widowed/domestic partner	46 (34.1)	50 (36.5)	
Location (study site)			.86
Louisiana	65 (48.2)	68 (49.6)	
Northern California	69 (51.1)	67 (48.9)	
Rurality ^c			.81
Rural	82 (60.7)	78 (56.9)	
Suburban	20 (14.8)	23 (16.8)	
Urban	33 (24.4)	36 (26.3)	
Current living situation			.64
Living alone	53 (39.3)	48 (35.0)	
Living with spouse or partner	65 (48.2)	67 (48.9)	
Living with friends, parents/family of origin, roommates/housemates, or other	17 (12.6)	22 (16.1)	
Current employment status			.99
Employed full-time	50 (37.0)	48 (35.0)	
Employed part-time	10 (7.4)	10 (7.3)	
Unemployed; looking for work	10 (7.4)	11 (8.0)	

(Continues)

TABLE 1 (Continued)

	Control N = 135 (%)	Intervention N = 137 (%)	P value
Retired/student/ disabled /other	65 (48.2)	68 (49.6)	
VA service connection status			.95
Nonservice connected	38 (28.2)	39 (28.5)	
Service connected	97 (71.9)	98 (71.5)	
Personal income, last year			.34
None	3 (2.2)	6 (4.4)	
< \$10,000	13 (9.6)	9 (6.6)	
\$10,000-\$25,000	38 (28.2)	41 (29.9)	
\$25,001-\$50,000	53 (39.3)	45 (32.9)	
\$50,001-\$75,000	18 (13.3)	29 (21.2)	
≥\$75,001	10 (7.4)	7 (5.1)	
Medicaid insurance used, past 6 months	19 (14.1)	19 (13.9)	.21
Medicare used, past 6 months	29 (21.5)	35 (25.6)	.17
Private insurance used, past 6 months	33 (24.4)	38 (27.7)	.31

^aRace and ethnicity have missing values in the intervention arm: 0.7%.

^bOther race refers to American Indian or Alaskan Islander, Asian, Mixed Race, Native Hawaiian or Pacific Islander, and other.

^cBased on location of VA clinic where participant received care at time of study enrollment.

MH treatment, in this largely rural veteran sample, most MH care was within primary care, followed by MH clinics and receiving "psychiatric medication." Adjusted Cox proportional hazards regression (Table 5) confirmed no independent differences between the 2 arms with regard to MH treatment initiation (hazard ratio: 1.10, 95% CI: 0.76-1.59, $P = .60$), after adjusting for site, MH treatment history, baseline MH symptom severity, baseline opioid and amphetamine scores, and readiness for MH treatment. Of note, the only positive independent association with MH treatment initiation was greater MH symptom severity. Table 6 shows that there were also no significant between-group differences regarding engagement in nonclinician-directed MH treatment. Figure 3 summarizes the proportion of participants in each arm initiating self-care activities during follow-up. Compared with controls, more participants in the intervention arm engaged in MH-related Internet or mobile self-help applications (61% vs 47%, $P = .002$) and MH-focused community classes (23% vs 12%, $P = .02$).

Self-reported MH screen scores and quality of life domain scores were captured at 8 and 16 weeks (Table 7). Varying numbers of participants did not complete assessments at these 2 time points, resulting in missing values. Nevertheless, as shown in Table 7, compared with controls, intervention participants had significantly lower depression scores (9.4 vs 11.1, $P = .01$) and cannabis scores (3.1 vs 4.6, $P = .01$). PTSD score data were available in 100 controls and 79 intervention

TABLE 2 Mental health (MH) characteristics at baseline by treatment group

	Control N = 135 (%)	Intervention N = 137 (%)	P value
Quality of life (QOL) scores (range: 4-20) Mean (SD) (higher scores indicate better QOL)			
Physical health	11.9 (3.3)	12.0 (3.7)	.89
Psychological health	13.0 (2.5)	13.3 (3.1)	.25
Social relationships	12.6 (3.9)	13.0 (4.2)	.36
Environment	14.2 (2.9)	14.6 (2.9)	.21
Mental health screen results			
Depression			.12
None	11 (8.2)	24 (17.5)	
Mild	39 (28.9)	40 (29.2)	
Moderate	69 (51.1)	61 (44.5)	
Severe	16 (11.9)	12 (8.8)	
Anxiety			.30
None	15 (11.1)	20 (14.6)	
Mild	61 (45.2)	68 (49.6)	
Moderate	42 (31.1)	29 (21.2)	
Severe	17 (12.6)	20 (14.6)	
Panic			.66
None	64 (47.4)	75 (54.7)	
Mild	40 (29.6)	34 (24.8)	
Moderate	20 (14.8)	17 (12.4)	
Severe	11 (8.2)	11 (8.0)	
PTSD			.60
None	37 (27.4)	48 (35.0)	
Mild	29 (21.5)	26 (19.0)	
Moderate	47 (34.8)	44 (32.1)	
Severe	22 (16.3)	19 (13.9)	
High-risk alcohol use			.79
None	105 (77.8)	103 (75.2)	
Mild	11 (8.2)	14 (10.2)	
Moderate	12 (8.9)	15 (11.0)	
Severe	7 (5.2)	5 (3.7)	
Cannabis use			.07
None	110 (81.5)	107 (78.1)	
Mild	18 (13.3)	29 (21.2)	
Moderate	6 (4.4)	1 (0.7)	
Severe	1 (0.7)	0 (0)	
Amphetamines use			.50
None	134 (99.3)	137 (100)	
Mild	1 (0.7)	0 (0)	

(Continues)

TABLE 2 (Continued)

	Control N = 135 (%)	Intervention N = 137 (%)	P value
Moderate	0 (0)	0 (0)	
Severe	0 (0)	0 (0)	
Amphetamine score	0.5 (1.7)	0.2 (0.9)	.04
Opioid use			.34
None	131 (97.0)	136 (99.3%)	
Mild	1 (0.7)	0 (0%)	
Moderate	1 (0.7)	0 (0%)	
Severe	2 (1.5)	1 (0.7%)	
Opioid score	0.9 (4.0)	0.2 (2.5)	.01
Other substance use ^a			.26
None	128 (94.8)	133 (97.1)	
Mild	4 (3.0)	0 (0)	
Moderate	2 (1.5)	2 (1.5)	
Severe	1 (0.7)	2 (1.5)	
Barriers to MH treatment; mean (SD) (range: 1-5; 5 indicates greatest barriers)			
Logistical	2.34 (0.72)	2.31 (0.65)	.92
Stigma	2.28 (0.97)	2.24 (0.85)	.90
Beliefs	2.37 (0.95)	2.36 (0.91)	.84
Readiness ruler (range: 0-10)			
Importance of MH treatment now	5.85 (3.56)	5.15 (3.12)	.05
Confidence in getting MH treatment now	6.32 (3.35)	5.87 (3.44)	.28
Readiness for MH treatment now	6.90 (3.42)	6.16 (3.32)	.04

^aOther substance use includes cocaine, inhalants, sedatives, hallucinogens, and other.

participants who endorsed a prior trauma, and in follow-up, the average PTSD score was significantly lower in the intervention group than control group (25.1 vs 29.7, $P = .03$). There were also significant differences in quality of life domain scores between the 2 groups with intervention participants demonstrating significantly higher scores in psychological health (13.4 vs 12.7, $P = .004$), social relationships (13.3 vs 12.1, $P = .003$), and environment domains (14.4 vs 13.6, $P = .004$).

Qualitative findings from the implementation-focused evaluation

Exit interviews were conducted with 25 participants in the telephone motivational coaching arm who did (64%) and did not (36%) engage in MH treatment. Of these, 84% were men, 52% resided in Northern California, and 48% resided in Louisiana. Participants

reported the following specific benefits from veteran peer-delivered motivational coaching sessions: help with problem-solving, gave suggestions for helpful and practical resources (eg, free or low-cost local and community-based resources, as well as web- or telephone-based resources), and encouragement and accountability with goals. Participants also reported that veteran peers asked and cared about their MH and were less judgmental than the MH professionals they had encountered in the past. For example, one participant reported, "To me it was actually kind of therapeutic to talk to someone about it all. Just having that person available to talk to, to learn stuff, someone who is able to talk to you as real person... Just kind of, relaxing—no judgment, no biases, to me it was really calming." Finally, participants described an intervention delivered by telephone as more convenient than driving long distances to receive in-person care. In sum, these qualitative data suggested that the veteran peers may have achieved a therapeutic effect through the motivational coaching intervention.

Motivational interview treatment fidelity

The mean length of recorded telephone MI peer coaching sessions was 20.1 min (SD = 10.8 min). Average MI global ratings ranged from 3.0 to 3.6, indicating "fair" fidelity to MI. Of note, "partnership" was the highest of the MI global ratings. Rates of MI-inconsistent responses (eg, persuade and confront) were low across all coded sessions. Coded sessions included an average of 1.7 MI-consistent responses (eg, affirm and emphasizing control) and 9.8 reflections per session, with 70% of the reflections coded as complex reflections. Thus, veteran peers were rated as fair in their MI techniques and skills throughout their coded sessions; the sessions being MI-informed, as intended (Table 8).

DISCUSSION

The COACH trial tested a veteran peer-delivered telephone motivational coaching intervention to improve MH treatment initiation among veterans who primarily used rural VA health care facilities and screened positive for MH symptoms but were not in MH care; which, to our knowledge, is the only study of its kind. No significant differences were found between groups in clinician-directed MH treatment initiation (primary outcome), nor in MH treatment retention. Notably, however, veterans randomized to the intervention were significantly more likely than controls to demonstrate modest improvements in several secondary outcomes, including MH symptoms, quality of life indicators, and self-care. Qualitative findings may explain how achieving these secondary MH and quality of life outcomes in the intervention arm may have paradoxically obviated veterans' need to engage in more formal MH treatment.

Both participant- and intervention-related factors may explain the lack of difference observed between the 2 groups regarding MH treatment engagement. First, rural veterans prefer to address MH concerns on their own terms (eg, engaging in self-care activities), largely influenced by geography and culture, as opposed to engaging in traditional MH treatment.^{33,34} In addition, stoicism, self-reliance, and

TABLE 3 Baseline MH treatment and self-care activities, past 5 years

	Control N = 135 (%)	Intervention N = 137 (%)	P value
Received any MH treatment, counseling, or support	114 (84.4)	115 (83.9)	.99
Types of MH treatment, counseling, or support			
Primary care	40 (29.6)	49 (35.8)	.50
MH clinic-individual or group	72 (53.3)	71 (51.8)	.83
Substance abuse treatment, individual or group	12 (8.9)	8 (5.8)	.50
Inpatient psychiatric treatment	5 (3.7)	5 (3.7)	.75
Psychiatric medication (ie, antidepressants)	83 (61.5)	80 (58.4)	.77
Counseling by social worker	18 (13.3)	18 (13.1)	.96
Counseling by chaplain or other religious person	10 (7.4)	6 (4.4)	.37
Marital, relationship, or family counseling	7 (5.2)	12 (8.8)	.44
Self-help group (eg, 12-step groups)	5 (3.7)	9 (6.6)	.50
Internet/mobile MH treatment application	10 (7.4)	9 (6.6)	.67
Telephone MH counseling program	16 (11.9)	10 (7.3)	.26
Research study	4 (3.0)	7 (5.1)	.61
Self-care activities			
Internet/mobile self-help applications	54 (40.0)	66 (48.2)	.39
Community groups (eg, church and hiking groups)	49 (36.3)	43 (31.4)	.61
Community classes (eg, dancing and cooking)	21 (15.6)	23 (16.8)	.95
Complementary integrative health (eg, acupuncture)	39 (28.9)	44 (32.2)	.79
Other self-care activities (eg, deep-breathing and fishing)	119 (88.1)	112 (81.8)	.34

TABLE 4 Clinician-directed mental health (MH) engagement, descriptive unadjusted outcomes

	Control N = 135 (%)	Intervention N = 137 (%)	P value
Initiated MH treatment (first visit) ^a	62 (45.9)	61 (44.5)	.82
≥2 MH treatment visits (retention) ^b	55 (40.7)	51 (37.2)	.55
MH treatment types ^b :			
Primary care (MH concern addressed)	41 (30.4)	40 (29.2)	.49
MH clinic-individual or group	36 (26.7)	33 (24.1)	.48
Substance abuse treatment-individual or group	8 (5.9)	3 (2.2)	.17
Inpatient psychiatric treatment	0 (0)	2 (1.5)	.17
Counseling by social worker	10 (7.4)	9 (6.6)	.49
Marital, relationship, or family counseling	6 (4.4)	10 (7.3)	.26
Psychiatric medication	31 (23.0)	32 (23.4)	.46
Number of MH visits (Mean, SD)	6.6 (9.6)	4.4 (4.6)	.17

^aPrimary outcome data supplemented with VA administrative data (Corporate Data Warehouse).^bSelf-report only.

preference for community, family, and peers (as opposed to outside MH treatment) may have presented barriers to MH treatment engagement among rural veterans not observed in prior similar studies of urban-dwelling veterans.^{13,36} Regarding the intervention, while other studies have employed MH professionals to deliver MI,^{16,17} this study trained peer veterans to conduct motivational coaching. MITI scores demonstrated fair fidelity to MI, raising the question of whether the primary

outcome may have been enhanced by stronger adherence to MI principles. Additionally, intervention participants received a mean of 2.6 of 4 motivational coaching sessions, suggesting that dose may have been attenuated, although other studies with fewer doses of MI have achieved treatment engagement.¹⁸

Nevertheless, this study achieved overall enhanced MH treatment engagement in all participants, likely through components common

TABLE 5 Adjusted Cox proportional hazards regression for time to MH treatment initiation reported as hazard ratios (HR)^a

	HR (95% CI)	P value
Intervention versus control	1.10 (0.76-1.59)	.60
Baseline amphetamine score	0.94 (0.81-1.10)	.47
Baseline opioid score	1.00 (0.95-1.05)	.98
Site: California versus Louisiana	1.16 (0.80-1.67)	.43
MH treatment history: experienced versus naïve	1.36 (0.77-2.40)	.29
MH symptom severity: severe versus moderate	1.57 (1.07-2.31)	.02
Readiness for MH treatment now	1.05 (0.99-1.12)	.08

^aAfter adjustment for significant differences between groups and stratification variables.

TABLE 6 Unadjusted self-reported nonclinician-directed MH treatment

	Control N = 135 (%)	Intervention N = 137 (%)	P value
Self-help group (eg, 12-step)	8 (5.9)	4 (2.9)	.27
Internet/mobile application treatment or support	6 (4.4)	11 (8.0)	.20
Either of the above	14 (10.4)	13 (9.5)	.49

TABLE 7 Unadjusted MH and quality of life domain scores after baseline at 16 weeks by treatment group during follow-up (by 16 weeks)

	Control N = 135 ^a Mean (SD)	Intervention N = 137 ^a Mean (SD)	P value
Depression score*	11.1 (6.5)	9.4 (6.2)	.01
Anxiety score	1.3 (0.8)	1.2 (0.9)	.19
Panic score	0.7 (0.9)	0.6 (0.9)	.21
PTSD score*	29.7 (16.7)	25.1 (18.4)	.03
Tobacco score	9.2 (10.0)	8.8 (9.5)	.73
Alcohol score	7.7 (8.6)	7.1 (7.7)	.46
Cannabis score*	4.6 (6.7)	3.1 (4.8)	.01
Amphetamine score	0.7 (2.5)	0.3 (1.6)	.07
Opioid score	0.9 (3.8)	0.5 (2.7)	.24
Other substances score (averaged) ^b	0.42 (0.86)	0.28 (0.84)	.19
Physical health	12.0 (3.1)	12.6 (3.7)	.06
Psychological health*	12.7 (2.5)	13.4 (2.8)	.004
Social relationships*	12.1 (3.8)	13.3 (3.9)	.003
Environment*	13.6 (2.6)	14.4 (2.5)	.004

^aNumbers of participants with missing data vary at follow-up time-points: up to 26 in the control arm and 46 in the intervention arm.

^bOther substances include cocaine, inhalants, sedatives, hallucinogens, and others.

*Between-group comparisons are significantly different (all P values < .05).

across both study arms, for example, multiple MH assessments, feedback of MH results, and personalized treatment referrals by veteran peers. These findings align with studies which have demonstrated that assessment of substance use alone is associated with significant reductions in use, known as “assessment reactivity.”^{37,38} Similar to our study, Walker et al found that repeated assessment for alcohol abuse followed by a single session of telephone-delivered MI versus psychoeducation (no MI) were both associated with increased treatment-seeking in soldiers with untreated alcohol abuse, pinpointing repeated assessment as a key ingredient.³⁹

The between-group descriptive analyses for the secondary outcomes demonstrated that veteran peer motivational coaching resulted in improved MH symptoms, reduced cannabis use, improved quality of life scores, and encouraged self-care activities compared to controls as observed in another study.³¹ This finding may be explained by the fact that “partnership” was the highest of the peers’ MITI global ratings. Self-disclosure about their experiences (which was encouraged) may have explained the higher partnership scores, although self-disclosure is not measured by the MITI.^{32,40} Nonclinician peers were specifically selected as study interventionists for this trial because rural veterans are known to prefer and trust insiders over “outside experts.”¹³ Qualitative exit interviews did suggest that the veteran peers achieved a therapeutic effect themselves, possibly through partnership and relatability, in their delivery of the motivational coaching intervention. For example, one study participant explained, “When she opened up that she was a veteran, I think it made me - I let my guard down a lot more. It gave me more freedom to express myself and actually talk.”

Another consideration is that greater MH symptom severity (shown to be independently associated with MH treatment engagement in this study), and hence perceived need for MH treatment, is a major driver of MH treatment engagement.^{41,42} Thus, as veteran peers achieved secondary outcomes of improved MH symptoms, quality of life, and increased self-care through motivational coaching, they may have paradoxically reduced veterans’ need for formal MH treatment engagement, perhaps explaining our findings in this trial. For example, one participant described the veteran peer coach as helping them, “catch it quickly, without it getting so out of hand that I have to call somebody for mental health. That was—to me—the highlight of all this.”

This trial had several limitations that should be considered in interpreting results. First, as evidenced by the CONSORT diagram (Figure 2), veterans enrolling in the trial were likely a biased sample as roughly half who were assessed for eligibility declined to participate. However, this attrition is not wholly unexpected because administrative data were used for recruitment. Second, the sample was largely White, male, and VA service-connected (received VA health care at no cost), so findings may not generalize to veterans of color and nonveteran populations. Third, there was large loss to follow-up among rural veterans (about 1/3 sample in each arm), but reasons for drop-out (needs met or not met by the study) are not known. Fourth, fidelity to the MI component of the intervention, intended to enhance MH treatment engagement, may have been supplanted by veteran peers’ “peeriness” or relatability, which may

TABLE 8 Motivational Interviewing Treatment Integrity (MITI 4.2) global ratings and behavior counts for intervention participants

Variables (range)	N = 98 Mean (SD)	% Agreement between coders ^b	MITI basic competence thresholds
Global ratings (1-5 scale)^a			
Cultivating change talk (2-5)	3.05 (0.70)	47.8% exact 47.8% within one score	3
Softening sustain talk (1-4)	2.98 (0.63)	60.9% exact 30.4% within one score	3
Partnership (2-5)	3.59 (0.68)	43.5% exact 52.2% within one score	3.5
Empathy (1-5)	3.27 (0.77)	43.5% exact 56.5% within one score	3.5
Behavior counts	Mean (SD)	ICC	
Giving information (0-16) ^c	5.30 (3.41)	.72	
Persuade (0-4) ^d	0.16 (0.52)	.47	
Questions (0-36)	13.24 (7.60)	.96	
Simple reflections (0-11) ^e	3.01 (3.15)	.62	
Complex reflections (1-16) ^f	6.83 (4.15)	.52	
Percent complex reflections (0-1) ^g	0.70 (0.24)	.67	40%
Reflection to question ratio (0-3.6) ^h	0.90 (0.64)	.85	1:1
Total MI adherent (0-6) ⁱ	1.74 (1.57)	.41	

^aGlobal ratings are measured on 1-5 scale, with higher numbers indicating stronger adherence.

^bPercent exact match and within one score are presented and may not sum to 100% as scores within 2+ are not included in table.

^cThis category quantifies information statements that are presented to the participant in a neutral way (ie, not directing or giving advice).

^dPersuade statements are MI-nonadherent statements that offer advice or solutions.

^eSimple reflections are statements that repeat or rephrase what the participant has said.

^fComplex reflections are statements that amplify or add meaning to what the participant has said.

^gPercent complex reflections = complex reflections/(simple reflections + complex reflections).

^hReflection to question ratio = total reflections/total questions.

ⁱTotal MI adherent includes: affirm, emphasizing control, and seeking autonomy statements.

have favored the study's secondary outcomes. Future studies of peer coaching might consider using validated measures more sensitive to a patient coaching intervention such as the Patient Activation Measure.⁴³

In sum, veteran peer-delivered motivational coaching failed to achieve enhanced MH treatment engagement in rural veterans compared to control, yet veterans in both arms responded to MH assessment, feedback, and personalized referrals for MH treatment with higher rates of engagement in care than previously observed in this population. Among rural veterans with MH problems, peer coaching resulted in modest (but significantly) improved MH symptoms, quality of life indicators, and engagement in self-care activities, which may have mitigated perceived need for clinician-directed MH treatment. Further research is needed to explore this potential expanded therapeutic role for peer coaches, including risks, benefits, and cost-effectiveness.

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DISCLOSURES

None of the authors have anything to disclose. The views expressed here are solely those of the authors and do not reflect those of the Department of Veterans Affairs.

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