

Factors Associated With Receipt of Cognitive-Behavioral Therapy or Prolonged Exposure Therapy Among Individuals With PTSD

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Objective: The aim of this study was to systematically review variables associated with initiation of trauma-centered cognitive-behavioral therapy (TC-CBT) among individuals with posttraumatic stress disorder (PTSD).

Methods: PubMed, PsycINFO, Web of Science, Published International Literature on Traumatic Stress (PILOTS), and Scopus were searched in a systematic manner up to 2018, and 26 relevant studies were recovered and analyzed.

Results: The average weighted initiation rate was 6% in larger hospital systems with a high rate of trauma and 28% in outpatient mental health settings (range 4%–83%). Older age (odds ratio [OR]=1.56, 95% confidence interval [CI]=0.51–1.61), female gender (OR=1.18, 95% CI=1.08–1.27), black or other racial-ethnic minority group (OR=1.16, 95% CI=1.03–1.28), Veterans Affairs PTSD service connection status (OR=2.30, 95% CI=2.18–2.42), mental health referral (OR=2.28, 95% CI=1.05–3.50), greater staff exposure to

TC-CBT (OR=2.30, 95% CI=2.09–2.52), adaptability of TC-CBT to staff workflow (OR=4.66, 95% CI=1.60–7.72), greater PTSD severity (OR=1.46, 95% CI=1.13–1.78), and comorbid depression (OR=1.21, 95% CI=1.14–1.29) increased the likelihood of TC-CBT initiation, whereas delayed treatment reduced the likelihood of TC-CBT initiation (OR=0.93, 95% CI=0.92–0.95). Qualitative studies showed that mental health beliefs (stigma and lack of readiness), provider organizational factors (low availability, privacy issues), and patient lack of time (logistics) were perceived as barriers to initiation by patients and providers.

Conclusions: TC-CBT initiation increased among patients who were older and female. Initiation was also higher among providers who had more exposure to TC-CBT in their work environment and when TC-CBT fit into their existing workflow.

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Posttraumatic stress disorder (PTSD) is a hallmark consequence of traumatic event exposure. It is as disabling as many other serious mental disorders and leads to a higher likelihood of suicidality (1). Trauma-centered cognitive-behavioral therapies (TC-CBTs) have been identified as the most effective treatments for PTSD (2). TC-CBTs have been shown to reduce PTSD symptoms (3) and sleep disturbances (4) and even improve quality of life (5). TC-CBTs include cognitive processing therapy (CPT) and prolonged exposure (PE) therapy, along with several other treatments. As the name suggests, trauma-centered interventions help individuals learn how to process and sort out their specific traumas and trauma memories, rather than only coping with associated symptoms or triggers.

The Veterans Health Administration (VHA), the largest PTSD treatment provider in the United States, has invested

heavily in expanding the use of two of the more well-known CBT interventions: CPT and PE (6). Implementation

HIGHLIGHTS

- Trauma-centered cognitive-behavioral therapies are some of the most effective treatments for posttraumatic stress disorder.
- Initiation of trauma-centered cognitive-behavioral therapies was low in large hospital settings but higher in outpatient mental health facilities.
- Initiation of trauma-centered cognitive-behavioral therapies was higher among organizations that invested in worker training and adapted these therapies into their current workflow.

efforts include didactic training, consultation, a mentoring program, clinical progress note templates, and the addition of evidence-based treatment coordinators at VHA facilities (7). Numerous data have demonstrated that, on average, veterans who complete evidence-based treatments in VHA facilities experience large reductions in symptoms (8).

Still, studies have demonstrated relatively modest increases in overall treatment seeking among those newly diagnosed with PTSD, increasing from 21% in 2004 to 27% in 2010 (9). This finding coincides with many studies of treatment initiation after traumatic exposure (10, 11). However, these same studies also have shown a lag time of approximately 7 years between trauma exposure and treatment seeking among service members (12, 13) and 12 years among civilians (14). Thus it appears that although those already engaged in mental health services can benefit from increased access to “gold standard” interventions, the availability of gold standard interventions may not significantly affect the overall demand or utilization among newly diagnosed individuals or those not already enrolled in mental health services.

It is also unknown what factors lead patients to seek TC-CBT interventions. Studies of behavioral health care utilization have commonly used some variation of a health service utilization prediction model (15). Andersen’s behavioral model of health services use (16) is one of the most widely acknowledged models of health service utilization. This multilevel model includes a combination of individual and contextual determinants of health service utilization. It is composed of factors predisposing individuals to health care utilization (demographic characteristics, social structure, mental health beliefs), factors enabling health care utilization (logistical issues, provider organizational structure and resources), and need factors (perceived need or health status). Past reviews of treatment after traumatic events showed an increased likelihood of initiation on the basis of level of psychiatric need (higher PTSD severity), the type of traumatic event (military for men and interpersonal trauma for women), and sociodemographic characteristics (age, employment status, race, education, and gender; 10, 11). However, mental health beliefs (stigma, understanding of PTSD) have played a major role in treatment seeking among individuals with PTSD (17).

Existing reviews have provided reports on initiation of nonspecific PTSD psychotherapy (18–20). However, it is not known whether the factors influencing treatment initiation for mental health services more generally are the same for TC-CBT treatments. Therefore, we systematically reviewed the literature to determine the rate of TC-CBT treatment initiation and factors increasing the likelihood of initiation.

METHODS

Procedure

A four-step search strategy, which included identification, screening, eligibility, and inclusion, was used to identify peer-reviewed articles. We identified articles from five

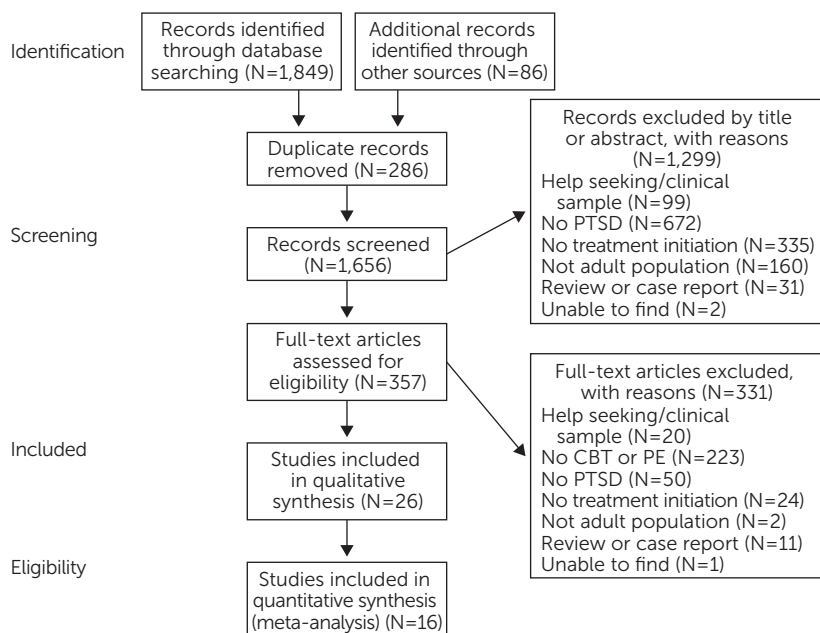
different databases (PubMed, Web of Science, PsycINFO, Published International Literature on Traumatic Stress [PILOTS], and Scopus; coverage up to September 2018) using the following keywords: “help seeking,” “utilization,” “posttraumatic stress disorder” or “PTSD,” “trauma,” “violence,” “victim,” “crime,” “combat,” “rape,” and “war.” Among the articles found through this search, we reduced eligible articles by filtering on “behavioral health” or “mental health.” Review studies were located through database searches and were also searched to identify articles that may have been missed through electronic databases. As shown in Figure 1, after removing duplicate studies, seven of the 13 authors (CVC, RM, SS, JB, RG, MO, and JAP) analyzed titles and abstracts of all studies identified and excluded articles that were irrelevant. Exclusion criteria consisted of clinical trials in which all patients had at least one TC-CBT encounter, studies that did not include individuals with PTSD or individuals who could make decisions about who is offered TC-CBT treatments, studies without adult participants, review studies, case reports, and studies that we were unable to find.

Next, three of the 13 authors (CVC, RM, and RG) analyzed the full-text versions of all remaining studies for the inclusion criteria of TC-CBT initiation. TC-CBT treatments included initiation of treatments in the 2018 U.S. Department of Veterans Affairs–Department of Defense (VA-DoD) *Clinical Practice Guideline for the Management of PTSD* (2), such as more generic CBT, CPT, PE, brief eclectic psychotherapy, narrative exposure therapy, eye movement desensitization and reprocessing therapy, and written narrative exposure. As shown in Figure 1, out of 1,935 articles identified through search databases and review studies as potentially relevant, 357 were given full-text reviews, 26 of which fulfilled inclusion criteria. We were able to quantitatively assess factors associated with increased TC-CBT treatment initiation in 16 of the 26 studies.

Data Analysis

We used Downs and Black’s (21) checklist to evaluate the quality of studies. We selected this checklist because it can be used to measure methodological quality of both randomized and nonrandomized studies. After evaluating for quality, we calculated a weighted mean for treatment initiation (weighted for sample size) and assessed other characteristics of the studies, including age, percentage of the sample that was male, and percentage that met criteria for PTSD diagnosis. Next, we followed Andersen’s behavioral model of health services use and identified all predisposing, enabling, and need variables. Last, to determine the relationship between predisposing characteristics, enabling resources, need factors, and use of CPT and PE initiation, we computed odds ratios (ORs) and 95% confidence intervals (CIs) for 16 of the 26 studies. For 10 of the studies, only descriptive or qualitative data were available, which precluded calculating ORs. The Stata user-written code, “METAN,” was used to calculate pooled ORs (weighted for

FIGURE 1. PRISMA diagram of the process for including peer-reviewed articles in a systematic review of factors associated with receipt of trauma-centered cognitive-behavioral therapy (CBT) for PTSD^a



^a PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; PE, prolonged exposure.

sample size) and consistency (i^2) if more than one study was identified (22).

RESULTS

Quality of Studies

There are 27 items for use in Downs and Black's (21) quality assessment tool, and four of the items are relevant only for randomly assigned trials. Because no eligible study used randomization, the scale of quality ranged from 0 to 23. The mean \pm SD weighted quality was 13.5 ± 1.0 (range 7–17), and the median quality was 13. A cutoff of 15 was established for high-quality studies, and additional subanalysis was performed on this sample. Of the 26 studies included in the qualitative synthesis, 10 had high risk of bias when clearly describing participants, 15 had high risk of bias when describing distribution of confounds, 11 had high risk of bias when utilizing representative samples, and 14 had high risk of bias when adjusting for confounding variables (see online supplement).

Participants

Nineteen studies included VA patients with PTSD (23–41), one included National Guard veterans (42), one included Iraq war service members from the United Kingdom (43), and five included civilian patients (44–48) (Table 1) (see online supplement). Almost half of the studies (N=12) utilized some version of a retrospective chart review. Usually, these studies relied primarily on medical record data, but four studies (31, 32, 35, 40) included reviews of VA chart

progress notes for key terms related to TC-CBT treatment in VA PTSD clinics.

Seven studies used cross-sectional surveys. Mott and colleagues (33) recruited participants through TC-CBT-trained therapists at the VA to determine which characteristics led to initiation of either CPT or PE (28, 41). Three of the other cross-sectional studies focused on patient choice between PE and selective serotonin reuptake inhibitors (SSRIs; 44, 45, 47) as well as between dialectical behavior therapy and PE (46). Two studies used qualitative methods exclusively (27, 42), and one study provided rates of initiation preferences that were expressed by patients before randomization (24).

The 26 eligible studies involved 716,851 participants, most of whom were diagnosed as having PTSD (weighted mean = $97.8\% \pm 5.9\%$, range 80%–100%). Of the participants in the studies, $86.9\% \pm 1.7\%$ (range 0%–98.3%) were male; almost all participants were in the military or were veterans. Participants in five studies were not members of the military, 0.12% of the total sample (44–48). Participants tended to be middle aged (mean age = 40.0 ± 5.8 , range 28–51.9; seven studies did not contain aggregated age data). Of the 17 studies that provided racial information on participants (N=290,017), about $63.3\% \pm 23.0\%$ of participants were white (range 17%–94% [N=16 studies]), $27.6\% \pm 14\%$ were black (range 13%–50% [N=12]), $2.8\% \pm 1.8\%$ were Asian (range 1.3%–4.8% [N=3]), $11.6\% \pm 8.7\%$ were Hispanic or Latino (range 2%–33% [N=10]), and $1\% \pm 0.9\%$ were Native American (range 0.6%–1.9% [N=2]). Five of the studies reporting racial information included only dichotomous information on white ($79.8\% \pm 16\%$) versus other racial groups (N=4), or black (14%) versus other racial groups (N=1). All but two studies used U.S. populations.

Initiation of TC-CBT Treatments

Only CBT, CPT, and PE were systematically tracked in the 26 studies. Twenty-three out of the 26 studies provided real-time rates of initiation of either CPT or PE (Table 2). Overall, treatment initiation averaged $40.0\% \pm 28.5\%$ (range 4%–83%). However, when we weighted the results for sample size, the amount of treatment initiation dropped significantly (weighted mean = $6.2\% \pm 5.0\%$). Treatment initiation rates were slightly higher among outpatient mental health specialty clinic studies (these patients had been referred to specialty anxiety, PTSD, or CBT clinics; weighted mean = $27.9\% \pm 13.8\%$, range 6%–82%) compared with hospital or community studies (weighted mean = $5.8\% \pm 3.6\%$, range 4%–83%). Hospital and community settings included primary care or emergency care. Patients were generally recruited through flyers, received a chart review diagnosis,

TABLE 1. Characteristics of the 26 studies that met eligibility criteria for inclusion in the review^a

Study	N	Sample	Dates	Design	Treatment	Outcomes
Baker et al., 2015 (23)	156	Veterans with PTSD	2008–2012	Retrospective chart review	PE, CBT	Initiation, completion of PE and CBT
Chen et al., 2013 (44)	200	Treatment-seeking civilians with chronic PTSD	2012–2013	Cross-sectional survey	PE	Preference for PE versus SSRIs
DeViva et al., 2017 (24)	182	Veterans with PTSD	2012–2015	RCT, retrospective chart review	CPT, PE	Initiation, education group
Feeny et al., 2009 (45)	74	Women recruited through ads for PTSD treatment	2008–2009	Cross-sectional survey	PE	Preference for SSRIs versus PE
Grubbs et al., 2015 (25)	133	Rural veterans with PTSD	2013–2015	Retrospective chart review	CPT	Initiation, engagement with CPT
Harned et al., 2013 (46)	46	Women with PTSD and BPD	2012–2013	Cross-sectional survey	PE	Preference for DBT or DBT + PE
Hundt et al., 2018 (26)	201	Veterans with PTSD	2015–2016	Retrospective chart review	PE, CPT	Initiation with PE/CPT
Hundt et al., 2018 (27)	24	Veterans with PTSD who declined PE and CPT	2015–2016	Qualitative	PE, CPT	Initiation with PE/CPT
Iversen et al., 2010 (43)	821	U.K. Iraq war military	2003	Cross-sectional survey	CBT, medications	Initiation, engagement with CBT, medications
Kehle-Forbes et al., 2014 (42)	58	National Guard veterans	2013	Qualitative	PE, SSRIs	Preference for PE versus SSRIs
Kehle-Forbes et al., 2016 (28)	427	Veterans with PTSD	2010–2012	Retrospective chart review	CPT, PE	Initiated PE and CPT, dropped out of PE and CPT
Keller & Tuerk, 2016 (29)	324	Veterans with PTSD	2015	Cross-sectional survey	PE, CBT	PE and CBT noninitiation
Lamp et al., 2014 (30)	476	Veterans with PTSD	2013	Retrospective chart review	PE, CPT	PE and CPT interest and initiation
Lu et al., 2016 (31)	63	Veterans with PTSD	2008	Content analysis	PE, CBT	Receipt of PE and CBT
Maguen et al., 2018 (32)	2,960	Veterans with PTSD	2001–2015	Retrospective chart review, content analysis	PE, CPT	Receipt of PE and CPT, N of sessions
Mott et al., 2014 (33)	796	Veterans with PTSD	2008–2012	Retrospective chart review, content analysis	PE, CBT	Initiation and completion of PE and CBT
Rosen et al., 2017 (34)	61,128	Veteran patients of clinicians trained in PE	2015–2016	Longitudinal survey	PE	Reach and maintenance of PE
Shalev et al., 2012 (47)	397	ER trauma patients in Jerusalem	2003–2007	Cross-sectional survey	CBT, PE	Initiation, preference for PE versus SSRIs
Shiner et al., 2013 (35)	1,924	Veterans with PTSD	2009–2010	Retrospective chart review, content analysis	PE, CBT	Use of PE and CBT
Shiner et al., 2018 (36)	13,473	Veterans with PTSD	2014–2016	Retrospective chart review	PE, CPT	Use of EBP templates
Sripada et al., 2018 (37)	270,277	Veterans with PTSD	2015–2016	Retrospective chart review	PE, CPT	Use of EBP templates
Sripada et al., 2018 (38)	273,694	Veterans with PTSD	2015–2016	Retrospective chart review	PE, CPT	Use of EBP templates
Stecker et al., 2013 (41)	143	Veterans with PTSD	2009–2012	Cross-sectional, qualitative	CBT	CBT noninitiation
Tuerk et al., 2013 (39)	60	Veterans with PTSD	2007–2009	Retrospective chart review	PE	Completed minimum PE sessions
Watts et al., 2014 (40)	1,924	Veterans with PTSD	2009–2010	Retrospective chart review	PE, CBT	N of veterans who received PE and CBT
Zayfert et al., 2005 (48)	115	Civilian patients of an anxiety clinic	2002–2004	Cohort, longitudinal	CBT	Initiation and completion of CBT

^a PE, prolonged exposure; CBT, cognitive-behavioral therapy; SSRIs, selective serotonin reuptake inhibitors; RCT, randomized controlled trial; CPT, cognitive processing therapy; BPD, borderline personality disorder; DBT, dialectical behavior therapy; EBP, evidence-based psychotherapy.

TABLE 2. Utilization of trauma-centered cognitive-behavioral therapy (TC-CBT) and other characteristics of 26 studies that met eligibility criteria for inclusion in the review

Study	Setting	Participants			Utilization of TC-CBT (%)
		Male (%)	Average age	Diagnosis of PTSD (%)	
Baker et al., 2015 (23)	VA PTSD clinic	90.4	46.7	100.0	58.0
Chen et al., 2013 (44)	PTSD treatment study	25.0	37.4	100.0	61.0
Deviva et al., 2017 (24)	VA PTSD clinic	93.0	48.5	100.0	34.0
Feeny et al., 2009 (45)	Convenience	0	31.8	100.0	82.0
Grubbs et al., 2015 (25)	VA clinic	88.7	51.9	100.0	55.0
Harned et al., 2013 (46)	behavioral therapy clinic	0	34.0	100.0	67.0
Hundt et al., 2018 (26)	VA PTSD clinic	79.3	43.7	100.0	42.0
Hundt et al., 2018 (27) ^a	VA PTSD clinic	79.0	44.6	100.0	0
Iverson et al., 2010 (43)	VHA	90.0	34.0	79.7	7.3
Kehle-Forbes et al., 2014 (42)	Military	98.3	35.4	100.0	53.0
Kehle-Forbes et al., 2016 (28)	VA PTSD clinic	84.1	46.4	100.0	82.0
Keller and Tuerk, 2016 (29)	VA PTSD clinic	77.0	42.9	100.0	43.2
Lamp et al., 2014 (30)	VA PTSD clinic	93.9	48.6	100.0	43.7
Lu et al., 2016 (31)	VA PTSD clinic	89.0	35.3	100.0	13.0
Maguen et al., 2018 (32)	VHA	90.0	35.5	100.0	20.1
Mott et al., 2014 (33)	VA PTSD clinic	90.0	46.6	87.9	11.0
Rosen et al., 2017 (34)	VHA clinicians				12.0
Shalev et al., 2012 (47)	ER in Jerusalem	54.0	38.0	100.0	72.0
Shiner et al., 2013 (35)	VHA	93.0	53.0	100.0	6.0
Shiner et al., 2018 (36)	VHA	88.8		100.0	28.0
Sripada et al., 2018 (37)	VHA	87.0		100.0	4.0
Sripada et al., 2018 (38)	VHA	87.0		100.0	4.0
Stecker et al., 2013 (41) ^a	VHA	84.0	28.0	100.0	0
Tuerk et al., 2013 (39) ^a	VA PTSD clinic	95.0	41.4	100.0	100.0
Watts et al., 2014 (40)	VA PTSD clinic	93.0	53.0	100.0	6.0
Zayfert et al., 2005 (48)	Anxiety clinic	18.0	37.8	100.0	83.0

^a Not counted in analysis of utilization of TC-CBT.

or (to our knowledge) either received a general mental health service referral or received no referral.

Predisposing, Enabling, and Need Variables Related to Initiation of TC-CBT

Predisposing characteristics, enabling resources, and need factors related to initiation of TC-CBT were identified in 21 studies (Table 3). Pooled effect sizes for each variable are reported in Table 4.

Predisposing characteristics. As shown in Table 3, five (29, 33, 36–38) of nine quantitative studies that examined the effects of age on initiation of TC-CBT found age to be significantly related to initiation, and two (30, 33) of three quantitative studies that examined the effects of military era status on initiation of TC-CBT showed that military era significantly affected initiation. Two (36, 38) of eight quantitative studies that examined the effects of gender on initiation of TC-CBT found that female gender was associated with initiation of trauma-centered therapy.

As presented in Table 4, pooled data from studies that examined the same variable showed that older age (OR=1.56, [N=9 studies]), Vietnam veteran era (OR=1.58 [N=3]), female gender (OR=1.18 [N=8]), black or other racial-ethnic minority group (OR=1.16 [N=9]), and interest in trauma-centered treatment (OR=2.13 [N=1]) increased the likelihood of TC-CBT initiation among individuals.

As noted previously, several studies provided participants with the opportunity to choose between PE and other treatment alternatives and then prompted them to justify their choices. When it came to utilization of PE, National Guard veterans in Kehle-Forbes et al.'s (42) study were concerned about not being able to develop trusting relationships with their providers, especially providers who had not seen combat.

Stecker et al. (41) showed similar findings, with more concern over stigma and readiness than logistic issues. VA patients stated fear of being labeled a “crazy vet” and extensive fear of consequences, which included loss of future deployments, loss of security clearances, and adverse actions from commanding officers. One veteran said that his VA doctor informed him that if he got treatment for PTSD he would no longer be eligible for a kidney donation. The VA doctor explained to him that the VA did not want to pay for kidney transplants for individuals at risk of suicide.

Several other studies also focused more heavily on knowledge and beliefs about TC-CBTs and providers. Kehle-Forbes et al. (42) found that the overwhelming theme was whether veterans actually believed TC-CBT treatments were credible treatments that could help them. There were additional concerns about emotional intensity of treatments and perceived side effects (31). About 13% of veterans in Keller and Tuerk's (29) study preferred SSRIs, and about 6.5% felt that they were not ready for TC-CBTs.

TABLE 3. Predisposing, enabling, and need factors affecting utilization of trauma-centered cognitive-behavioral therapy (TC-CBT) for PTSD

Factor	Qualitative themes ^a	Quantitative variables ^b
Predisposing		
Demographic characteristics	None	Age (N=5), race (N=2), marital status (N=1), military era (N=2), gender (N=2)
Mental health beliefs	Concerns about stigma (N=2), denial that treatment is necessary (N=2), readiness (N=2), trust and alliance with therapist (N=3), fear of repercussions related to military career (N=1), preference for psychopharmacology approaches (N=1), interest in trauma-centered therapies (N=2), credibility of treatment and perceived efficacy (N=1), emotional intensity of treatment (N=2), perceived side effects (N=2), timing of symptom relief (N=1), perception of VA (N=1)	Prior group psychotherapy (N=1), interest in trauma-centered therapies (N=1)
Enabling		
Logistic issues	Time (N=4), affordability (N=2), distance (N=2), poor therapeutic relationship (N=2), redeployment and contracts (N=1)	Affordability (N=1), PTSD service connection (N=3)
Provider Organizational structure and resources	Training of providers (N=1), timing of discussion of treatment options with providers (N=2), consistency of providers (N=1), concerns about privacy (N=3), negative experiences with VA (N=1)	Clinical exposure to prolonged exposure (PE) and cognitive-behavioral therapy (CBT) (N=2), referral source (N=2), access to PE and CBT champions (N=1), provider training (N=2), clinician believes PE effective, workflow for patients with PTSD (N=2), region (N=1), gender of clinician (N=1), race of clinician (N=1)
Need	Clinical priorities (i.e., suicidality, substance dependence) (N=1), crisis (N=1), remission (N=1)	PTSD severity (N=3), comorbid depression (N=3), delay in treatment (N=2), length of stay (N=1)

^a Five studies identified themes related to the effect of various factors on use of TC-CBT. Ns in parentheses indicate the number of studies fitting this result.

^b Sixteen studies identified variables associated with use of TC-CBT. Ns in parentheses indicate the number of studies fitting this result.

Enabling resources. Enabling resources included logistic issues and organizational setting. Table 3 shows that in quantitative studies of treatment initiation, affordability (33), PTSD service connection (33, 38, 49), greater clinical exposure to TC-CBT in the work environment (34, 38, 40), referral source (mental health provider, not primary care provider; 29, 34), and provider access to TC-CBT champions (40) were associated with higher levels of TC-CBT initiation. Overall, pooled data from studies that examined the same variable showed that greater access to treatment (i.e., VA service connection; OR=2.30 [N=3]), mental health rather than primary care referral source (OR=2.28 [N=2]), staff exposure to TC-CBTs (OR=2.30 [N=3]), and adaptability of TC-CBT to staff workflow (OR=4.66 [N=2]) increased the likelihood of TC-CBT initiation.

The major logistic theme was lack of time to devote to treatment (29, 31, 41, 42) (Table 3). Across studies, veterans reported that they often had a substantial amount of family, deployment, and financial constraints that consumed a large percentage of their time. They had trouble getting off work to get to scheduled appointments or driving to VA locations, which were sometimes a long distance away. The monetary cost associated with taking time off from work and driving long distances was also a reported concern (31, 42). Deployment and contract rotations among active duty service members and military contractors (31), and the need to

sometimes relocate, reduced the flexibility needed to plan TC-CBT treatments effectively.

Among veterans, there were also substantially negative perceptions about the VA more generally (27). Concerns included staff turnover and providers' ability to ensure privacy (31, 42). For instance, some patients said that VA providers informed them about the limitations of privacy during the initial session, including limitations to confidentiality of active duty service members' treatment status (31).

Need factors. Three of the eight studies examining PTSD severity (25, 33, 48), four of the nine studies examining comorbid depression (36, 38, 48), two of the five studies examining substance misuse (26, 36), and all of the studies of delayed treatment (33, 38) were significantly associated with TC-CBT treatment initiation. When studies were pooled, PTSD severity (OR=1.46 [N=6]) and comorbid depression (OR=1.21 [N=9]) increased the likelihood of TC-CBT treatment initiation among individuals. Nevertheless, when treatment was delayed after an initial diagnosis of PTSD (i.e., patients waited to seek any type of mental health treatment after initial referral), patients were less likely to ever utilize TC-CBTs (OR=0.93 [N=2]).

Fewer qualitative studies examined need and perceived need. However, Lu et al. (31) conducted content analysis of process notes contained in electronic medical records and found that need played a prominent role (e.g., crisis events

TABLE 4. Pooled effect sizes of studies that predicted utilization of TC-CBT for PTSD, by predisposing, enabling, and need factors^a

Factor	Total N	Studies (N)	Average OR	95% CI	Weighted OR	95% CI
Predisposing						
Demographic characteristic						
Age	645,407	9	1.67	1.08 to 2.90	1.56	1.51 to 1.61
Vietnam era (reference: other military era)	964	3	1.48	.75 to 3.21	1.58	1.00 to 2.15
Female gender (reference: male)	288,848	8	1.13	.61 to 2.49	1.18	1.08 to 1.27
Black or other race-ethnicity (reference: white)	288,470	9	1.38	.47 to 12.65	1.16	1.03 to 1.28
Married (reference: unmarried)	496	4	1.22	.62 to 2.82	1.44	.87 to 2.00
Income	116	2	1.78	.37 to 9.08	1.52	-1.19 to 4.89
High school diploma or higher (no high school diploma)	406	4	.86	.32 to 3.07	.99	.32 to 1.66
Mental health belief ^b						
Concerns about stigma	58	1	8.18	.95 to 70.44	8.18	.95 to 70.44
Readiness for treatment (reference: ambivalence)	58	1	.32	.03 to 3.74	.32	.03 to 3.74
Side effects	58	1	.14	.02 to 1.37	.14	.02 to 1.37
Preference for medication	58	1	.06	.01 to .23	.06	.01 to .23
Previous psychotherapy	274,206	5	1.67	.90 to 3.47	1.01	1.01 to 1.02
Trauma-centered interest	476	1	2.13	1.37 to 3.30	2.13	1.37 to 3.30
Enabling						
Motivators						
Disability claim (reference: none)	133	1	2.01	.38 to 10.65	2.01	.38 to 10.65
Logistic issues						
Time	58	1	3.12	.94 to 10.36	3.12	.94 to 10.36
Relocation	58	1	1.38	.12 to 16.26	1.38	.12 to 16.26
Affordability	58	1	2.96	.31 to 28.57	2.96	.31 to 28.57
VA service connection (reference: no service connection)	631,067	3	1.89	1.31 to 3.22	2.30	2.18 to 2.42
Organizational structure						
Mental health referral source (reference: primary care)	61,452	2	2.09	1.22 to 3.86	2.28	1.05 to 3.50
Staff training	76,849	4	1.29	1.02 to 1.72	1.19	.64 to 1.70
Staff exposure	693,796	3	2.70	2.15 to 3.83	2.30	2.09 to 2.52
Adaptability of TC-CBT to workflow	63,052	2	3.13	1.78 to 5.56	4.66	1.60 to 7.72
Need						
PTSD severity	1,890	8	1.51	1.02 to 2.47	1.46	1.13 to 1.78
Amount of time treatment delayed	274,490	2	1.67	1.13 to 2.63	.93	.92 to .95
Comorbid depression (reference: none)	288,486	9	1.62	.91 to 3.53	1.21	1.14 to 1.29
Comorbid substance misuse (reference: none)	287,562	5	1.64	.93 to 3.37	1.01	.96 to 1.07

^a The analysis included 16 studies (25, 27–30, 33, 34, 36–38, 40, 42, 44–46, 48).

^b Except where indicated, the reference group is the absence of the belief.

motivated treatment interest and remission reduced the likelihood of initiation). These process notes also showed that severe need could change clinical priorities. For example, when a veteran with PTSD became suicidal or developed substance dependence, then treatment needed to shift from TC-CBT approaches to treatments intended to stabilize suicidality or addiction.

Findings From Subgroups of High-Quality Studies

Seven (25, 28–30, 36, 37, 48) out of the 16 quantitative studies examining factors associated with initiation of TC-CBT had a quality score of 15 or more (total sample size, N=646,121; sample range, N=115–630,746). Five of these studies used

the outpatient psychiatric specialty clinics as a setting. The mean treatment initiation rate from high-quality studies was higher (unweighted average percentage=51.1±30.8; weighted average percentage=9.3±4.6). Of the seven high-quality studies, participants on average were older (weighted mean=45.7±4.5), and similar numbers of participants were female (males, 87.0%±2.0%). Importantly, all participants in the seven high-quality studies had PTSD. High-quality studies assessed the relationship between initiation of TC-CBT and age (N=4), gender (N=5), race (N=4), marital status (N=1), education (N=1), military era (N=2), previous psychotherapy (N=1), referral status (N=1), service connection (N=1), staff exposure (N=1), staff training (N=1), PTSD

severity (N=5), depression (N=4), and substance misuse (N=1). Older age (OR=1.83, 95% CI=1.76–1.89), blacks and other minority racial-ethnic groups (OR=0.87, 95% CI=0.78–0.97), Vietnam era (OR=1.67, 95% CI=1.12–2.22), service connection (OR=2.30, 95% CI=2.18–2.42), greater staff exposure to TC-CBTs (OR=2.26, 95% CI=2.18–2.34), greater staff training (OR=1.61, 95% CI=1.43–1.79), depression (OR=0.85, 95% CI=0.77–0.93), and substance misuse (OR=1.23, 95% CI=1.12–1.35) were significantly associated with TC-CBT treatment initiation in the seven high-quality studies.

Heterogeneity of Predictors

Heterogeneity was high among many of the predictors of TC-CBT initiation and may be the result of variation between larger, high-powered studies and smaller, low-powered studies (see online supplement). When just the seven high-quality studies were included in the analysis, heterogeneity (i^2) was reduced to 0% for gender, 0% for race, 0% for military era, and 15.2% for staff training, but it still remained high for age, PTSD severity, and depression. High heterogeneity in age, PTSD severity, and depression may be explained by high number of studies with opposing direction of association. For example, of the eight studies that examined the relationship between PTSD severity and initiation of TC-CBT, two showed that PTSD severity reduced initiation, whereas the remaining six studies showed that PTSD severity increased TC-CBT initiation. Some of the studies, such as Mott et al. (33) and Zayfert et al. (48), showed a very large effect of PTSD severity, whereas other studies showed very small effects.

DISCUSSION AND CONCLUSIONS

Of the over 249 studies of mental health treatment utilization of individuals with PTSD, only 26 examined treatment initiation of TC-CBTs. Reports of initiation ranged from 4% to 83%, with weighted average referral rates of 28% by outpatient clinics and 6% by hospital settings. All but five of these studies focused on military or veteran populations, and almost all of the participants were men.

The mean rate of initiation of TC-CBT (6% in hospital settings, 28% in outpatient mental health settings) was similar to studies using the VA National Patient Care database (9), which showed that psychotherapy initiation (not limited to of TC-CBT) was around 22% in 2007 and 27% in 2010. Rates of initiation were higher during wartime among service members (ranging from 23% to 40%; 12, 13). The majority of the studies also examined the rate of initiation after referral to a specialty PTSD or anxiety clinic. Thus initiation of PTSD treatment may mean a choice between TC-CBTs and other types of treatment offered through VA PTSD clinics (medication only, anger management, mindfulness training, or stress inoculation therapy).

Although some predisposing factors (age and military era) and need factors (PTSD severity, depression) showed a

higher trend in initiation, overall, there was substantial heterogeneity of study designs and measures. Qualitative studies of treatment initiation revealed the role of stigma and the ambivalence many veterans felt about whether to actually get therapy and whether they could endure the side effects.

Patients were enabled by a combination of their own ability to time treatment according to already existing priorities, responsibilities, and providers' organizational constraints. For example, veteran patients often needed to manage the timing of their military service, deployment, and employment responsibilities with the constraints of VA providers—including the availability of consistent therapists—and the ability to take time off work to attend counseling sessions. Concerns about privacy were a constraining factor, especially because studies mostly included military populations. Many VA patients feared that a mental health provider would alert their commanding officer and thus damage their military career prospects.

For active duty service members, utilization of the VA is also complicated because they are technically not eligible for VA health services until they separate from the military (50). Military health care (TRICARE) requires that active duty service members either use military treatment facilities for mental health care or acquire a referral (50). These referrals are not always necessary because of VA and military sharing agreements. Regardless, general medical and mental health information is still shared between the military and other mental health providers, including the VA and community-based agencies. The sharing of data between mental health providers and the military likely increases active duty members' concerns about privacy.

Studies showed that organizational factors, such as provider TC-CBT training, provider workflow compatibility with TC-CBT, and consistent use of TC-CBT by providers, significantly enabled initiation. Variations in these practices may explain a significant amount of the variation in initiation between different studies in different organizational settings. Given the complexities of reporting evidence-based practice uptake in real-world settings and the range of methods of determining initiation (general scan of medical records, probing process notes, recruiting trained workers), it is clear why initiation rates vary so much from study to study.

Another complexity includes the role of providers themselves, who inform individuals with PTSD about evidence-based practices. According to the studies by Cook et al. (51) and Hamblen et al. (52), many providers hesitated to use interventions that activate fear memory with patients because of concerns that they would not be able to handle this type of therapy. This may explain why we found that delayed treatment was associated with lower rates of initiation and that comorbid substance misuse also lowered rates.

The concerns among treatment providers about patient readiness should be examined more thoroughly, especially given the decades of data indicating that TC-CBTs are

extremely safe. It is unclear, for example, whether providers are willing to change their minds about patients and whether they believe these same patients would be ready in the future (and if so, when). It is also unclear, except in a few of the qualitative studies, how providers in other specialties (primary care, internal medicine, nursing, cardiology) talk about mental health services with patients, what factors lead to their willingness to make referrals to mental health services, and whether electronic medical record notes influence the discretionary behavior of mental health providers.

The VA-DOD guidelines for PTSD, and VA in general, have encouraged shared decision making. A challenge is balancing what a predictive model might reveal about what a patient wants, given what is available for him or her. This process is particularly challenging when effect sizes of these various predictors tend to be rather small. In theory, it would appear that an avenue for improvement would be focused in the area of enabling factors. It seems that organizational factors are the more obvious choice for improvement because providers are better able to intervene in their organizational setting.

Accordingly, the VA, as well as organizations that serve civilian populations, would see benefits from putting resources into TC-CBT leadership champions, provider training, and provider-protected clinical time to deliver TC-CBT to ensure more consistent initiation in mental health clinics. The VA could also use these strategies to improve care coordination with larger health systems and local military bases. Yet organizational change assumes that the organization has access to unlimited capacity and that the organization has influence over its task environment (the system in which it delivers services). The VA has been under substantial pressure to reduce wait times for specialty consultations and to respond to crisis events (especially suicide) in the past 5 years (53). This task may impair successful organization change focused on increasing the number of patients initiating TC-CBT.

This study had limitations worth noting. As stated previously, our findings drew heavily from military and veteran samples and thus may not be generalizable to nonmilitary populations who are traumatized. In their review of mental health seeking among individuals exposed to trauma, van den Berk Clark and Patterson Silver Wolf (11) noted that trauma type varied by gender. Most of the intimate violence studies featured mostly women, whereas most of the military studies featured mostly men. Studies we reviewed also relied heavily on VA administrative data. These trends, to some extent, limits the analysis because the VA currently does not have precise identifiers for specific TC-CBTs offered and does not show takeup by patient. Thus studies tended to use different approaches for measuring TC-CBT initiation. The VA setting also has a much more developed system of TC-CBT dissemination than other types of health systems or community-based mental health providers. Organizational constraints and predictors may be different among these non-VA mental health providers.

There was significant heterogeneity for measures of time, setting, and methods of measurement of initiation even in studies in VA settings, which also makes it difficult to generalize across studies. All but two studies were done in the United States, so these results may also not be generalizable to individuals outside the United States. Thus we cannot definitively compute the percentage of patients with PTSD who initiate TC-CBT treatment, and we also cannot state conclusively that other factors may also increase the likelihood of initiation. Additional factors such as stigma, concerns about privacy, patients' perceived treatment readiness, timing of treatments, ability to manage the treatment regimen (nine to 12 weekly sessions over consecutive weeks), and availability and consistency of trained TF-CBT providers (low turnover; TF-CBT provider available for entire 12-week regimen) should also be examined using quantitative methods.

This study was novel because, unlike studies focused on generic mental health treatment initiation, we attempted to determine initiation of treatments and treatment regimens that have been found to be reliable in reducing PTSD symptoms. Providers who want to increase TC-CBT initiation should consider developing interventions that improve how both organizations and patients time and plan TC-CBT interventions. Future studies that combine VHA national-level data with data from county-level VA PTSD clinical sites across the nation are necessary to confirm initiation rates in VA facilities. In other words, it is necessary first to understand the rate of individuals referred to PTSD clinics and then to understand the rate of individuals within PTSD clinics who then initiate TC-CBTs. Furthermore, because only about 7% of the U.S. population is in the military (54), it is necessary for there to be more initiation studies in civilian populations. Such research will provide a more precise estimate of initiation and will clarify which factors increase the likelihood of initiation of interventions that are known to successfully treat PTSD.

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