Randomized Clinical Trial of Brief Primary Care–Based Mindfulness Training Versus a Psychoeducational Group for Veterans With Posttraumatic Stress Disorder

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ABSTRACT

Objective: Individuals with posttraumatic stress disorder (PTSD) symptoms are often reluctant to engage in traditional mental health care but do seek primary care services. Alternative strategies are needed to develop emotional regulation skills among individuals with PTSD symptoms. This study examined the feasibility and effectiveness of Primary Care Brief Mindfulness Training (PCBMT) compared to a psychoeducational group for reducing PTSD symptoms.

Methods: Primary care patients (n = 55) with *DSM-5* PTSD symptoms but not engaged in PTSD psychotherapies were randomized to 4-week PCBMT or a PTSD psychoeducation group (EDU). Both groups were cofacilitated by mental health providers and veteran peer specialists. Between January 2019 and March 2020, assessments were completed at baseline, post-treatment, and 16- and 24-week follow-up.

Results: PCBMT participants had significantly larger decreases in PTSD symptoms from pre- to post-treatment ($d = 0.57$) and depression from pre-treatment to 16- and 24-week follow-ups ($d = 0.67, 0.60$) compared to EDU. PCBMT participants also reported significantly greater improvements in health responsibility ($d = 0.79$), stress management ($d = 0.99$), and not feeling dominated by symptoms ($d = 0.71$). Both interventions resulted in the majority of participants "stepping up" to a higher level of PTSD care.

Conclusions: Brief mindfulness training is effective for reducing psychiatric symptoms and improving broader recovery outcomes and health promoting behaviors. For individuals who are not yet willing to engage in trauma-focused PTSD treatment, PCBMT may be preferable and more effective than psychoeducational classes as preliminary treatments. Further research is needed to confirm the effectiveness of PCBMT in a larger sample and investigate factors that will support wider implementation in primary care settings.

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Posttraumatic stress disorder (PTSD) is prevalent (2%–39%) and debilitating among primary care populations.[1] PTSD is associated with higher rates of comorbid physical and mental health conditions, impaired functioning, and higher rates of health care utilization.[1] Given the considerable burden to individual and public health imposed by PTSD, research to identify a range of effective and acceptable interventions is warranted.

Research on mindfulness-based interventions for PTSD has increased in recent years. Mindfulness, "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment,"[2] encompasses 5 core components: (1) observation of experience, (2) describing and labeling experience, (3) non-reactivity to experience, (4) non-judgmental acceptance, and (5) acting with awareness.[3,4] Mindfulness-based skills may directly target key PTSD symptoms.[5,6] For example, enhanced attentional control can increase mastery over intrusive thoughts and shift attention toward self-regulation. Also, present-centered focus may reduce rumination and foster nonjudgmental acceptance of emotions, which, in turn, can improve emotion regulation and decrease avoidance behaviors, shame, and guilt.[7,8]

While clinical practice guidelines for PTSD report insufficient evidence for mindfulness approaches,[9] recent reviews support the efficacy of mindfulness interventions to reduce PTSD symptoms in randomized controlled trials.[5,6,10] Most research has focused on Mindfulness Based Stress Reduction (MBSR), which involves 8 weekly, 2.5-hour groups and 1 full-day retreat.[11] Time burden has been cited as a participation barrier, and recent trials report suboptimal attendance.[12–14] Early research on briefer mindfulness interventions suggests that shorter programs may have lower attrition and can reduce PTSD symptom severity.[15,16]

Brief mindfulness programs can also facilitate engagement with the mental health treatment system and traditional trauma-focused PTSD psychotherapies. Stigma and avoidance of discomfort associated with direct confrontation of trauma memories prevent some individuals from engaging in treatment.[17–20] Delivery of mindfulness training in non–mental health settings (ie, primary care) can increase access to this modality. Integrated primary care (IPC) includes mental health providers who deliver brief treatments for mild-moderate behavioral health symptoms. Veterans Health Administration (VHA) also involves peer

Clinical Points

- Many primary care patients present with PTSD, yet few receive adequate mental health services.
- Brief, primary care–based mindfulness classes can reduce PTSD and depression symptoms among primary care patients.

specialists: veterans trained to use their lived experiences with mental illness to help other recovering veterans.[21] IPC settings broadly, and involving peer specialists specifically, may directly address treatment barriers by offering PTSD treatment in an accessible, lower-stigma environment.[22–26] When combined with the destigmatizing benefits of mindfulness interventions and reduced time burden of brief adaptations, a brief mindfulness intervention delivered in IPC may offer a palatable, first-stage treatment option for individuals hesitant to address their PTSD.

Initial reports from the development of Primary Care Brief Mindfulness Training (PCBMT), a brief (ie, 4 weekly 90-minute classes) mindfulness training for veterans with PTSD, showed support for its feasibility, acceptability, and efficacy and areas for refinement.[27,28] Participants who attended mindfulness classes experienced greater decreases in PTSD and depression severity compared to participants receiving primary care treatment as usual,[28] however, attendance in PCBMT classes was suboptimal. The current study incorporated veteran peers as cofacilitators alongside mental health providers to increase participant engagement. PCBMT content also benefited from mental health provider and peer stakeholder input to make content more trauma-sensitive.

The purpose of this study is to (1) report on the feasibility of delivering the adapted PCBMT intervention including facilitator fidelity and patient satisfaction and (2) evaluate the efficacy of an adapted PCBMT in reducing PTSD and depression severity compared to a PTSD psychoeducation control group (EDU). We hypothesized that PCBMT would be associated with greater reductions in PTSD and depression severity compared to EDU. We also assessed the intervention's impact on broader recovery orientation and health promoting behavior outcomes and post-intervention mental health treatment utilization.

METHODS

The trial is registered at ClinicalTrials.gov (identifier: NCT03352011). This study was approved by the local VA institutional review board.

Participants

Primary care patients at 3 VHA facilities were recruited between January and November 2019. Inclusion criteria were significant PTSD symptoms (qualifying criterion A traumatic event and ≥ 31 on the PTSD Checklist-5). Exclusion criteria were (1) gross cognitive impairment, (2) past-month suicide attempt or intent, (3) PTSD treatment outside of VHA primary care in the last 2 months (ie, psychotherapy or medication change), or (4) participant preference for specialty mental health referral.

Procedures

Veterans were referred from their primary care team or identified with a case-finding procedure: study staff used electronic medical record data to identify patients with positive annual PTSD screenings or a PTSD diagnostic code at a recent primary care visit who were not currently engaged in PTSD treatment. For patients identified via case-finding, the study team asked primary care providers if a recruitment letter could be sent. Following the introductory letter, patients were called and invited to complete a baseline research assessment via phone or in-person, per patient preference.

The baseline session began with informed consent followed by administration of the measures below. Eligible participants were then randomized in equal proportions to PCBMT or EDU using a stratified permuted block design. Stratification consisted of 2 levels of PTSD severity using a cut-point (PCL-5 = 40). Post-treatment assessment occurred upon completion of the assigned intervention (mean = 8.63 weeks post-baseline, SD = 4.05, range = 4–23 weeks). Follow-up assessment occurred 16 and 24 weeks post-baseline. Participants received $25 per assessment ($100 total). All assessments were done via Qualtrics, unless the participant preferred paper administration. Staff were unblinded for post-baseline assessments.

Measures

A self-report measure assessed demographics and military background. PTSD, depression, recovery orientation, and health promoting behaviors were measured at all 4 timepoints. The PTSD Checklist-5 (PCL-5) is a 20-item self-report measure that asks respondents to rate past-month distress related to *DSM-5* PTSD symptoms and has good reliability and validity.[29] This measure was administered with the extended assessment of traumatic events to ensure that reported symptoms were related to a traumatic event that meets *DSM-5* criteria. Sample internal consistency reliability ranged from 0.81–0.94. The Patient Health Questionnaire-9 (PHQ-9) assesses 9 symptoms of depression on a 4-point scale and has good reliability and validity.[30] Sample internal consistency reliability ranged from 0.81–0.94.

Two measures assessed the interventions' impact beyond symptom reduction. The Recovery Assessment Scale (RAS) is a 24-item self-report measure that assesses recovery, including living a hopeful, satisfying, contributing life not limited by illness[31] with 5 subscales: personal confidence and hope; willingness to ask for help; goal and success orientation; reliance on others; and no domination by symptoms. It has good concurrent validity.[32] Sample internal consistency reliability ranged from 0.89–0.95. The Health-Promoting Lifestyle Profile II (HPLP) is a self-report

Figure 1. Primary Care Brief Mindfulness Training Core Activities

Class 1	Welcome and Class Overview	Class 3	Check-in and Discussion of Home Practice
	Grounding Meditation		Opening 15-Minute Sitting Meditation
	Awareness of Breath Discussion and Exercises		STOP (Stop, Take a breath, Observe, Proceed)
	What Is Mindfulness? The Waterfall Metaphor		Loving Kindness Meditation
	Mindful Eating: Chocolate Eating Exercise		Intro to Mindful Walking (for home practice)
	Body Scan		Wrap-up and Homework
	Wrap-up and Homework		
Class 2	Check-in and Discussion of Home Practice	Class 4	Check-in and Discussion of Home Practice
	Opening Grounding Meditation		Discussion: Making this Practice Your Own
	Overview of Stress Response		Sitting Meditation
	RAIN (working with bodily sensations)		Yoga
	Yoga Stretches		Body Scan
	Body Scan		Closing Ceremony and Meditation
	Wrap-up and Homework		

measure assessing behaviors that support healthy lifestyles.[33] Twenty-five items from 3 subscales were administered health responsibility (ie, personal accountability for their own well-being, including paying attention to and educating themselves about health, and exercising informed consumerism when seeking professional assistance), stress management (ie, mobilization of resources to effectively manage tension), and spiritual growth (ie, development of inner resources to experience balance and purpose). This measure is valid and sensitive to change following behavioral interventions.[33] Sample subscale internal consistency reliability ranged from 0.75–0.84.

Treatment satisfaction was measured with the Client Satisfaction Questionnaire (CSQ-8) post-treatment. The CSQ-8 is reliable and correlates well with global improvement measures.[34] Internal consistency was good in the current sample ($\alpha = .88$).

Post-intervention treatment utilization (eg, number of mental health sessions) was primarily measured via VHA medical records and supplemented by self-report of treatment outside of VHA.

Intervention Conditions

PCBMT is a brief, manualized intervention adapted from MBSR (Figure 1). PCBMT consists of four 90-minute group classes (360 total minutes) cofacilitated by a mental health provider (psychologist or social worker) and a veteran peer specialist. Instruction encompasses sitting meditation, body scan, moving meditation, gentle yoga, and group processing of in-class experiences. At-home practice between sessions is encouraged and guided by simple checklists.

Facilitator training consists of 32 hours of training over 3 phases led by a certified MBSR trainer. In Phase 1, trainees participate in the 4 classes of PCBMT as students. Phase 2 is 3 days of didactic instruction and experiential practice leading exercises. Phase 3 is four 2-hour training classes in which trainees lead components of each class and receive feedback from the training facilitator.

Facilitators completed an 18-item fidelity checklist for each cohort (set of 4 classes). An independent rater also observed 1 class in each cohort to rate fidelity.

Prior to starting PCBMT, peer cofacilitators met one-on-one with participants for brief (~30 minute) meetings to guide PCBMT participants in completing the brief Personal Health Inventory (PHI).[35] Peer meetings aimed to increase patient engagement by helping participants identify personal health goals that aligned with their values and priorities. Completed PHIs were used by facilitators to help personalize the intervention. Peer facilitators also met with participants after the last PCBMT class to revisit health goals and connect participants to additional services, if needed.

EDU was the chosen comparator, as psychoeducational classes are commonly implemented in VHA as preparatory to PTSD treatment due to perceived positive effects on treatment engagement.[36,37] EDU provides a supportive environment for learning about PTSD and recovery options. Locally, these were called "PTSD 101" and were a treatment-as-usual service at study sites; they have not been empirically evaluated. EDU was co-led by a mental health provider and a peer specialist. No PCBMT facilitators delivered EDU. These classes had a 4-session format, but facilitators could opt to provide additional sessions for a specific cohort.

Analyses

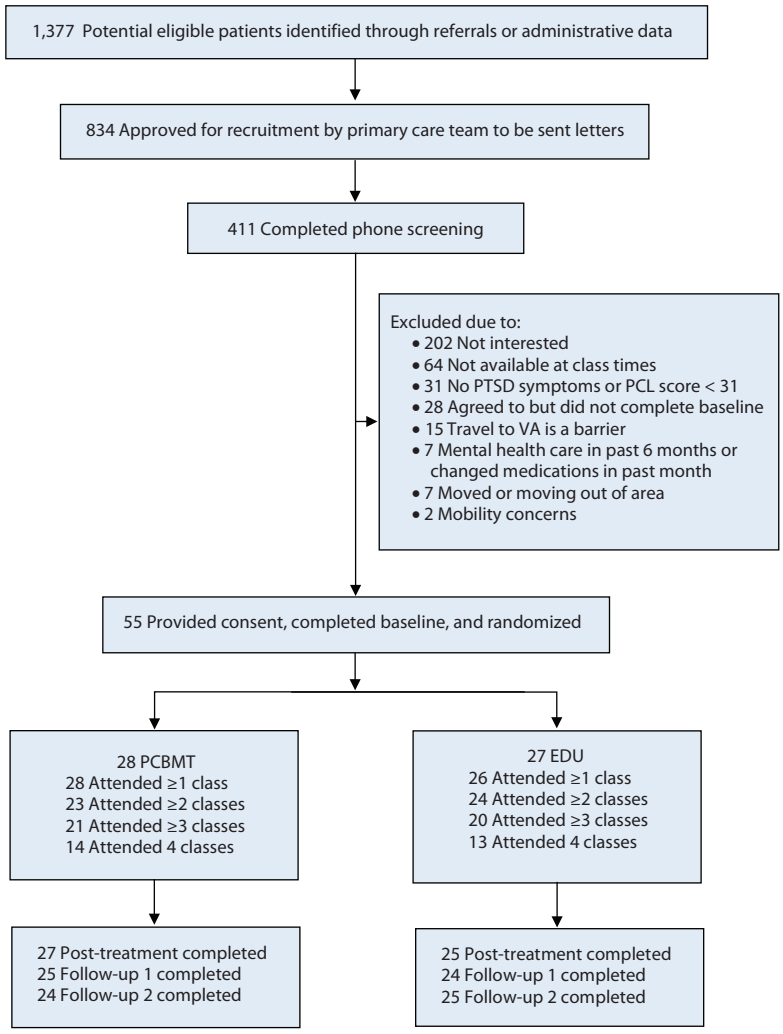
Outcomes collected at the 4 timepoints were analyzed using multilevel models. Random intercept and slope effects were included to accommodate within-participant dependency due to repeated measurements. Fixed effects included condition, time, and a cross-level condition × time interaction. Contrasts were written into the model to estimate means, standard errors, and a priori between-group comparisons from baseline to post-treatment and follow-up. A small number of missing items were imputed in less than 5 participants per measure and occasion using a single imputation via a fully conditional specification method.[38,39] No item-level imputation was performed in participants missing more than 25% of items. SAS 9.4 Proc Mixed and MI were used for analysis and imputation.

RESULTS

Feasibility, Fidelity, and Participant Satisfaction

Figure 2 details screening, enrollment, intervention allocation, and assessment completion. Table 1 describes sociodemographic characteristics. Participants ($N = 55$) were mostly White ($n = 47$, 85%) and men ($n = 48$, 87%),

Figure 2. CONSORT Diagram



Abbreviations: EDU = PTSD psychoeducation group, PCBMT = Primary Care Brief Mindfulness Training, PCL-5 = PTSD Checklist-5, PTSD = posttraumatic stress disorder, VA = Veterans Affairs.

with an average age of 56 years (SD = 14.46). No baseline characteristics differed by randomized condition except education: PCBMT participants had 1.3 more years of education ($P = .01$). Education was unrelated to outcomes. PCBMT and EDU classes were well-attended, with 75% (n = 21) and 74% (n = 20) of PCBMT and EDU participants, respectively, completing treatment (defined as completing at least 3 out of 4 classes). When the total PCBMT classes attended (Figure 2) were added with the pre- and post-class peer meetings, PCBMT participants attended an average of 4.61 (SD = 1.55) appointments. Because EDU participants were often offered more than 4 EDU classes, the average number of EDU classes attended was 5.11 (SD = 3.06). Assessment retention was high across both conditions, with 95% (n = 52) completing the post-treatment assessment and 89% (n = 49) completing follow-up assessments.

Five PCBMT cohorts were completed over a 12-month period. Of the 18 essential elements assessed across the 4 classes, facilitators indicated that 85/90 (94%) were enacted in the 5 cohorts overall. Interrater reliability between the facilitators' essential elements checklists and the independent rater's checklist was 100%, indicating that the facilitators accurately rated their own fidelity.

Participants who completed the post-treatment assessment reported high satisfaction in both conditions with no between-condition differences in overall satisfaction. Across both conditions 85% (n = 44) reported getting their desired services and being satisfied with the amount of services they received and 93% (n = 25) of PCBMT participants vs 84% (n = 21) of EDU participants reported the intervention helped them deal more effectively with problems.

Intervention Impact on Study Outcomes

Table 2 displays results from analyses of PTSD, depression, recovery orientation and health-promoting behaviors at 4 time points. PCBMT participants reported significantly larger mean decreases (9.86-point) on the PCL-5 from pre- to post-treatment compared to EDU participants (3.27-point

mean decrease), equating to a medium effect size ($d = 0.57$). PCBMT participants maintained PTSD symptom reduction through the follow-up period, reporting a mean decrease of 11.55 points at 24-week follow-up compared to a 6.15-point decrease among EDU participants ($d = 0.40$). PCBMT participants were also more likely to have a PCL-5 score below the clinical cutoff (> 31, n = 11) than EDU participants (n = 3) ($\chi^2_1 = 5.45$, $P = .02$) at follow-up. PCBMT participants also experienced significantly larger improvements in depression severity than EDU participants at the 16- and 24-week assessments ($d = 0.67$, 0.60), whereas EDU participants experienced slight increases in depressive symptoms over the course of the study.

PCBMT participants reported increased recovery orientation (RAS) compared to EDU participants from baseline to 24-week follow-up, which approached significance (Table 2). Explorations of subscales showed that PCBMT participants reported significantly larger improvements than EDU participants in the not being dominated by symptoms subscale from baseline to all follow-ups ($d = 0.80$, 0.71). PCBMT participants also reported significantly greater health-promoting behaviors (HPLP) from baseline to 24-week follow-up compared to EDU participants on all subscales: health responsibility ($d = 0.79$), stress management ($d = 0.99$), and spiritual growth ($d = 0.70$).

Table 1. Sociodemographic Characteristics of Participants

Characteristics	Total sample (N = 55)
Age, mean (SD), y	55.91 (14.46)
Education, mean (SD), y	15.45 (1.984)
Income, mean (SD), $	61,000 (34,646)
Gender	
Male	48 (87%)
Female	7 (13%)
Ethnicity	
Caucasian	47 (85%)
Native American	1 (2%)
African American	5 (9%)
Other	2 (4%)
Hispanic	3 (5%)
Marital status	
Married/partnered	38 (69%)
Non-married/partnered	17 (31%)
Employment	
Yes	14 (25%)
No	41 (75%)
Military branch	
Navy	8 (15%)
Marine	11 (20%)
Air Force	4 (7%)
Army	32 (58%)
Deployments	
OIF/OND Iraq	13 (24%)
Gulf War	8 (15%)
Vietnam	18 (33%)
Afghanistan	10 (18%)
Other wars	8 (15%)

Abbreviations: OIF = Operation Iraqi Freedom, OND = Operation New Dawn.

Table 2. Mean Estimates, Standard Error, and Effectiveness Testing of Outcomes From Multilevel Models

Measure	Intervention	Mean estimate (SE)			
		0 Weeks	8 Weeks	16 Weeks	24 Weeks
PTSD (PCL-5)	PCBMT	44.55 (2.03)[a]	34.68 (2.38)[a]	34.36 (2.81)	32.99 (3.27)
	EDU	47.03 (2.07)[a]	43.77 (2.45)[a]	42.71 (2.86)	40.89 (3.29)
Depression (PHQ-9)	PCBMT	11.71 (1.14)[b]	10.59 (1.10)	9.95 (1.13)[b]	9.12 (1.21)[b]
	EDU	12.41 (1.16)[b]	12.88 (1.13)	13.45 (1.15)[b]	12.98 (1.21)[b]
Recovery orientation: total (RAS)	PCBMT	84.21 (2.24)[c]	86.83 (2.33)	88.09 (2.56)	89.53 (2.88)[c]
	EDU	82.82 (2.29)[c]	81.11 (2.39)	78.97 (2.61)	82.35 (2.90)[c]
Recovery orientation: non-domination by symptoms (RAS)	PCBMT	8.57 (0.46)[d]	9.56 (0.46)[d]	9.82 (0.50)[d]	10.36 (0.56)[d]
	EDU	9.00 (0.47)[d]	8.44 (0.47)[d]	8.07 (0.56)[d]	8.56 (0.56)[d]
Health promotion: health responsibility (HPLP)	PCBMT	17.39 (0.78)[e]	19.82 (0.78)	24.58 (0.86)[e]	24.80 (1.00)[e]
	EDU	17.93 (0.70)[e]	19.96 (0.80)	21.51 (0.88)[e]	21.40 (1.00)[e]
Health promotion: stress management (HPLP)	PCBMT	17.29 (0.80)[f]	20.16 (0.82)[f]	24.22 (0.91)[f]	24.76 (1.03)[f]
	EDU	18.79 (0.81)[f]	19.35 (0.85)[f]	21.05 (0.92)[f]	20.99 (1.03)[f]
Health promotion: spiritual growth (HPLP)	PCBMT	21.21 (0.99)[g]	23.98 (1.00)	28.13 (1.10)[g]	28.78 (1.26)[g]
	EDU	21.82 (1.01)[g]	23.20 (1.03)	24.60 (1.12)[g]	24.31 (1.27)[g]

[a]PCBMT participants significantly improved more on PTSD severity than EDU participants from baseline to post-treatment ($t_{129} = 2.32$, $P = .02$).
[b]PCBMT participants significantly improved more on depression severity than EDU participants from baseline to 16 weeks ($t_{113} = 2.32$, $P = .02$) and 24 weeks ($t_{53.7} = 2.20$, $P = .03$).
[c]PCBMT participants marginally improved more on overall recovery orientation than EDU participants from baseline to 24 weeks ($t_{132} = -1.74$, $P = .08$).
[d]PCBMT participants significantly improved more on non-domination of symptoms than EDU participants from baseline to 8 weeks ($t_{130} = 1.55$, $P = .01$), 16 weeks ($t_{124} = 2.18$, $P = .002$), and 24 weeks ($t_{56.3} = 2.23$, $P = .008$).
[e]PCBMT participants significantly improved more on health responsibility than EDU participants from baseline to 16 weeks ($t_{111} = 3.61$, $P = .003$) and 24 weeks ($t_{53.5} = 3.93$, $P = .008$).
[f]PCBMT participants significantly improved more on stress management than EDU participants from baseline to 8 weeks ($t_{130} = 2.29$, $P = .04$), 16 weeks ($t_{122} = 4.66$, $P = .0002$) and 24 weeks ($t_{55.2} = 5.26$, $P = .0004$).
[g]PCBMT participants significantly improved more on spiritual growth than EDU participants from baseline to 16 weeks ($t_{96.9} = 4.14$, $P = .0009$) and 24 weeks ($t_{58.7} = 5.07$, $P = .002$).
Abbreviations: EDU = PTSD psychoeducation group, HPLP = Health Promoting Lifestyle Profile, PCBMT = Primary Care Brief Mindfulness Training, PCL-5 = PTSD Checklist-5, PHQ-9 = Patient Health Questionnaire-9, PTSD = posttraumatic stress disorder, RAS = Recovery Activation Scale.

Post Study Intervention Treatment Utilization

Mental health treatment between post-intervention (~8 weeks) to 24-week follow-up was common in both conditions and did not differ significantly ($P = .20$) with 54% (n = 15) of PCBMT participants and 70% (n = 19) of EDU participants initiating psychotherapy.

DISCUSSION

In this randomized controlled trial comparing PCBMT to a psychoeducational group, the large majority of primary care veterans with PTSD symptoms completed and were satisfied with treatment. PCBMT participants reported greater PTSD and depression symptom relief and improved wellness outcomes compared to EDU participants. Most participants in both conditions stepped-up to more intensive PTSD services when needed, although fewer PCBMT participants had clinically significant symptoms post-treatment and therefore may have had less need for additional services.

It is important to examine the magnitude of symptom decreases in this study. The 11.55-point decrease on the PCL-5 within the PCBMT condition is clinically meaningful,[29] and the between-group effect is medium, a smaller effect than is typically reported for full-length (12–16 sessions) trauma-focused PTSD treatments.[40] Notably, our participants were not willing to engage in trauma-focused treatments or any type of PTSD specialty care at the study's onset, but many were ready to step up to a higher level of PTSD care following 4 PCBMT classes. The 11.55-point drop in PTSD severity is comparable to or slightly larger than what has been reported in full-length MBSR (25 hours over 9 sessions) for veterans with PTSD (PCL change = 9.2 points).[41] Veterans in the full-length MBSR study had somewhat higher mean baseline PTSD symptom scores than our primary care sample, which may have impacted results. It is also possible that the clinical benefit of MBSR can be derived in many fewer hours of care (ie, 6 hours of care in this study). The use of veteran peer specialists as cofacilitators may have been another contributing factor to the larger reduction in PTSD severity in our PCMBT study.

The impact of PCBMT on broader transdiagnostic and wellness outcomes is also important. PCBMT participants experienced a small decrease in depressive symptoms, which constitutes a medium-large effect given the increased depression experienced by EDU participants. Therefore, our results indicated that PCBMT is more helpful in reducing depression symptoms than a psychoeducation class. PCBMT also helped veterans decrease the perceived interference of symptoms, which aligns with the emphasis on acceptance of internal experiences in mindfulness. It is not surprising that PCBMT had an impact on stress management (eg, helping participants feel they had the personal resources to manage tension) and spiritual growth (experiencing balance and positive growth) as the original intent of MBSR was stress management, and mindfulness emphasizes finding balance and equanimity. The impact on health responsibility is more surprising as PCBMT participants rated that they were more likely to talk to health professionals and seek counseling when necessary compared to EDU participants. It is possible that experiential mindfulness training helped participants reflect on their values and prioritize their health more than an EDU approach using didactic methods. In fact, the study's overall results may have been at least partially driven by the experiential methods of PCBMT that helped participants learn skills quickly rather than the information-giving approach used in EDU.

PCBMT appears highly feasible for mental health providers and peers to deliver and for primary care patients with PTSD to engage in. Our facilitators completed a much shorter local training program than is typically required to become a mindfulness facilitator, and this training enabled them to deliver PCBMT with high fidelity. Participants liked the intervention, as evidenced by the 75% treatment completion rate. A previous study[41] of MBSR among veterans found similarly high completion rates that stand in contrast to the much lower completion rates (~50%) reported by trials of trauma-focused treatments,[40] indicating that mindfulness interventions may be more palatable than trauma-focused treatment for some individuals. In addition, when mindfulness classes are used as a preparatory treatment, patient acquisition of emotional regulation skills has the potential to facilitate engagement with trauma-focused interventions. Our inclusion of peer facilitators may have contributed to high patient engagement as peers can help destigmatize treatment and serve as role models for trying new things. The role of the pre- and post-class peer contacts may have also impacted outcomes. Peers worked within the Whole Health framework to help participants set personal health goals, and this likely contributed to the recovery orientation outcomes.

Study results should be viewed considering strengths and limitations. We conducted a pragmatic clinical trial within real-world primary care clinics, with existing clinical staff as facilitators and few patient exclusion criteria. This enables generalization to other primary care settings, especially in VHA. However, some pragmatic design choices added variability into study procedures, such as our use of a treatment-as-usual psychoeducational comparison group, which was less structured and was not assessed for provider fidelity. In addition, our sample was small and most participants were older white men. More research is needed with larger, younger, and more diverse samples.

In conclusion, primary care patients with PTSD are willing to engage in brief mindfulness training classes, which are associated with decreases in PTSD and broader wellness outcomes compared to an active control. Preparatory treatments are commonly used to prepare individuals for PTSD treatment, and our findings suggest that preparatory approaches focused on experiential mindfulness activities may be preferable to didactic psychoeducation. The feasibility and clinical outcomes associated with PCBMT are likely attributable to several novel aspects of the

intervention: previously tailoring the content for veterans with PTSD (increasing fit), primary care location (increasing access), brevity (also increasing accessibility), and inclusion of peer facilitators (establishing trust and making classes more approachable). Thus, our findings demonstrate that it is possible for PCBMT participants to experience clinically significant improvements with fewer hours of care (ie, PCBMT 6 hours vs full MBSR 24 hours). This wide variety of benefits that PCBMT participants experienced indicates that this brief treatment could be examined as a transdiagnostic approach for general mental health distress in various medical settings.

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