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# Implementation of Psychotherapies and Mindfulness-based Stress Reduction for Chronic Pain and Chronic Mental Health Conditions: A Systematic Review

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**U.S. Department of Veterans Affairs**

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## PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted healthcare topics of importance to clinicians, managers, and policymakers as they work to improve the health and healthcare of Veterans. These reports help:

- Develop clinical policies informed by evidence;
- Implement effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- Set the direction for future research to address gaps in clinical knowledge.

The program comprises three ESP Centers across the US and a Coordinating Center located in Portland, Oregon. Center Directors are VA clinicians and recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Center Program. The Coordinating Center was created to manage program operations, ensure methodological consistency and quality of products, and interface with stakeholders. To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee composed of health system leadership and researchers. The program solicits nominations for review topics several times a year via the [program website](#).

Comments on this evidence report are welcome and can be sent to Nicole Floyd, Deputy Director, ESP Coordinating Center at [Nicole.Floyd@va.gov](mailto:Nicole.Floyd@va.gov).

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The findings and conclusions in this document are those of the author(s) who are responsible for its contents and do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. No investigators have any affiliations or financial involvement (eg, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

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In designing the study questions and methodology at the outset of this report, the ESP consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts.

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Operational partners are system-level stakeholders who have requested the report to inform decision-making. They recommend TEP participants; assure VA relevance; help develop and approve final project scope and timeframe for completion; provide feedback on draft report; and provide consultation on strategies for dissemination of the report to field and relevant groups.

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## ABBREVIATIONS TABLE

ACT	Acceptance and commitment therapy
AHRQ	Agency for Healthcare Research and Quality
aOR	Adjusted odds ratio
BDI	Beck Depression Inventory
BPI	Brief pain inventory
CASP	Critical Appraisal Skills Programme
CBT	Cognitive behavioral therapy
t-CBT	Telephone cognitive behavioral therapy
CBT-CP	Cognitive behavioral therapy for chronic pain
CBT-I	Cognitive behavioral therapy for insomnia
CBSST	Cognitive behavioral social skills training
CDC	Centers for Disease Control and Prevention
CFIR	Consolidated Framework for Implementation Research
CESD	Center of Epidemiological Studies Depression Scale
CI	Confidence interval
CM	Contingency management
CORE	VA Pain/Opioid Consortium of Research
CPT	Cognitive processing therapy
DBT	Dialectical behavior therapy
DoD	Department of Defense
EBP	Evidence based psychotherapy
EPC	Evidence-based Practice Center
ERIC	Expert Recommendation for Implementation Change
ESP	Evidence Synthesis Program
GP	General practitioner
HSR&D	VA Health Services Research and Development
IAPT	Improving Access to Psychological Therapies
KQ	Key Question
MET	Motivational enhancement therapy
MSBR	Mindfulness-based stress reduction
NHS	UK National Health Service
NR	Not reported
OCD	Obsessive-compulsive disorder
OR	Odds ratio
PE	Prolonged exposure therapy
PCL	PTSD Checklist
PCMHI	Primary Care Mental Health Integration
PCP	Primary care provider
PSOCQ	Pain Stages of Change Questionnaire
PTSD	Posttraumatic stress disorder
QALY	Quality-adjusted life years



QOL	Quality of life
RCT	Randomized controlled trial
RE-AIM	Reach, effectiveness, adoption, implementation, maintenance
RMDS	Roland-Morris Disability Scale
SD	Standard deviation
SUD	Substance use disorder
TEP	Technical Expert Panel
UC	Usual care
UK	United Kingdom
US	United States
VHA	Veterans Health Administration
WHYMPI-INT	West Haven–Yale Multidimensional Pain Inventory

## INTRODUCTION

Chronic pain conditions comprise 3 of the top 5 causes of disability in the United States (US) and contribute to other disabling conditions, such as opioid use disorder (ranked 8<sup>th</sup>).<sup>1</sup> In 2011-2012, chronic pain was estimated to affect at least 100 million US adults and to cost more than \$600 billion in treatment and lost productivity.<sup>2,3</sup> Research suggests that chronic pain prevalence has continued to increase, with concomitant higher levels of psychological distress.<sup>4</sup> The persistence or recurrence of pain profoundly impacts physical, mental, and social functioning. Individuals with chronic pain have higher prevalence of mental health conditions, including posttraumatic stress disorder (PTSD), depression, and insomnia; they are also at greater risk for other chronic health conditions.<sup>5-8</sup> Veterans have a higher prevalence of chronic pain conditions compared to civilians,<sup>8-11</sup> resulting in significant healthcare costs for the Veterans Health Administration (VHA).<sup>12-14</sup>

People with chronic pain often receive medical treatments, such as opioids and surgery, that have limited benefit in many circumstances and carry higher risk for adverse events.<sup>2,15,16</sup> The VA/Department of Defense (DoD) clinical practice guidelines and the Centers for Disease Control and Prevention (CDC) guidelines recommend nondrug, noninvasive therapies with demonstrated functional benefits as first- and second-line treatments for chronic pain.<sup>16-19</sup> First-line options for pain management include evidence-based psychotherapies (EBPs), exercise and physical therapy, and non-opioid medications. EBPs that have demonstrated efficacy for improving chronic pain outcomes include cognitive behavioral therapy (CBT), acceptance and commitment therapy (ACT), and mindfulness-based stress reduction (MBSR).<sup>20,21</sup> Because research suggests that no single therapy is effective for the majority of patients with chronic pain and pain treatment responses are heterogeneous, experts recommend personalized multimodal care—using multiple treatment approaches in a stepped or integrated fashion.<sup>22</sup>

VA is committed to improving nonpharmacological treatment and reducing opioid-related harms for Veterans with chronic pain.<sup>16,17,19</sup> VHA has engaged in national dissemination and implementation of EBPs, including CBT for chronic pain,<sup>23,24</sup> but critical gaps remain. EBPs are underutilized in VHA clinical settings and are not widely integrated into chronic pain care.<sup>25,26</sup> To help identify areas of research critical for improving uptake of these therapies, the VA Health Services Research & Development (HSR&D) Pain/Opioid Consortium of Research (CORE) requested an evidence review on barriers, facilitators, and implementation strategies for EBPs in chronic pain. We included CBT, ACT, and MBSR since these EBPs have demonstrated efficacy for improving chronic pain outcomes, are included in treatment guidelines for chronic pain, and are being delivered in VHA settings; therefore, implementation research is a logical next step. Additionally, because some findings from implementation of EBPs to treat chronic mental health conditions may be applicable to implementation of EBPs for chronic pain, the Pain/Opioid CORE asked the VA Evidence Synthesis Program (ESP) to identify and summarize studies examining barriers, facilitators, and implementation strategies for these other EBPs. This may be especially true for studies conducted within VHA, where provider- and system-level barriers and facilitators or implementation strategies for other EBPs may more readily generalize to EBPs for chronic pain. Similar to the selection process of EBPs for chronic pain, we included EBPs that have a strong evidence base and are included in treatment guidelines for mental health conditions. Selected EBPs are being delivered at VHA facilities to treat common conditions, including insomnia, depression, and PTSD.

In this systematic review, we sought evidence relevant to implementation of EBPs for chronic pain and chronic mental health conditions, focusing on 1) barriers and facilitators at the patient, provider, and system levels; and 2) results of various implementation strategies aimed at promoting uptake of and engagement with EBPs. We present qualitative summaries of results for barriers and facilitators, focusing first on CBT, ACT, and MBSR for chronic pain and then discussing CBT for other conditions, including insomnia and substance use disorders. Next, we summarize outcomes from use of implementation strategies for increasing uptake of these EBPs, for chronic pain and other conditions. Finally, we summarize results regarding barriers, facilitators, and effects of implementation strategies for additional EBPs for chronic mental health conditions, including trauma-focused psychotherapies for PTSD.

## METHODS

The protocol was registered in PROSPERO: CRD42021252038.

## TOPIC DEVELOPMENT

Collaboratively with representatives from the VA Pain/Opioid CORE and an advisory panel of experts, we defined the scope, formulated key questions (KQ), and determined the eligibility criteria. Because the goal of this evidence synthesis is to support implementation of EBPs for chronic pain, we first focused on those psychotherapies with the strongest evidence base for efficacy in chronic pain treatment, CBT, ACT, and MBSR.<sup>20,21</sup> Additionally, we also considered implementation evidence for those EBPs recommended by clinical guidelines for various mental health conditions (*eg*, depression, PTSD<sup>27,28</sup>) and readily available within VHA. For implementation of EBPs for non-pain conditions, we focused on provider- and system-level barriers and facilitators because these would likely be more applicable to improving implementation of psychotherapies for pain. We considered patient factors in a non-pain context more likely to be distinct from and less applicable to implementation of chronic pain treatments. Additionally, in order to identify evidence with greater applicability for Veterans enrolled in VHA, we sought studies that examined barriers and facilitators, or evaluated implementation strategies, in large integrated health care delivery systems. We expanded the setting beyond the US to include Canada, the UK, Ireland, and Australia for 2 reasons—1) existence of integrated health systems with qualities similar to VHA; and 2) comparable economic, cultural, and public health contexts, including predominant use of English.

## KEY QUESTIONS

KQ1: For cognitive behavioral therapy, acceptance and commitment therapy, and mindfulness-based therapy used to treat adults with **chronic pain**:

- a) What are the patient-, provider-, and system-level barriers and facilitators for treatment uptake?
- b) What is the effect of implementation strategies to increase uptake of these treatments?

KQ2: For evidence-based psychotherapies and mindfulness-based interventions used in integrated delivery systems to treat adults with **chronic mental health conditions**:

- a) What are the provider- and system-level barriers and facilitators to treatment uptake?
- b) What is the effect of implementation strategies to increase uptake of these treatments?

## SEARCH STRATEGY

We searched the following databases from inception through March 2021: MEDLINE, Embase, PsycINFO, and CINAHL. Search terms included MeSH and free text for: EBP names (*eg*, CBT, ACT, and MBSR), chronic pain, integrated delivery systems and Veterans (Appendix A). We also sought relevant systematic reviews from the Agency for Healthcare Research and Quality (AHRQ) Evidence-based Practice Center (EPC) reports and VA ESP reports; we hand-searched relevant reviews for potentially eligible studies. Our expert advisory panel also provided referrals.

## SCREENING AND SELECTION OF ELIGIBLE STUDIES

Duplicate results were removed and abstracts were screened using DistillerSR (Evidence Partners, Ottawa, Canada). Prespecified eligibility criteria (Appendix B) included: outpatient treatment of adults with chronic pain or chronic mental health condition; EBPs used for chronic pain or chronic mental health conditions (*eg*, CBT, ACT, MBSR, Prolonged Exposure Therapy [PE], and Cognitive Processing Therapy [CPT]); examination of barriers and facilitators, and/or evaluation of implementation strategies; and conducted in the US, United Kingdom (UK), Ireland, Canada, or Australia. Exclusion of abstracts required agreement of 2 reviewers. Included abstracts underwent full-text review by 2 individuals, with eligibility decisions requiring consensus of both reviewers.

## DATA ABSTRACTION AND QUALITY ASSESSMENT

All eligible articles underwent independent data abstraction by 2 individuals for: participant characteristics and setting (including country and whether study was conducted in VHA); EBP being evaluated; data sources and analytic methods (*eg*, semi-structured interviews and framework analysis, or surveys and multivariate logistic regression); and outcomes. We extracted demographic data in categories consistent with terminology used by authors, including gender and sex. For articles evaluating barriers and facilitators, we classified outcomes by domains within the Consolidated Framework for Implementation Research (CFIR).<sup>29,30</sup> CFIR consists of 5 major domains: I) Intervention characteristics; II) Outer setting; III) Inner setting; IV) Characteristics of the individuals involved; and V) Process of implementation. Each major domain has additional subdomains (see Table 1). CFIR has been recommended as a unifying structure for examining major constructs that influence implementation of evidence-based mental health treatments.<sup>30</sup> For those that addressed effects of implementation strategies (*eg*, training and education), we categorized outcomes by RE-AIM: Reach (*eg*, uptake by target populations); Effectiveness (*eg*, patient outcomes, cost-effectiveness); Adoption (*eg*, uptake by providers), Implementation (*eg*, consistency and fidelity of intervention delivery), and Maintenance (*eg*, sustainability of effects).<sup>31,32</sup> We also classified implementation strategies according to the expert recommendations for implementing change (ERIC) project.<sup>33,34</sup>

All quantitative results were abstracted by 1 reviewer and over-read by a second reviewer. Qualitative results were independently coded by at least 2 reviewers, with final codes reached by consensus. A priori codes were generated from either CFIR (for barriers and facilitators) (Table 1 and Appendix C) or RE-AIM (for evaluation of implementation strategies) (Table 2). We allowed for emergence of new codes, if results did not fit well within existing frameworks. We used a best-fit framework synthesis approach to categorize results and adapt the frameworks as needed; we developed new CFIR subdomains within Outer Setting to facilitate interpretation of data on barriers and facilitators. For evaluations of implementation strategies, we categorized provider attitudes and self-efficacy within Adoption, as the most appropriate domain. These provider factors were assessed to improve understanding about why some providers will (or will not) use certain EBPs.

Two reviewers independently assessed quality using criteria adapted from either the Newcastle-Ottawa Scale<sup>35</sup> (for quantitative studies) and the Critical Skills Appraisal Programme (CASP) Checklist for qualitative studies.<sup>36</sup> We also rated overall quality as high, moderate, or low. Consensus on quality ratings was reached through discussion. For studies that used mixed-

methods (*ie*, quantitative and qualitative methods), we used both sets of criteria to separately rate the applicable results. Quality assessment criteria can be found in Appendix D.

## DATA SYNTHESIS

Given heterogeneity in populations, different types of EBPs, and variable study designs among eligible articles, we did not conduct quantitative meta-analyses. We undertook a qualitative synthesis, focusing first on results for CBT, ACT, and MBSR for chronic pain. We then summarized results related to use of CBT, ACT, and MBSR to treat other conditions. Finally, we described results regarding other EBPs, including trauma-focused therapies for PTSD (PE and/or CPT), cognitive behavioral social skills therapy (CBSST), MET, contingency management, and Dialectical Behavioral Therapy (DBT).

For all eligible articles (whether using quantitative and/or qualitative methods), we first created tables with detailed results (classified or coded as described above). We then reviewed these results within categories, and across articles addressing the same EBP, to derive themes related to barriers and facilitators for implementation and implementation outcomes. We used CFIR for the synthesis of barriers and facilitators to implementation, and the RE-AIM framework for synthesis of implementation outcomes (with grouping of studies by ERIC strategies).

## RATING THE BODY OF EVIDENCE

A formal certainty of evidence rating was not conducted as part of this review.

## PEER REVIEW

A draft version of this report was reviewed by content experts and VA operational partners. Their comments and our responses are presented in Appendix E and the report has been modified as needed.

**Table 1. Adaptation of the Consolidated Framework for Implementation Research (CFIR): Domains and Subdomains<sup>a</sup>**

<p><b>I. Intervention characteristics</b></p> <ul style="list-style-type: none"> <li>A. Intervention source</li> <li>B. Evidence strength &amp; quality</li> <li>C. Relative advantage</li> <li>D. Adaptability</li> <li>E. Trialability</li> <li>F. Complexity</li> <li>G. Design quality &amp; packaging</li> <li>H. Cost</li> <li><i>I. Group dynamics</i></li> <li><i>J. Patient-therapist dynamics</i></li> </ul> <p><b>II. Outer setting</b></p> <ul style="list-style-type: none"> <li>A. Patient needs &amp; resources</li> <li>B. Cosmopolitanism</li> <li>C. Peer pressure</li> <li>D. External policies &amp; incentives</li> <li><i>E. Patient knowledge &amp; beliefs</i></li> <li><i>F. Other patient attributes</i></li> <li><i>G. General practice climate &amp; patterns</i></li> </ul> <p><b>III. Inner setting</b></p> <ul style="list-style-type: none"> <li>A. Structural characteristics</li> <li>B. Networks &amp; communications</li> <li>C. Culture</li> <li>D. Implementation climate           <ul style="list-style-type: none"> <li>1. Tension for change</li> <li>2. Compatibility</li> <li>3. Relative priority</li> <li>4. Organizational incentives &amp; rewards</li> <li>5. Goals and feedback</li> <li>6. Learning climate</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>E. Readiness for implementation           <ul style="list-style-type: none"> <li>1. Leadership engagement</li> <li>2. Available resources</li> <li>3. Access to knowledge and information</li> </ul> </li> <li><i>F. Provider decision-making</i></li> <li><i>G. Patient-provider relationships (outside of psychotherapy)</i></li> </ul> <p><b>IV. Characteristics of individuals</b></p> <ul style="list-style-type: none"> <li>A. Knowledge &amp; beliefs about the intervention</li> <li>B. Self-efficacy</li> <li>C. Individual stage of change</li> <li>D. Individual identification with organization</li> <li>E. Other personal attributes</li> </ul> <p><b>V. Process</b></p> <ul style="list-style-type: none"> <li>A. Planning</li> <li>B. Engaging           <ul style="list-style-type: none"> <li>1. Opinion leaders</li> <li>2. Formally appointed internal implementation leaders</li> <li>3. Champions</li> <li>4. External change agents</li> </ul> </li> <li>C. Executing</li> <li>D. Reflecting &amp; evaluating</li> </ul>
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<sup>a</sup> Adapted from Damschroder et al., 2009<sup>29</sup> and Damschroder and Hagedorn, 2011;<sup>30</sup> new subdomains noted in italics; see Appendix C for detailed definitions

**Table 2. RE-AIM Framework Domains and Definitions<sup>a</sup>**

Reach	<p>The absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative, intervention, or program, and reasons why or why not.</p> <p><i>How do I reach the targeted population with the intervention?</i></p>
Effectiveness	<p>The impact of an intervention on important individual outcomes, including potential negative effects, and broader impact including quality of life and economic outcomes; and variability across subgroups (generalizability or heterogeneity of effects).</p> <p><i>How do I know my intervention is effective?</i></p>
Adoption	<p>(Setting levels) The absolute number, proportion, and representativeness of settings and intervention agents (people who deliver the program) who are willing to initiate a program, and why.</p> <p><i>How do I develop organizational support to deliver my intervention?</i></p>
Implementation	<p>At the setting level, implementation refers to the intervention agents' fidelity to the various elements of an intervention's key functions or components, including consistency of delivery as intended and the time and cost of the intervention. Importantly, it also includes adaptations made to interventions and implementation strategies.</p> <p><i>How do I ensure the intervention is delivered properly?</i></p>
Maintenance	<p>At the setting level, the extent to which a program or policy becomes institutionalized or part of the routine organizational practices and policies. At the individual level, maintenance has been defined as the long-term effects of a program on outcomes after a program is completed.</p> <p><i>How do I incorporate the intervention so that it is delivered over the long term?</i></p>

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<sup>a</sup> Definitions from [www.re-aim.org](http://www.re-aim.org) and Glasgow et al, 2019<sup>32</sup>, slightly edited for length.



## RESULTS

### OVERVIEW OF ELIGIBLE ARTICLES

We screened 7295 unique citations from database searches, and reviewed the full text for 506 articles, including 7 that were identified by hand searches of relevant systematic reviews (Figure 1). We identified 67 eligible articles—20 that addressed KQ 1, 46 for KQ 2, and 1 applicable to both KQ 1 and 2. We provide a summary of characteristics for all eligible articles in Table 3. Most articles were conducted in the US (n=59), and the vast majority of these were in VHA settings (n=47). Most articles were of high or moderate quality (n=53). Detailed quality ratings for all articles are provided in Appendix F.

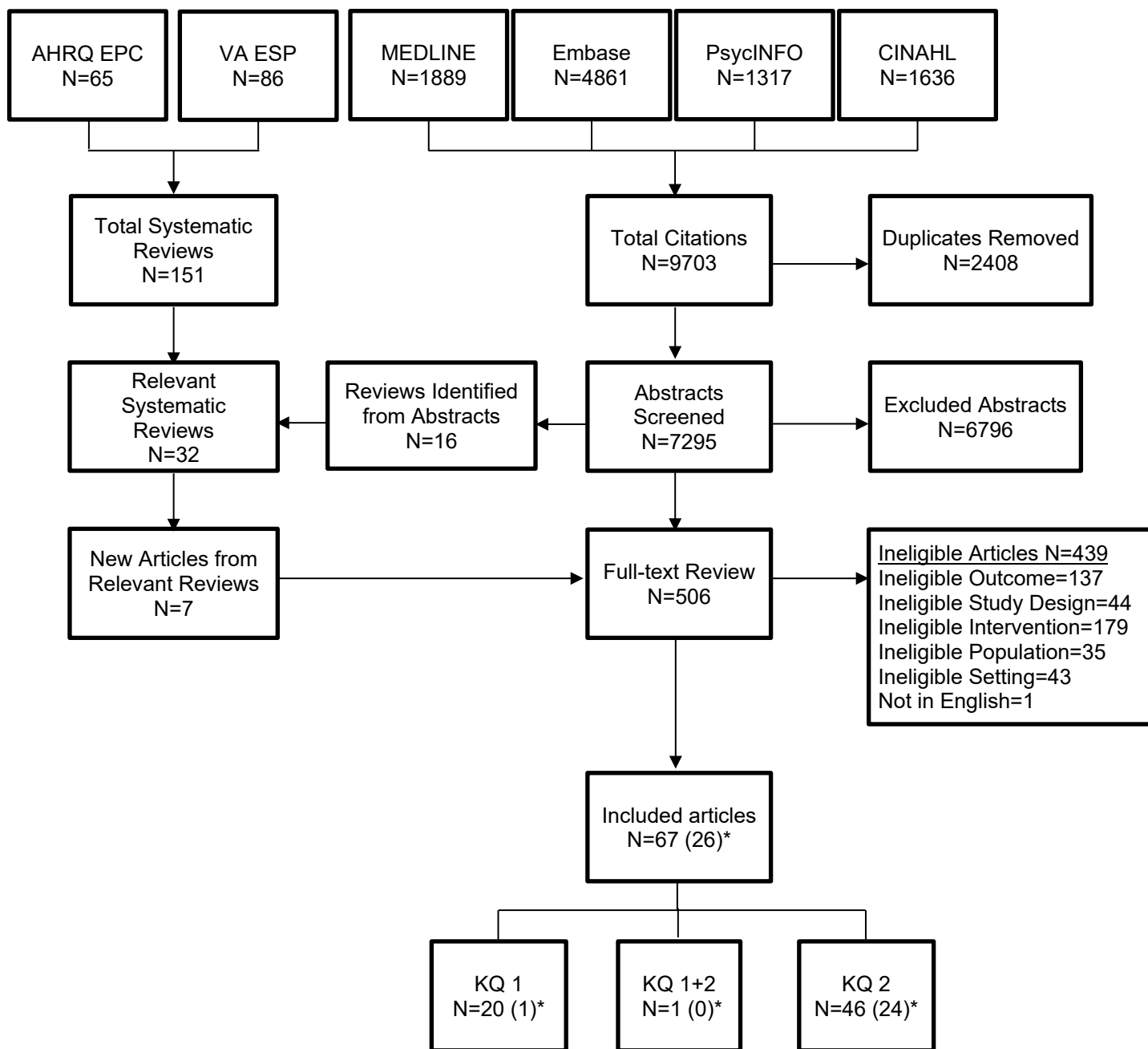
Nearly all articles addressing KQ 1 examined only barriers and facilitators (n=20).<sup>24,37-55</sup> Only 1 article evaluated outcomes of implementation strategies; this evaluated the VHA national training program for CBT-CP.<sup>24</sup> Most KQ 1 articles addressed CBT (n=14),<sup>37,39-41,45,46,48-53,55</sup> while fewer addressed MBSR (n=5)<sup>38,43,44,55,56</sup> and ACT (n=4).<sup>42,46,47,54</sup> Half of these articles used qualitative methods (n=10), and the remaining used only quantitative techniques (most often questionnaires of RCT participants or analyses of electronic medical record data).

Among articles addressing KQ 2, about half examined only barriers and facilitators (n=22),<sup>56-72</sup> with the remaining half evaluating implementation strategies (n=25).<sup>73-96</sup> A third of articles examined CBT for a variety of conditions (n=15),<sup>57,59,64,81,83,85,86,88-90,92-94,97,98</sup> while half addressed trauma-focused therapies for PTSD (PE and CPT, n=25). Remaining articles examined MBSR,<sup>56</sup> ACT,<sup>84</sup> CBSST,<sup>99</sup> DBT,<sup>95,96</sup> MET,<sup>79</sup> and contingency management.<sup>100</sup> A third of articles used qualitative methods (n=16), with the remaining articles reporting only quantitative results.

Below, we first describe detailed results for barriers and facilitators for CBT, MBSR, and ACT for chronic pain. We then provide findings for barriers and facilitators for CBT used to treat other conditions (depression, insomnia, substance use disorder [SUD], and obsessive-compulsive disorder [OCD]). Table 4 provides summaries of barriers and facilitators for CBT, MBSR, and ACT for chronic pain and mental health conditions.

Next, we describe outcomes of implementation strategies for CBT for a variety of conditions, including chronic pain, and ACT for depression; these results are summarized in Table 5. Then, we provide results on barriers, facilitators, and effects of implementation strategies for trauma-focused psychotherapies for PTSD—CPT and PE (Table 6 and Table 7). Finally, we summarize results for barriers and facilitators and implementation strategies for other EBPs, including CBSST, DBT, MET, and contingency management.

**Figure 1. Search and Selection of Eligible Articles**



\*Articles that evaluated outcomes of implementation strategies are shown in ( )

**Table 3. Summary of Characteristics for Included Articles**

	# Total	# High/Mod. Quality	Country:			Barriers & Facilitators:		Implementation Strategies:	
			# US (VHA)	# UK	# Others <sup>a</sup>	# Quantitative	# Qualitative	# Quantitative	# Qualitative
<b><i>KQ1: Chronic Pain</i></b>									
Cognitive Behavioral Therapy (CBT)	14	14	11 (7)	2	1	9	4	1	—
Mindfulness-based Stress Reduction (MBSR)	5	3	5 (1)	—	—	2	4	—	—
Acceptance & Commitment Therapy (ACT)	4	4	1 (1)	2	1	2	3	—	—
<b><i>KQ2: Chronic Mental Health Conditions</i></b>									
Cognitive Behavioral Therapy (CBT)	15	12	13 (9)	1	1	1	4	9	2
Mindfulness-based Stress Reduction (MBSR)	1	1	1 (1)	—	—	—	1	—	—
Acceptance & Commitment Therapy (ACT)	1	1	1 (1)	—	—	1	—	1	—
Trauma-focused Psychotherapies (PE & CPT)	25	18	25 (22)	—	—	9	7	10	1
Other Psychotherapies <sup>b</sup>	5	3	5 (5)	—	—	—	1	3	1

CPT=Cognitive Processing Therapy; PE=Prolonged Exposure Therapy; US=United States; UK=United Kingdom; VHA=Veterans Health Administration

<sup>a</sup> Includes Australia and Ireland

<sup>b</sup> Includes Cognitive Behavioral Social Skills Training, Motivational Enhancement Therapy, Contingency Management, and Dialectical Behavior Therapy

## CBT, MBSR, AND ACT FOR CHRONIC PAIN: BARRIERS AND FACILITATORS (KQ 1A)

### Key Results

- All articles assessing CBT for chronic pain involved individual therapy (via telehealth and in person), except 1 cost-effectiveness analysis; all articles assessing MBSR or ACT for chronic pain involved in-person group therapy.
- Barriers to CBT for chronic pain included cultural and communication barriers, mismatch between patient knowledge and beliefs about pain and EBP principles, logistical conflicts for patients, and patient attributes including high pain-related interference.
- Facilitators of CBT for chronic pain included positive patient-therapist dynamics, good match between patient knowledge and beliefs about pain and EBP principles, patient readiness for change, and telehealth availability.
- One article showed that CBT and MBSR for chronic pain were cost-effective for improving quality of life.
- Barriers to MBSR and ACT for chronic pain included mismatch between patient knowledge and beliefs about pain and EBP principles, physical discomfort of being seated for sessions, and logistical conflicts for patients.
- Facilitators of MBSR and ACT for chronic pain settings included positive group dynamics and good match between patient knowledge and beliefs about pain and EBP principles.

### Section Overview

We identified 20 eligible articles that addressed barriers and facilitators for uptake of CBT (n=13),<sup>37,39-41,45,46,48-53,55</sup> MBSR (n=5),<sup>38,43,44,55,56</sup> and ACT (n=4)<sup>42,46,47,54</sup> for chronic pain; 2 studies addressed more than 1 EBP.<sup>46,55</sup> Of these twenty, 9 reported only quantitative results,<sup>37,39,41,46,50-53,55</sup> 9 used purely qualitative methods,<sup>40,42-45,48,49,54,56</sup> and 2 used mixed methods.<sup>38,47</sup> All were rated moderate or high quality except 1.<sup>44</sup> The majority were studies conducted in the US (n=14; 6 within VA<sup>37,39,41,46,50,51</sup>), with the remaining 6 conducted in the UK (n=4),<sup>40,42,47,49</sup> Ireland (n=1),<sup>54</sup> and Australia (n=1).<sup>48</sup> The majority of articles (n=12), including most assessing CBT (n=9)<sup>39-41,45,46,50,52,53,55</sup> and all assessing ACT (n=4),<sup>42,46,47,54</sup> were conducted within effectiveness RCTs of the EBPs for chronic pain. MBSR, in contrast, was assessed outside of RCTs and in clinical contexts (n=4)<sup>38,43,44,56</sup> with the exception of 1 cost-effectiveness analysis.<sup>55</sup> Definitions of and inclusion/exclusion criteria for chronic pain varied across studies (Appendix Table G1).

Among the eligible articles examining barriers and facilitators, the majority (n=18) evaluated patient perspectives and experience of EBPs for chronic pain. Results mainly addressed the CFIR domain of Outer Setting (n=19),<sup>37-54,56</sup> including subdomains we developed to adapt the CFIR framework for best fit to the data: Patient Knowledge and Beliefs (*ie*, individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and

principles related to the intervention) and Other Patient Attributes (*ie*, broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, priorities, competence, capacity, learning style, and other patient characteristics that do not fit under other patient-related domains). We added these new subdomains, along with others, to describe themes that were not captured by existing CFIR domains and subdomains. Several qualitative articles ( $n=10$ )<sup>38,40,42-45,47,49,54,56</sup> and 1 cost-effectiveness analysis<sup>55</sup> also addressed the domain of Intervention Characteristics, including subdomains we developed to adapt the CFIR framework for best fit to the data: Group Dynamics (*ie*, interactions during group therapy between participants or with facilitators that impacted patient experience and/or outcomes); and Patient-Therapist Dynamics (*ie*, interactions during one-on-one therapy that impacted patient experience and/or outcomes).

Below, we provide results by CFIR domains and subdomains, beginning with Outer Setting and then Intervention Characteristics. We also describe results from a few articles that addressed other CFIR domains. Detailed characteristics and results are found in Appendix Table G1.

## Outer Setting

### *Patient Needs and Resources*

Nine articles reported results addressing this subdomain: 4 for CBT,<sup>40,45,48,49</sup> 4 for MBSR,<sup>38,43,44,56</sup> and 1 for ACT.<sup>47</sup>

Two articles reported interview results from participants in telephone CBT (tCBT) programs.<sup>40,45</sup> Patients found that telephone delivery helped overcome barriers of geography and time, including balancing their work and childcare responsibilities.<sup>40,45</sup> Some also felt, however, that tCBT delivery limited face-to-face interactions and the depth of the patient-therapist relationship,<sup>45</sup> as in their view it did not include non-verbal communications or allow as personal or holistic a therapeutic approach compared with in-person care.<sup>40</sup> One study interviewed patients participating in group CBT, finding that patients couldn't use pacing skills when at home amid daily tasks.<sup>48</sup> Another study interviewed general practitioners (GPs) regarding chronic pain care for their South Asian patients; GPs felt that unaddressed needs were often psychosocial, that CBT would be helpful, and that culturally specific care and therapy in the patient's own language would be important.<sup>49</sup>

Participants in group MBSR studies found that other time commitments and responsibilities were an obstacle to participation, including work and caregiving or parenting.<sup>38,44,56</sup> In 1 small MBSR group, half (3 participants) thought an online program would help [with time commitments], while the other half preferred in-person sessions to foster program engagement.<sup>44</sup> In another group MBSR intervention, 59% of participants would have preferred more than 4 sessions, and 73% thought 90-minute sessions were just right.<sup>38</sup> This group's short format (4 sessions over 4 weeks) helped patients fit the program into their schedules and was less intimidating, but some found the duration too short to allow sufficient group bonding or to build the skills necessary to develop their own mindfulness routines.<sup>38</sup> Many group MBSR participants found that pain associated with lengthy seated meditation made groups harder to tolerate and was an obstacle to participation.<sup>38,43,56</sup> Some participants observed that participating in meditation despite discomfort helped them feel capable of doing activities despite pain.<sup>56</sup>

One study conducted interviews with participants in group ACT, finding that the sessions were cognitively, emotionally, and physically demanding; these qualities were substantial obstacles to sustained engagement and attendance. The duration and mode of delivery were especially difficult for participants to cope with, due to the need to be in classrooms and to sit in a hard chair for a long time.<sup>47</sup>

### *Patient Knowledge and Beliefs*

To facilitate meaningful distinctions that best fit the data, we additionally divided this subdomain into 2 major themes: pain knowledge and beliefs, and therapy knowledge and beliefs.

#### *Pain knowledge and beliefs*

Four articles reported patients' pain-related knowledge and beliefs as barriers or facilitators for CBT (n=2)<sup>40,45</sup> and ACT (n=2).<sup>42,54</sup>

Some tCBT participants demonstrated a lack of understanding about pain triggers, which they believed related to a lack of clinical consensus on causes of chronic pain.<sup>45</sup> They saw pain as physical, a natural warning system responding to mechanical stress or dysfunction. They did not perceive control over pain episodes' beginning or end, so did not perceive control over future pain events happening. As they saw no clear relationship between their own behavior and the onset of pain, it was rare for them to have engaged in pre-emptive adjustment or pacing prior to the intervention. Accordingly, cognitive reflection enhanced their understanding of their own pain triggers and helped them shift emphasis from reactive to proactive pain management strategies.<sup>45</sup> Participants who attributed positive changes (in their subjective level of pain or their pain management) to tCBT reported higher self-awareness and self-management of symptoms and evidence of cognitive restructuring, such as changing the way they thought about pain: "put things in perspective," "think of others worse off," "focus less on the pain".<sup>40</sup>

Some group ACT participants found that fear of causing damage to themselves, and associated negative imagery, limited their ability to engage in acceptance.<sup>54</sup> Belief that a specific pain diagnosis or cure could be found was also a barrier to acceptance, while believing there was no specific cure facilitated acceptance.<sup>54</sup> Identifying psychological factors in pain expression helped give patients confidence to become more active and decatastrophize the impact of pain on their thinking and mood.<sup>42</sup>

#### *Therapy knowledge and beliefs*

Fourteen articles reported patients' therapy-related knowledge and beliefs as barriers or facilitators for CBT (n=8),<sup>39,40,45,48,50-53</sup> ACT (n=3),<sup>42,47,54</sup> and MBSR (n=3).<sup>38,43,56</sup>

Some tCBT participants initially felt that CBT did not fit their concepts of pain or pain experiences, and that psychotherapy questioned the validity of pain experience or implied that chronic pain is due to a character weakness needing correction.<sup>45</sup> In another tCBT intervention, about a third of participants had low expectations of tCBT, as they were skeptical that talking could affect their physical conception of pain.<sup>40</sup> Patients who had received CBT believed some people with chronic pain will be resistant to the idea that counseling may help prevent or manage chronic pain, and recommended clear information at screening about CBT principles and the link

between physical pain symptoms and “what we do...the way we think.”<sup>40</sup> Some group CBT participants felt that a group program can’t suit individuals’ complex pain experiences.<sup>48</sup>

An analysis of group CBT for pain and insomnia found that higher Treatment Acceptability (treatment made sense, is acceptable, is suitable, is expected to be effective) predicted higher treatment session attendance ( $\beta$  .20,  $p < 0.05$ ).<sup>52</sup> Participants who eventually dropped out of another group CBT intervention recalled prior session material less accurately (effect size not reported (NR),  $p < 0.01$ ), recalled current material less accurately just after a session (effect size NR;  $p < 0.01$ ), and performed more poorly on homework (effect size NR;  $p < 0.05$ ) than completers.<sup>53</sup>

In 1 tCBT program, about a fifth of participants had a good understanding of CBT approaches based on prior CBT experience for other health conditions, reading, or their own professions, and many participants saw tCBT as a non-invasive, low-risk, “nothing to lose” alternative to medication.<sup>40</sup> Some, however, felt tCBT was not effective for them because they were already using CBT-informed pain management strategies prior to the intervention, including positive thinking and pacing. Participants thought tCBT would be most helpful for people with little or no prior experience of CBT for pain and recommended pre-intervention screening for CBT experience.<sup>40</sup> In another study of people who had participated in group CBT for pain in the past, CBT methods continued to provide a framework to facilitate positive change for some participants, while for others the concepts could not be adopted or maintained when living with chronic pain beyond the program.<sup>48</sup> Continuity appeared to be related to individuals’ readiness to adopt cognitive behavioral beliefs and attitudes about pain. Some saw “not talking about pain” [avoidance of focus on pain, refocusing on self-efficacy and self-management] as a valuable way of managing their pain, while others thought it to be counter-productive to moving forward in the pain management process. Some participants thought CBT techniques felt like “brainwashing” and reinforcement seemed unnecessary: “it was all lectures and brain washing...they brainwash you, sieve you out and then bring you back. I just hope they’ve got rid of the silt...They take you on a journey, and then bring you back to all these cognitive sorts of phrases they use, and stages. And then you come back the next day and they’d come at it from another angle.”<sup>48</sup>

Three articles reported patients’ readiness for change as barriers or facilitators for CBT.<sup>39,50,51</sup> Two analyses of the same study data assessed roles of constructs comprising the Pain Stages of Change Questionnaire (PSOCQ) in relation to CBT adherence in a primary care setting.<sup>39,50</sup> In 1 analysis, higher Precontemplation, representing lower perceived personal responsibility for pain control and interest in pain-related behavior changes, was negatively associated with CBT adherence (% unique variance -0.301,  $p < 0.05$ ).<sup>50</sup> Higher Contemplation, representing increasing awareness of personal responsibility for pain control and interest in pain-related behavior changes, was positively associated with CBT adherence (% unique variance 0.370,  $p < 0.05$ ). Self-efficacy was not meaningfully or significantly predictive of adherence. In another analysis of the same study data, higher increase in a change score combining Action (acceptance of a self-management approach to chronic pain and engagement in efforts to improve pain management skills) and Maintenance (established self-management perspective and desire to continue learning and applying pain management skills) subscales was positively correlated with higher CBT adherence ( $r$  0.34,  $p < 0.05$ ).<sup>39</sup> A foundational study of different data preceding these analyses observed that for CBT completers versus non-completers, pre-treatment mean scores

were significantly lower for Precontemplation (2.93 vs 3.27,  $p < 0.05$ ) and higher for Contemplation (3.84 vs 3.61,  $p < 0.05$ ), and did not differ on Action or Maintenance scores.<sup>51</sup>

Some group ACT participants found the approach difficult to grasp: they couldn't see relevance to their pain experience, and found the content "wishy-washy...nothing concrete about it."<sup>47</sup> Participants in 1 group ACT program saw acceptance of present pain and limitations while committing to keeping as active and mobile as possible as key to self-management and as acquired from the program, along with the ability to use pacing skills to set consistent, realistic goals and the development of mindfulness strategies to train attention to the present moment.<sup>42</sup> Other group ACT participants developed a focus on creating openness to possibility that pain does not have to stop one from doing things, that one can set objectives based on one's values and view life in a different, more rewarding way.<sup>47</sup> In another group ACT program, participants eventually saw acceptance as the acknowledgement of the presence of pain, with the belief that life could still be lived despite pain.<sup>54</sup> Some participants in this program had initial strong emotional reactions, including anger and resistance, to the word "acceptance". Acceptance was associated with "giving up" for 1 patient: accepting pain would prevent her from moving forward with her life. Some moved from this resistance of acceptance toward a sense of expanded possibilities, associated with changes in both mindset and behaviors (*eg*, overcoming fear of increasing pain to engage in more exercise). Mindfulness was a component of this group ACT program, and participants understood its purpose as being in the present moment. Most found mindfulness to be of benefit, as it assisted with processing emotions and letting them pass; others "hated [it]...didn't get it."<sup>54</sup>

Some group MBSR participants wanted the program to have more focus on chronic pain, including how to control it and how to decrease medications.<sup>38</sup> Some wanted more information on anxiety, pain, and the mind-body connection, and some wanted more physical movement incorporated.<sup>38</sup> Participants in 1 group MBSR program found MBSR techniques (breathing, pausing, counting, slowing down) useful for relaxation and relieving pain, and were able to apply them with benefits beyond the practice time.<sup>43</sup> For participants in another group MBSR program, insufficient or inaccurate information about MBSR led some patients to believe that it would not be valuable: it was seen as "for people whose problems were in their head".<sup>56</sup> Some participants in this program found difficulty understanding the purpose of MBSR practices to be an obstacle: "I felt ignorant and embarrassed so that's why I quit." Some found the body scan practice problematic, as it identified more sites or types of pain, and seemed counter to some of their past impressions about pain ("that's what we're taught: resist the pain, not...approach and accept it") or avoidance strategies ("ignore it and not pay attention if it's there...if I can help it").<sup>56</sup> Some group MBSR participants were afraid that meditation in 1 position would not be helpful and would mean they were "just going to end up hurting real bad" because of their chronic pain and disabilities, even if they believed that "can't be the reason [the teachers] want us to do it."<sup>56</sup>

### *Other Patient Attributes*

To facilitate meaningful distinctions that best fit the data, we divided this subdomain into 5 thematic categories: pain characteristics, pain treatments, values, religion, and age and other demographics.



### *Pain characteristics*

Eight articles examined the impact of pain characteristics in uptake and attendance of CBT (n=7)<sup>37,40,41,50-53</sup> and ACT (n=1).<sup>47</sup>

Higher pain interference was associated with incomplete attendance of pain psychotherapies in 3 studies.<sup>37,43,50</sup> Non-completers of one-on-one CBT reported more baseline pain-related interference than completers in 1 study (mean West Haven–Yale Multidimensional Pain Inventory (WHYMPI-INT) 5.33 vs 4.64,  $p < 0.01$ ), but did not differ on pain severity, Global Pain Rating, pain-related disability, pain duration, state anxiety, or depressive symptoms.<sup>50</sup> In another study, one-on-one CBT completion was more likely among participants with lower baseline pain-related interference per WHYMPI-INT (OR 1.19, [95%CI 1.06, 1.34]), but completers and non-completers did not differ significantly on baseline pain severity, pain catastrophizing, depression severity or quality of life measures.<sup>37</sup> Higher baseline pain interference (brief pain inventory [BPI-I]) was associated with less frequent attendance of a group MBSR program ( $r = .357$ ,  $p = .045$ ).<sup>43</sup>

In another group CBT study, as compared to people who attended at least 1 group CBT session, people who were eligible but attended no sessions had higher pre-treatment Pain Catastrophizing Scale scores (mean 38.9 vs 30.3,  $p < 0.01$ ) but did not differ on BPI-I, Roland-Morris Disability Scale (RMDS), Center of Epidemiological Studies Depression Scale (CESD) or quality of life (QOL). Completers did not differ from non-completers on any of these measures.<sup>53</sup>

In another one-on-one CBT study, completers and non-completers did not differ significantly on pain interference, or on pain severity, pain-related disability, pain behavior, pain duration, activity level, or depressive symptom severity.<sup>51</sup> In a one-on-one CBT study, participants who did or did not receive an adequate CBT dose (3 sessions) did not differ significantly in pain intensity.<sup>41</sup> In a one-on-one study of CBT for pain and insomnia, completers and non-completers did not differ significantly on several functional pain measures, pain catastrophizing, kinesiophobia, or on measures of anxiety, depression, insomnia, or objectively measured sleep.<sup>52</sup>

Participants in 1 telephone CBT program believed tCBT is most likely to be acceptable to people with presenting symptoms of musculoskeletal pain, and to people with low to moderate pain rather than severe pain.<sup>40</sup>

Group ACT participants who did not attend an adequate number of sessions did not differ significantly from attendees on primary pain location, pain-related disability, pain intensity, pain acceptance, acceptance, or quality of life measures.<sup>47</sup>

### *Pain treatments*

Five articles reported patients' other pain treatments as barriers or facilitators for CBT (n=4)<sup>39,50-52</sup> and ACT (n=1)<sup>47</sup>.

An analysis of group CBT for pain and insomnia found that opioid medication use at baseline predicted lower treatment session attendance ( $\beta .21$ ,  $p < 0.05$ ), but that current use of medication types including hypnotics, opioids, and non-opioid analgesics was unrelated to attendance.<sup>52</sup> Non-completers of one-on-one CBT did not differ from completers on pain medication use or

history of pain surgery.<sup>39,50</sup> Non-completers of another one-on-one CBT intervention did not differ from completers on number of medical outpatient visits for pain, number of medical inpatient visits for pain, number of psychiatric visits, number of visits to other pain care providers, percentage of participants using prescribed or over-the counter pain medications, or percentage of participants receiving disability for pain.<sup>51</sup>

Many participants in 1 group ACT trial had experienced other interventions of multiple types that hadn't helped, and "were prepared to try anything that's offered that might help."<sup>47</sup>

### *Values*

Some participants in 1 group ACT program noted that knowing their pain burdened family members was a motivation to get better.<sup>54</sup> Social interaction through re-engagement in valued activities (work, gatherings) helped participants become aware of the need to look after their own needs as well as those of family members or others. Some could identify their values but were not ready to move toward values-based action and continued to avoid experiences perceived to involve pain or discomfort.

### *Religion*

Referring providers for 1 group MBSR intervention were reportedly concerned that MBSR would not be a good fit for patients with strong religious beliefs, but many participants reported that this was not an issue and most did not perceive any relationship between MBSR and their religion/spirituality.<sup>56</sup>

### *Age and other demographics*

Ten articles addressed age and other demographics as barriers or facilitators for CBT (n=8),<sup>37,39,41,46,50-53</sup> ACT (n=2),<sup>46,47</sup> and MBSR (n=1).<sup>43</sup>

Completers of CBT for chronic pain in national VHA clinical settings were more likely to be older (OR for 1 year 1.01, 95% CI 1.002-1.023), but did not differ significantly from non-completers on gender, race, ethnicity, education level, or military service era.<sup>37</sup> As compared to people who completed a group CBT session focused on low literacy rural people with chronic pain, non-completers had lower mean income (under vs over \$13,000 annually,  $p < 0.01$ ;  $\eta^2 = 0.105$ ) and fewer years of education (mean 11.8 vs 13.1,  $p < 0.02$ ), and did not differ significantly on achievement testing, age, or miles traveled to reach session sites.<sup>53</sup> An analysis of group CBT for pain and insomnia found that completers did not differ significantly from non-completers on age, sex, race, marital status, or education level.<sup>52</sup> Studies of one-on-one CBT completers and non-completers within RCTs found that they did not differ significantly in age, sex, race/ethnicity, years of education, living alone versus with others, employment status, retirement status, relationship status, or service connection<sup>39,50</sup>; age, race/ethnicity, or gender<sup>41</sup>; or age, education level, percent male (neither sex nor gender mentioned), or employment status.<sup>51</sup>

In a study of group ACT and group CBT, there was no significant difference across age groups in dropout percentage, number of sessions attended, treatment credibility, treatment satisfaction, or expectations of improvement with treatment.<sup>46</sup> In a group ACT program, participants who did not attend an adequate number of sessions did not differ significantly from attenders on age,

years of education, gender, ethnicity, employment status, marital status, or number of medical comorbidities.<sup>47</sup> Some group ACT participants felt that older participants might be less open to the psychological orientation of the intervention: “for older people you need to talk their language... they’ve been through wars and what not...they just want someone to tell them either way.”<sup>47</sup>

Attendance of 1 group MBSR program was not predicted by age, gender, ethnicity, living alone, or having a pre-existing relationship with the research team.<sup>43</sup>

Sex, gender, race and ethnicity were not defined in any included articles, either conceptually or in terms of data collection processes, and the accuracy of these terms as descriptors of analyzed data could not be confirmed.

## **Intervention Characteristics**

### *Evidence Strength and Quality*

One study reported that GPs in community UK practice were interested in culturally relevant CBT to help their South Asian patients with chronic pain. Study authors noted that most CBT clinical evidence comes from studies with people of European descent.<sup>49</sup>

### *Design Quality and Packaging*

Five articles reported design quality and packaging as barriers or facilitators for CBT (n=2)<sup>40,45</sup> and MBSR (n=3).<sup>38,44,56</sup>

Participants in a telephone CBT intervention found that the self-management therapy materials provided to them for home use had useful functions as a memory aid for advice during sessions, a way to prompt and motivate daily goals, and a notebook for thoughts to discuss with their therapist at the next session.<sup>40</sup> Therapy materials helped participants understand mind-body connections and principles of CBT and helped identify pain triggers in order to identify solutions.<sup>40</sup> However, some participants found therapy materials repetitive, difficult to navigate, and too rigid as compared to the personalized and adaptable therapist approach, and thought the purpose and role of therapy materials in relation to therapist sessions was not clear enough at the outset.<sup>40</sup> Participants in another telephone CBT intervention felt that the self-help therapy materials’ case studies and lifestyle scenarios focused on inactive, isolated people, which was an unwelcome reminder of potential identity loss that they wanted to avoid.<sup>45</sup>

Participants in a group MBSR intervention found that recordings and handouts helped people set up and adapt their mindfulness routines at home: “having a mobile set of tools helped me go with the flow about it”.<sup>38</sup> Participants in another group MBSR intervention found that recordings of training sessions were helpful for viewing at an alternate time and that weekly messages encouraged mindfulness.<sup>44</sup> Participants of a group MBSR intervention wanted MBSR to be held in a space that was quiet, not “too crowded,” and consistent.<sup>56</sup>

### **Cost**

A cost-effectiveness study of group MBSR and group CBT versus usual care (UC) for chronic back pain found both MBSR and CBT to be cost-effective for increasing quality of life.<sup>55</sup> The

mean one-year per-participant cost to society for MBSR was \$724 lower than UC (95% CI -\$4386, \$2778), and the mean one-year per-participant healthcare cost to the payer was \$982 lower than UC (-\$4108, \$1301). MBSR also yielded a quality-adjusted life years (QALY) gain of 0.034 (0.008, 0.060) and had a 90% probability of costing <\$50,000/QALY (the cost-effectiveness threshold) in societal cost-QALY bootstrap analyses. The mean 1-year per-participant cost to society for CBT was \$125 higher than UC (95% CI -\$4103, \$4347), and the mean 1-year per-participant healthcare cost to the payer for CBT was \$495 higher than UC (-\$2741, \$3550), yielding a QALY gain of 0.041 (0.015, 0.067). The incremental cost-effectiveness ratio for CBT over UC was \$3049/QALY, far below the \$50,000/QALY threshold for cost-effectiveness, and CBT had a 81% probability of costing <\$50,000/QALY in bootstrap analyses.<sup>55</sup>

Back pain-related healthcare costs showed the same pattern as seen in overall healthcare costs: a trend toward increase in healthcare costs over UC for CBT and a trend toward reduction for MBSR. Both CBT and MBSR trended toward reducing non-back related healthcare costs compared to UC. There were no significant differences between MBSR and UC, between CBT and UC, or between MBSR and CBT in patient copay amounts or in total societal costs (total overall healthcare costs + patient copay amounts + lost productivity from absenteeism + lost productivity from presenteeism). There were no significant differences between MBSR and UC, or between CBT and UC, in health care utilization (all office-based and outpatient care, emergency department visits, hospital inpatient stays, pharmacy prescriptions, imaging visits) or productivity losses (absenteeism lost hours, presenteeism lost hours).<sup>55</sup>

### *Group Dynamics*

Six articles addressed group dynamics as barriers or facilitators for ACT (n=3)<sup>42,47,54</sup> and MBSR (n=3).<sup>38,43,56</sup> No CBT interventions in included studies had a group format.

Participants in group ACT interventions appreciated the ability to express emotions freely in a non-judgmental atmosphere, felt solidarity with chronic pain patients “in the same boat,” and felt empathy and emotional support from the group as other participants validated their difficulties.<sup>42,54</sup> The group enabled participants to share best ways of managing pain, including practical self-management strategies and specific pain [treatments], and helped participants identify non-coping areas, offering a “wake up call” to challenge negative thinking or identify ways in which they were “stuck”.<sup>42</sup> Comparison with others in the group helped participants reframe their pain-related challenges and increase motivation to cope with pain.<sup>47</sup> Hearing others’ perspectives within the group facilitated some participants’ identification of values and subsequent values-based action.<sup>54</sup> Participants valued the group facilitators’ emotional attitude (relaxed, non-judgmental, and understanding) and use of techniques and adaptations to help the group understand and apply concepts.<sup>42</sup>

Participants in group MBSR interventions also appreciated group social support, felt less isolated in their pain experience<sup>38</sup> and valued the ability to talk with people with similar experiences.<sup>43</sup> Sharing with the group also helped participants feel better about their challenges in learning mindfulness.<sup>38</sup> Some, however, felt the group detracted from their experience and would have preferred a one-on-one format for MBSR.<sup>38</sup> Mixed-gender groups were difficult for some women with histories of sexual assault, and women-only group options were suggested.<sup>56</sup> Participants

sometimes felt the facilitator would ask them to be quiet too often, and that more conversation with group members with similar experiences would have been better.<sup>43</sup> Participants in a military Veterans' group, however, could become frustrated by other group members discussing topics they viewed as irrelevant, such as military service, and appreciated when facilitators could structure and control the group; they felt teachers' lack of military service and unfamiliarity with Veteran culture made them reluctant to provide limits and accountability in group discussion.<sup>56</sup> Many patients were able to minimize pain and accommodate disabilities by making adjustments to standard seated meditation. Sometimes the MBSR teacher aided in this process; at other times participants felt "the instructors need to be a little bit more open-minded... some of us have to stretch a certain way or move a certain way."<sup>56</sup>

### *Patient-Therapist Dynamics*

Two studies addressed patient-therapist dynamics as barriers or facilitators for CBT.<sup>40,45</sup> No ACT or MBSR interventions in included studies had a one-on-one format.

Participants in tCBT thought that direct interaction with the therapist enabled them to compare daily routines and activity levels against social norms and identify self-care opportunities.<sup>45</sup> Patients appreciated having someone to share their pain experience with, which made the experience less isolating, and felt that tCBT was an opportunity to talk and be heard, as opposed to GP care.<sup>40</sup> Therapists were viewed as friendly, knowledgeable, empathic, and able to quickly establish rapport, and speaking to the same therapist each session felt consistent, reliable, and convenient.<sup>40</sup>

### **Other CFIR Domains**

Additional results from 1 article addressed Inner Setting, Readiness for Implementation—Available Resources, and Characteristics of Individuals, Knowledge and Beliefs.<sup>49</sup> Regarding available resources, GPs in a community UK practice noted that there are not enough trained counsellors with South Asian language skills and relevant cultural understanding to provide culturally informed CBT.<sup>49</sup> For knowledge and beliefs about CBT, GPs also noted they had limited understanding of what CBT approaches existed and were available. GPs had some understanding of how CBT could help pain, but felt current provision was limited, inadequate and culturally inappropriate for some South Asian patients.<sup>49</sup>

## **CBT FOR INSOMNIA, SUD, AND OCD: BARRIERS AND FACILITATORS (KQ 2A)**

### **Key Results**

- Barriers in VHA and non-VA settings included:
  - Deficits in resources including lack of protected time to deliver treatment, lack of training of referring providers, no centralized source for educational information, and limited availability of trained providers
  - Lack of provider knowledge about EBPs

- Patient factors related to comorbid mental health conditions, cognitive barriers to understanding CBT concepts, cultural/language barriers, transportation barriers
- Facilitators in VHA and non-VA settings included:
  - Scalability and convenience of CBT tools and resources
  - Local champions and leadership support
  - Strong networks/communication across clinics and teams

## Section Overview

Among evidence addressing provider- and system-level barriers and facilitators to uptake of EBP for chronic mental health conditions, we identified 5 eligible articles on CBT for insomnia (n=3),<sup>57,59,64</sup> SUD (n=1),<sup>97</sup> and OCD (n=1).<sup>98</sup> The 3 articles on CBT for insomnia (CBT-I)<sup>57,59,64</sup> addressed persistent barriers and facilitators approximately 10 years after VHA national training initiatives for CBT-I were first launched (Table 4). One article reported interview, focus group, and survey data from general practice and mental health providers in Australia regarding barriers and facilitators for CBT for OCD.<sup>98</sup> One article reported interview results from mental health providers regarding barriers and facilitators to use of CBT for SUDs; providers worked at US community-based addiction treatment organizations that had received a grant award to implement EBPs.<sup>97</sup> Results for these 5 articles mainly addressed domains of Inner Setting, (Readiness for Implementation—Available Resources), and Characteristics of Individuals, (Knowledge and Beliefs about the Intervention). Detailed characteristics and results for these articles are found in Appendix Table G2.

## Inner Setting

All 5 articles addressed Readiness for Implementation; specifically, Available Resources were reported as barriers or facilitators to implementation of CBT.<sup>57,59,64,97,98</sup> One reported that “Most primary care physicians were satisfied with CBT-I resources in their facility.”<sup>59</sup> The remainder reported deficits in resources related to time, training, educational information, and availability of providers.<sup>57,64,97,98</sup> In 1 quantitative study with primary care providers (PCPs) that asked, “On a scale of 1 to 10 where 1 = not at all satisfied and 10 = very satisfied, how satisfied are you with the opportunities available to you for training in the assessment and diagnosis of sleep disorders?”, the modal response to this question was 5 (33.3% of respondents), suggesting some dissatisfaction with training opportunities.<sup>64</sup> Two articles addressed Access to Knowledge and Information.<sup>59,98</sup> For example, 1 reported, “Several primary care physicians expressed the desire for a more centralized resource to learn about CBT-I and make referrals.”<sup>59</sup> One article addressed Leadership Engagement: “two key facilitators...contributed to a successful implementation and widespread dissemination of CBT-I: local champions and leadership support.”<sup>59</sup>

One article addressed Implementation Climate—Relative Priority, stating: “The general consensus among physicians was that sleep took a ‘backseat priority’ in complex patients and was not prioritized by patients or providers.”<sup>59</sup>

One article addressed Networks and Communication, finding that “strong connections between primary care clinics, Primary Care Mental Health Integration (PCMHI) teams, and sleep medicine clinics increased utilization of CBT-I.”<sup>59</sup> One article addressed Provider Decision-making, with a primary care provider stating: “I like sending them out to PCMHI because I secretly hope they will address some of their underlying mental health issues.”<sup>59</sup> One article addressed Patient-Provider Relationships, finding that “patients were more willing to engage if 1) a known primary care provider facilitated an introduction or 2) the CBT-I provider reached out to them.”<sup>57</sup>

### Characteristics of Individuals

All articles identified provider factors in the subdomain Knowledge and Beliefs about the Intervention as barriers or facilitators to implementation of CBT.<sup>57,59,64,97,98</sup> For example, regarding evidence for CBT-I, 1 provider reported, “I have been educated in research talks from an expert in the area...I believe it is effective based on what I have heard.”<sup>59</sup> Studies also found that both patients and providers emphasized the importance of provider knowledge about CBT. For example, “Several patients pointed out that providers need to be informed about CBT-I to answer patient questions and facilitate referrals”<sup>57</sup> and “Psychologists reported themselves as knowledgeable about OCD...also stressed importance of GP support in ongoing care and management of people with OCD”.<sup>98</sup> A quantitative study with PCPs reported that the majority of respondents had some level of familiarity with CBT-I (82.3%). However, a small percentage of respondents (15.7%) had never heard of it.<sup>64</sup>

### Other CFIR Domains

Two articles addressed Intervention Characteristics (Adaptability), finding that providers appreciated the scalability and convenience of CBT in primary care settings<sup>59</sup> and patients appreciated the ability to use multiple therapeutic tools and resources across different settings (*eg*, accessing therapy materials through workbooks at home and electronic applications when travelling).<sup>57</sup> Two articles reported results pertaining to Outer Setting; 1 of these indicated that cultural/language barriers and transportation barriers led to poor attendance (Patient Needs and Resources).<sup>97</sup> This study also identified factors within Other Patient Attributes, including cognitive barriers to understanding CBT concepts, and comorbid mental health conditions (*eg*, anti-social personality disorder).<sup>97</sup> The other article also addressed Other Patient Attributes, finding hesitancy to commit to provider-delivered CBT among patients without a history of mental health treatment.<sup>57</sup>

**Table 4. Barriers and Facilitators for Uptake of CBT, MBSR, and ACT for Chronic Pain and Chronic Mental Health Conditions—Results by CFIR Domains**

	CBT (19 articles) <sup>24,37,39-41,45,46,48-53,55,57,59,64,97,98</sup>	MBSR (5 articles) <sup>38,43,44,55,56</sup>	ACT (4 articles) <sup>42,46,47,54</sup>
I. Intervention Characteristics	<p><b>Evidence Strength &amp; Quality</b></p> <ul style="list-style-type: none"> <li>GPs interested in culturally relevant CBT for South Asian patients; authors note most CBT clinical evidence comes from European populations<sup>49</sup></li> </ul> <p><b>Design Quality and Packaging</b></p> <ul style="list-style-type: none"> <li>Self-management therapy materials helped understand principles and prompted use of skills, but could be repetitive and unclear in purpose with dispiriting case studies<sup>40,45</sup></li> </ul> <p><b>Adaptability</b></p> <ul style="list-style-type: none"> <li>Providers and patients appreciated scalability and convenience of CBT tools<sup>57,59</sup></li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>CBT was cost-effective for improving quality of life and was not significantly different from UC in health care utilization or productivity losses<sup>55</sup></li> </ul> <p><b>Patient-Therapist Dynamics</b></p> <ul style="list-style-type: none"> <li>Patients appreciated therapists for empathic, consistent, reliable care<sup>40,45</sup></li> </ul>	<p><b>Design Quality and Packaging</b></p> <ul style="list-style-type: none"> <li>Recordings and handouts helped patients adapt their routine for home use<sup>38,44</sup></li> <li>Patients wanted MBSR to be held in quiet, uncrowded, consistent space<sup>56</sup></li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>MBSR was cost-effective for improving quality of life and was not significantly different from UC in health care utilization or productivity losses<sup>55</sup></li> </ul> <p><b>Group Dynamics</b></p> <ul style="list-style-type: none"> <li>Patients in MBSR group appreciated social support, talking with people with similar experiences, structure and control was important<sup>38,43,56</sup></li> </ul>	<p><b>Group Dynamics</b></p> <ul style="list-style-type: none"> <li>Patients in ACT group appreciated non-judgmental atmosphere, support from other participants, different perspectives<sup>42,47,54</sup></li> </ul>
II. Outer Setting	<p><b>Patient Needs &amp; Resources</b></p> <ul style="list-style-type: none"> <li>Cultural/language, transportation barriers led to poor attendance<sup>97</sup></li> <li>Need for culturally specific care and therapy in patient’s language<sup>49</sup></li> <li>Telephone CBT increased accessibility, eliminated time/geographical barriers<sup>40,45</sup></li> </ul>	<p><b>Patient Needs &amp; Resources</b></p> <ul style="list-style-type: none"> <li>Patients in MBSR group reported time commitment and responsibilities, physical pain during lengthy seated meditation were obstacles to participating<sup>38,43,44,56</sup></li> </ul>	<p><b>Patient Needs &amp; Resources</b></p> <ul style="list-style-type: none"> <li>Group ACT sessions too cognitively, emotionally, physically demanding<sup>47</sup></li> </ul> <p><b>Patient Knowledge &amp; Beliefs about Intervention</b></p>





CBT  
(19 articles)<sup>24,37,39-41,45,46,48-53,55,57,59,64,97,98</sup>

- Pacing skills learned during treatment were difficult to use at home<sup>48</sup>

**Patient Knowledge & Beliefs about Intervention**

- CBT increased understanding of pain triggers<sup>45</sup>
- Some patients had difficulty accepting mental health treatment for what they perceived as physical condition<sup>40,45,48</sup>
- Treatment acceptability predicted session attendance<sup>52</sup>
- CBT adherence related to stages of change<sup>39,50,51</sup>

**Other Patient Attributes**

- Cognitive barriers to understanding therapy, comorbid health conditions, and no history of mental health treatment led to poor engagement<sup>57,97</sup>
- Baseline pain interference,<sup>37,50</sup> catastrophizing,<sup>53</sup> opioid use<sup>52</sup> were associated with lower attendance in some but not all studies<sup>39,41,51</sup>
- Patient demographics generally not related to attendance<sup>39,41,46,50-53</sup>

MBSR  
(5 articles)<sup>38,43,44,55,56</sup>

- Online and shorter sessions may eliminate barriers<sup>38,44</sup>

**Patient Knowledge & Beliefs about Intervention**

- Desire for increased focus on how to control pain, concern about meditation position increasing pain, and desire for more movement<sup>38,56</sup>

**Other Patient Attributes**

- Baseline pain interference associated with less frequent attendance<sup>43</sup>
- Patient demographics generally not related to attendance<sup>43</sup>
- Patients don't see religion/spirituality as barrier to MBSR<sup>56</sup>

ACT  
(4 articles)<sup>42,46,47,54</sup>

- Fear of causing damage and focus on specific pain diagnosis/cure limited engagement<sup>54</sup>
- Identifying psychological factors in pain helpful<sup>42</sup>
- Content did not seem relevant to pain<sup>47</sup>
- Mindfulness and acceptance controversial concepts<sup>54,56</sup>

**Other Patient Attributes**

- Patients who did not attend sessions did not differ on pain location, intensity, or distress<sup>47</sup>
- Pain as burden to family members was motivation to engage<sup>54</sup>
- Patient demographics generally not related to attendance<sup>46,47</sup>

III. Inner Setting

**Networks & Communication**

- Strong connections between clinics and teams increased utilization CBT-I<sup>59</sup>

**Implementation Climate:**

- **Relative Priority**
  - Sleep assessment and treatment took backseat priority<sup>59</sup>

CBT  
(19 articles)<sup>24,37,39-41,45,46,48-53,55,57,59,64,97,98</sup>

MBSR  
(5 articles)<sup>38,43,44,55,56</sup>

ACT  
(4 articles)<sup>42,46,47,54</sup>

**Readiness for Implementation:**

- **Leadership Engagement**
  - Local champions and leadership support contributed to successful implementation<sup>59</sup>
- **Available Resources**
  - Deficits in resources related to time, training, educational information, and availability of providers<sup>57,64,97,98</sup>
  - Need for trained providers with South Asian language skills and cultural understanding<sup>49</sup>
- **Access to Knowledge & Information**
  - Need for centralized resources for information, including psychoeducation and guidelines for providers<sup>59,98</sup>

**Provider Decision-making**

- Provider likes connecting patients with mental health for sleep treatment so other issues can be addressed<sup>59</sup>

**Patient-Provider Relationships**

- Patients more willing to engage in CBT if known provider made referral or CBT provider reached out to them<sup>57</sup>

**(Provider) Knowledge & Beliefs about Intervention**

- More provider education necessary for answering patient questions, facilitating referrals, ongoing care and management<sup>49,57,59,64,97,98</sup>

IV.  
Characteristics  
of Individuals

ACT = acceptance and commitment therapy; CBT = cognitive behavioral therapy; GP= general practitioner; MBSR = mindfulness-based stress reduction; QALY = quality-adjusted life year



## CBT FOR CHRONIC PAIN, DEPRESSION, ANXIETY, INSOMNIA, AND PTSD, AND ACT FOR DEPRESSION: EFFECTS OF IMPLEMENTATION STRATEGIES (KQ 1B + KQ 2B)

### Key Results

- EBPs demonstrated large effects on symptom reduction and improvements in quality of life.
- Over 80% of mental health providers completed VHA national trainings, but it is unclear if trainings increased reach and adoption (*eg*, uptake by target patient populations and use by relevant clinical staff, proportion or representativeness of settings and staff).
- Increased provider self-efficacy and improved perceptions of EBP after VHA training programs.
- It is unclear if there is added benefit for external facilitation.
- Findings related to maintenance of EBPs following VHA training initiatives (*ie*, after consultation phase) were modest, with continued barriers including competing professional time demands and patient barriers (*eg*, distance from clinic, missed appointments).

### Section Overview

Among 12 articles addressing CBT for chronic pain (n=1),<sup>24</sup> depression and/or anxiety (n=7),<sup>81,86,88-90,93,94</sup> insomnia (n=2),<sup>85,92</sup> and PTSD (n=1),<sup>83</sup> and ACT for depression (n=1),<sup>84</sup> nearly half evaluated VHA national initiatives to implement these therapies (n=5)<sup>24,84,85,92,93</sup> (Table 3). These articles evaluated pre-training to post-training outcomes following VHA national training initiatives for CBT for chronic pain,<sup>24</sup> CBT for depression,<sup>93</sup> CBT-I,<sup>85,92</sup> and ACT for depression.<sup>84</sup>

### Implementation Strategies Evaluated

We identified 4 distinct groups of implementation interventions: 1) training/education, facilitation, and audit/feedback, 2) training/education and audit/feedback, 3) training/education, and 4) access to new funding. First, we classified the implementation strategies employed in VHA implementation of CBT and ACT as training/education, facilitation, and audit/feedback. This classification was based on ERIC definitions,<sup>33,34</sup> in which training/education means provision of provider educational resources, facilitation is interactive support provided by internal or external individuals (*eg*, centralized VHA training initiatives to provide resources and support to individual sites), and audit/feedback is collection and summary of clinical performance data (*eg*, fidelity measures, recommendations during consultation) given to administrators or clinicians to modify behaviors and enhance fidelity. VHA implementation of CBT and ACT involved structured programs of in-person workshops (2-3 days) followed by 6 months of weekly consultation with experts. For their consultation sessions, trainees were required to submit audio-recordings of therapy sessions with patients, which were rated for fidelity. VHA provided facilitation through centralized resources and support.

In addition to VHA national training initiatives, we included an additional 3 articles under the classification of training/education, facilitation, and audit/feedback.<sup>86,88,89</sup> These articles were also VHA training initiatives that included training, internal or external facilitation, and audit/feedback, but were not part of the VHA national training initiatives. Two articles reported on the same VHA study evaluating pre-post outcomes following implementation of regional training for CBT for depression.<sup>88,89</sup> This training included a 1.5-day CBT workshop and biweekly follow-up group telephone consultation calls for participants over 12 weeks. In addition, 12 therapists at 10 sites were randomly assigned to receive external facilitation. The facilitator met with them at least monthly after the workshop for 6 months to discuss setting individual goals for CBT implementation, attempting CBT quickly, and reinforcing all efforts to get started. Later calls focused on maintaining motivation and overcoming barriers to achieving individual goals. In addition to scheduled calls, the facilitator received and responded to individual questions and sent email announcements and reminders to the group.<sup>88,89</sup> One article also reported a pre-post VHA pilot study implementing brief CBT in primary care for depression and anxiety.<sup>86</sup> Mental health providers were given access to an online training program to complete at their own pace, expected to take approximately 8 hours. Expert clinicians audited patient session audio recordings and provided written and/or verbal feedback regularly, with 2-4 randomly extracted session recordings reviewed in 4- to 6-month intervals. External facilitators (*ie*, members of the project staff) regularly engaged study clinicians and clinic leadership through regular group meetings and email. Internal facilitators (*ie*, local directions of Primary Care Mental Health Integration [PCMHI]) addressed site-specific clinician and system concerns collaboratively with external facilitators.

In the second group, there were 2 articles which evaluated training/education and audit/feedback, but did not explicitly state the use of internal or external facilitation and were not supported by VHA national initiatives. One article evaluated training US community addiction counselors to deliver group CBT for depression; counselors received 2 days of didactic training and weekly group supervision over 2.5 years, including review of audiotapes and feedback to improve adherence.<sup>90</sup> The other study trained providers on CBT skills for treating PTSD patients, using 3 internet-based training modules combined with weekly consultations via telephone for 6 weeks.<sup>83</sup>

Finally, 1 study evaluated online training/education for CBT for depression for VHA SUD program counselors,<sup>81</sup> and another examined access to new funding to facilitate implementation of mental health treatments at primary care sites.<sup>94</sup> This latter study involved 2 primary care demonstration sites for the Improving Access to Psychological Therapies (IAPT) initiative of the UK National Health Service (NHS). IAPT provided financial resources to improve access to mental health treatments in primary care.<sup>94</sup>

Below, we summarize results organized by these 4 groups based on implementation strategies. Detailed characteristics and results are found in Appendix Table G3.

### **Training/Education, Facilitation, and Audit/Feedback**

Eight articles evaluated VHA training programs for CBT ( $n=7$ )<sup>24,85,86,88,89,92,93</sup> and ACT ( $n=1$ ),<sup>84</sup> using survey data from trainees and those who completed training, and information about patients treated by providers who were trained by these programs. Evaluation of CBT-CP involved 71 trained mental health providers across VHA facilities (48 psychologists, 19 social

workers, and 4 nurses); of these, 84.5% (n = 60) met all training program requirements.<sup>24</sup> Evaluation of the national training program for CBT for depression involved 221 therapists who participated in workshops and consultation; 82% (n= 182) met all training program requirements.<sup>93</sup> Evaluation of the national training program for CBT-I reported data from 207 trained therapists across 6 cohorts, with 93% (n = 193) having met all training program requirements.<sup>85,92</sup> For national implementation of ACT for depression, 391 therapists were trained, with 85% (n = 334) completing training program requirements.<sup>84</sup> The regional implementations of CBT for depression involved 28 mental health providers in 1 study,<sup>88,89</sup> and 9 PCMHI providers at 2 VHA sites in the other (4 providers completed all training modules).<sup>86</sup> These studies reported outcomes addressing Effectiveness, Adoption, Implementation, and Maintenance. No articles in this classification group reported on reach.

### *Effectiveness*

For patients treated with CBT-CP, there was a large reduction of pain catastrophizing (Cohen's d = 0.81); moderate reductions in pain interference (Cohen's d = 0.57) and depression (Cohen's d = 0.53), and moderate improvement in quality of life (Cohen's d = 0.45); and a small reduction in pain intensity (Cohen's d = 0.22 to 0.26).<sup>24</sup> For patients who received CBT for depression, there was a large reduction in depression (Cohen's d = 0.80) and moderate improvement in quality of life (Cohen's d = 0.39 to 0.74).<sup>93</sup> Patients who were treated with CBT-I had large reductions in insomnia symptoms (Cohen's d = 2.2); moderate reduction in depression (Cohen's d = 0.60); and small to large improvement in quality of life across domains (Cohen's d = 0.34 to 0.87).<sup>85</sup> Patients who received ACT for depression had moderate improvement in quality of life across domains (Cohen's d = 0.40 to 0.61) and reduction in depression symptoms ( $p < 0.001$ ).<sup>84</sup>

### *Adoption*

We categorized reported outcomes regarding provider attitudes and self-efficacy as Adoption. For providers trained in CBT for depression, improvement in general psychotherapy self-efficacy was found post-consultation ( $p < 0.001$ ), and higher CBT-specific self-efficacy was noted post-workshop and post-consultation ( $p < 0.001$  for both comparisons).<sup>93</sup> Additionally, providers had increases in positive attitudes toward CBT post-workshop and post-consultation ( $p < 0.001$  for both comparisons). Providers who underwent training for CBT-I had increases in general psychotherapy self-efficacy post-consultation ( $p < 0.001$ ), and CBT-I specific self-efficacy post-workshop and post-consultation ( $p < 0.001$  for both comparisons).<sup>92</sup> There were also increases in positive attitudes toward CBT-I post-workshop ( $p < 0.001$ ), with no further increase after consultation. Providers trained in ACT for depression had increased self-efficacy for general psychotherapy post-consultation ( $p < 0.001$ ), and higher ACT-specific self-efficacy post-workshop and post-consultation ( $p < 0.001$  for both comparisons).<sup>84</sup> Therapists' attitudes toward ACT were also more positive post-workshop ( $p < 0.001$ ), with no further increase after consultation.

One study evaluated regional training for CBT for depression, finding that therapists who received facilitation had a mean increase of 19% in self-reported CBT use from baseline (vs control mean increase of 4%), but this was not statistically significant.<sup>89</sup> There was also no added benefit for facilitation in terms of CBT-specific knowledge, skill, or ability at 3 months post-workshop when compared with those who did not receive facilitation.<sup>88</sup> There was improvement in providers' CBT knowledge post-workshop ( $p < 0.01$ ), and increased use of certain CBT skills

at 3 months post-training, including orienting patients to CBT ( $p=0.003$ ), setting goals ( $p=0.002$ ), and behavioral activation ( $p=0.01$ ).<sup>88</sup>

### *Implementation*

Five articles reported on implementation fidelity, as assessed by review of audio-recorded patient sessions. Providers trained in CBT-CP showed higher ratings on competency for the second patients they treated, compared with the first ones (Cohen's  $d = 0.34$ ,  $p=0.003$ ).<sup>24</sup> Similarly, providers had increased competency ratings for CBT for depression, in comparing later sessions to initial ones for their first treated patients (Cohen's  $d = 0.79$ ).<sup>93</sup> The study of CBT-I found competency scores were significantly higher on providers' last therapy sessions compared to the first therapy sessions for the first patients, and on the second patient's tapes compared with first patient's tapes.<sup>85</sup> The study for ACT for depression found the percentages of therapists who achieved as score indicative of core ACT competencies during the initial, middle, and later phase of training were 21%, 68%, and 96%, respectively, and that all sub-scale scores improved significantly during consultation.<sup>84</sup> In evaluating the fidelity of brief CBT for depression and anxiety, the majority of audio-recorded sessions were rated acceptable for treatment adherence and skillfulness.<sup>86</sup>

The evaluation of regional training for CBT for depression reported that the facilitator spent 25 hours in facilitation-related activities.<sup>89</sup> Therapists spent a total of 26.5 hours in direct contact with the facilitator. The total cost for personnel time (facilitator and 12 therapists) was \$2,458.80 over 7 months. Regarding barriers to using CBT, qualitative interviews identified 4 common themes: lack of control over the clinic schedule; rejection of CBT due to difficulty and inflexibility; therapist duties; and poor communication between therapists and clinical leadership.

### *Maintenance*

In surveys 6 months after completion of consultations, therapists reported using CBT-CP with approximately two-thirds of the patients they treated.<sup>24</sup> About three-quarters adhered to the protocol, including use of outcome measures to assess progress. Providers agreed that CBT-CP was effective, were likely to recommend it to Veterans, and reported that their treatment approach had changed more towards a CBT model. Similarly, provider surveys 6 months after consultation for CBT-I training showed that 74% had used CBT-I during the previous month, with mean of 3.4 (SD 5.3) patients seen per provider.<sup>92</sup> The most common challenges to continued use of CBT-I were competing professional demands and patient factors (eg, no-shows and patients' distance from clinic).

Evaluation of national training program for CBT for depression included provider surveys 3-12 months after consultation, finding a mean of 19 (SD 22.3, range 0–140) patients were treated since completion of training.<sup>93</sup> Additionally, surveys of providers 3-12 months after training for ACT for depression showed they were using ACT with approximately 39% of the patients they treated with depression in the month prior.<sup>84</sup> However, given the wide range in duration post-training for both of these studies, it is unclear whether there was sustained use of CBT or ACT for depression by providers.

## Training/Education and Audit/Feedback

Of 2 studies using training/education and audit/feedback, 1 evaluated outcomes for implementing group CBT for depression in non-VA community addiction programs.<sup>90</sup> For 5 trained addiction counselors, implementation fidelity was assessed using ratings of audio-recorded sessions; the average adherence rate was 94% across all coded sessions (total 80), suggesting high adherence to the treatment.<sup>90</sup> The average competence score across all coded sessions was 4.1, which authors reported as indicating counselors were competently delivering CBT.<sup>90</sup> For reach, survey data from patients who received CBT indicated positive experiences and perceptions of group CBT. For example, 86% indicated that they “strongly agree” they could use information from the group in their daily life, and 83% reported exercises conducted in the group were helpful.<sup>90</sup>

The other study involved 139 VHA mental health providers who were randomized to training in CBT skills for treating PTSD (n=46 internet modules only, n=42 internet modules and weekly consultation), or no training (n=51).<sup>83</sup> In surveys of provider knowledge and self-efficacy, providers in either training arm had greater increases post-training compared with no training group (eg, mean difference on self-efficacy was 1.28 for internet and consultation group, compared with 0.21 in no training group). Improved motivation enhancement and behavioral task assessment skills, as assessed using standardized patient encounters, were also noted for both training arms, with stronger effects for those who had internet modules and consultation.<sup>83</sup>

## Training/Education

Eight volunteer counselors (at 7 VHA SUD programs) completed online training for CBT for depression.<sup>81</sup> They reported concerns regarding implementation resource barriers: “I’m going to have to do the group [alone]... I don’t think I’m going to have a co-facilitator.” Additionally, counselors indicated they would adapt group CBT such that patients could be admitted on an open basis. Regarding reach, counselors indicated concerns about patient needs and that complexity of clinical presentation necessitated resources beyond standard CBT.

## Access to New Funding

The other study evaluated outcomes at 2 primary care demonstration sites for IAPT (UK NHS initiative).<sup>94</sup> We focus here on the results for the Newham site which delivered in-person CBT for depression or anxiety to a majority of referred patients; the other site provided mostly self-guided resources. For reach, 24% of referred patients (249 of 1043) attended at least 2 sessions (ie, received some treatment beyond initial assessment).<sup>94</sup> There were also more black individuals among self-referrals for CBT (22%), compared with those referred by their GPs (16%). Regarding effectiveness, the study found significant improvements in depression (Cohen’s  $d = 1.06$ ) and anxiety (Cohen’s  $d = 1.26$ ) from initial assessment to last available session for patients who had at least 2 sessions.<sup>94</sup>

**Table 5. Outcomes for Implementation of CBT and ACT—Results by Implementation Strategies and RE-AIM Categories**

	Training/Education, Facilitation & Audit/Feedback (8 articles) <sup>24,84-86,88,89,92,93</sup>	Training/Education & Audit/feedback (2 articles) <sup>83,90</sup>	Training/Education (1 article) <sup>81</sup>	Access to New Funding (1 article) <sup>94</sup>
Reach		<ul style="list-style-type: none"> <li>• Patients felt CBT groups and resources were helpful and understandable<sup>90</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Due to patient complexity, CBT may not be enough to help patients</li> </ul>	<ul style="list-style-type: none"> <li>• 24% of the patients referred (249 of 1043) attended ≥2 CBT sessions</li> <li>• More black individuals among self-referrals (22%) for CBT vs those referred by GPs (16%)</li> </ul>
Effectiveness	<ul style="list-style-type: none"> <li>• ↓ chronic pain symptoms with CBT-CP<sup>24</sup></li> <li>• ↓ insomnia symptoms for CBT-I<sup>85</sup></li> <li>• ↓ depression/anxiety symptoms with CBT-CP,<sup>24</sup> CBT for depression,<sup>93</sup> CBT-I,<sup>85</sup> and ACT for depression<sup>84</sup></li> <li>• ↑ quality of life for CBT-CP,<sup>24</sup> CBT for depression,<sup>93</sup> CBT-I,<sup>85</sup> and ACT for depression<sup>84</sup></li> </ul>			<ul style="list-style-type: none"> <li>• ↓ depression/anxiety symptoms for treated patients</li> </ul>
Adoption	<ul style="list-style-type: none"> <li>• ↑ provider self-efficacy for general and CBT-specific skills after training<sup>84,92,93</sup></li> <li>• ↑ provider positive attitudes toward CBT after training<sup>84,92,93</sup></li> <li>• ↑ utilization, knowledge and ability for specific CBT procedures after training, no added benefit from facilitation<sup>88,89</sup></li> </ul>	<ul style="list-style-type: none"> <li>• ↑ knowledge and self-efficacy for CBT after training, with added benefit from consultation following training<sup>83</sup></li> </ul>		
Implementation	<ul style="list-style-type: none"> <li>• ↑ provider competency in CBT after training<sup>24,86,92,93</sup></li> <li>• ↑ provider competency in ACT after training<sup>84</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Mean provider adherence rate of 94% and demonstrated competence after CBT training<sup>90</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Providers need to do CBT group alone due to lack of co-facilitator, and would adapt CBT</li> </ul>	



	Training/Education, Facilitation & Audit/Feedback (8 articles) <sup>24,84-86,88,89,92,93</sup>	Training/Education & Audit/feedback (2 articles) <sup>83,90</sup>	Training/Education (1 article) <sup>81</sup>	Access to New Funding (1 article) <sup>94</sup>
Maintenance	<ul style="list-style-type: none"> <li>• Barriers to using CBT—lack of control over schedule; provider rejection of CBT due to difficulty and inflexibility; therapist duties; and poor communication between therapists and leadership<sup>88</sup></li> <li>• 6 months post-training, 66% of providers were using CBT-CP <sup>24</sup></li> <li>• 6 months post-training, 74% of providers were using CBT-I with patients, mean of 3.4 patients seen by each<sup>92</sup></li> <li>• 3-12 months post-training, providers reported using CBT for mean of 19 patients (range 0-140)<sup>93</sup></li> <li>• 3-12 months post-training, providers were using ACT with approximately 39% of patients with depression in the month prior<sup>84</sup></li> <li>• Common challenges to use of CBT-I—competing professional demands and patient factors (eg, patients' distance from clinic)<sup>92</sup></li> </ul>	<ul style="list-style-type: none"> <li>• ↑ provider skills ratings for CBT (for PTSD) after training, with added benefit of consultation <sup>83</sup></li> </ul>	<p>group to admit patients on an open basis <sup>81</sup></p>	

ACT = Acceptance and Commitment Therapy; CBT = Cognitive Behavioral Therapy; CBT-CP = Cognitive Behavioral Therapy for Chronic Pain; CBT-I= Cognitive Behavioral Therapy for Insomnia; GP=general practitioner; PTSD=Posttraumatic Stress Disorder

## TRAUMA-FOCUSED PSYCHOTHERAPIES FOR PTSD—CPT AND PE: BARRIERS, FACILITATORS, AND EFFECTS OF IMPLEMENTATION STRATEGIES (KQ 2)

### Key Results

- VHA national training programs improved provider perceptions about and self-efficacy for CPT/PE, but persistent barriers in VHA settings limited reach and adoption.
- Barriers in VHA settings included:
  - Inflexibility and lack of adaptability of CPT/PE protocols
  - Provider workload and scheduling challenges
  - Complexity, comorbidities, and other competing needs of Veterans in VHA
  - Complex referral processes that were burdensome and appeared redundant to patients
  - Patients’ (and their social networks’) negative perceptions about VHA care, whether due to direct experience or media reports
- Facilitators in VHA settings included:
  - Strong VHA support for training
  - Perceived effectiveness of CPT/PE for patient outcomes
  - Perceived benefits for clinic scheduling and provider morale
  - Patients’ positive experiences and relationships with providers in general and those who made referrals for treatments
- In non-VA community settings, mental health providers generally had low concern for barriers and thought that CPT/PE were compatible with their current work, but few had been trained in CPT/PE.
- Non-VA providers who underwent a training program for CPT/PE reported higher self-efficacy post-training, along with use of CPT/PE at 3 (58%) and 6 months (64%).

### Section Overview

Among 25 articles addressing CPT and/or PE, the majority evaluated VHA national initiatives to implement these therapies (n=7)<sup>76-78,80,82,87,91</sup> or persistent barriers and facilitators to their use in VHA settings (n=12),<sup>58,60-62,65,67-71,101,102</sup> often 10 years or more after these initiatives were first launched (Table 6 and Table 7). One article reported only pre-training survey results from mental health providers enrolled in the VHA national PE training program.<sup>72</sup> VHA implementation of

CPT and PE began in 2006 and 2007, respectively, and involved structured programs of in-person workshops (2-4 days) followed by 6-9 months of weekly consultation with experts. Consultants were nationally designated trainers that initially included individuals who had developed these therapies.<sup>72,91</sup> For their consultation sessions, trainees were required to submit records of therapy sessions with patients, either session notes or audio-recordings. We classified the implementation strategies employed in these national VHA programs as training/education, facilitation, and audit/feedback.

Additionally, 2 articles reported evaluations within VHA settings of different strategies to increase patient uptake and adherence — 1 developed a new referral process for CPT/PE that included 1 session of CBT delivered by PCMHI providers.<sup>75</sup> This article also reported on stakeholder interviews with primary care and mental health leadership regarding barriers and facilitators to uptake of CPT/PE, which provided the rationale for development of specific referral processes.<sup>75</sup> A second study examined outcomes associated with preparatory psychoeducation groups for patients not ready to undergo CPT/PE.<sup>73</sup> Finally, 3 articles evaluated CPT/PE in non-VA community settings: 1 article evaluated outcomes of CPT/PE implementation<sup>74</sup> and 2 articles addressed barriers and facilitators among community providers.<sup>63,66</sup> Similar to VHA program for implementing CPT/PE, the implementation program for community providers involved 2-day workshops (on CPT or PE) followed by 6 months of expert consultation that involved reviewing 3 audio-recorded patient sessions for each trainee.<sup>74</sup>

Below, we first summarize results for articles addressing CPT/PE in VHA settings, and then describe remaining studies in non-VA community clinics. As in other sections, we group outcomes of implementation strategies by RE-AIM, and results on barriers and facilitators using the CFIR framework. Detailed characteristics and results for these articles are found in Appendix Table G4 and Appendix Table G5.

## Outcomes of VHA National Implementation for CPT and PE

Seven articles evaluated the VHA national training programs using surveys of mental health providers who were participating or who had completed training (Table 6).<sup>76-78,80,82,91</sup> Some articles also reported patient outcomes (obtained from the medical record or submitted during consultation) for those treated by these providers.<sup>77,82,87,91</sup> Reported outcomes largely addressed Effectiveness, Adoption, Implementation, and Maintenance.

### *Effectiveness*

Four articles described reduction in severity of PTSD symptoms for patients who were treated by mental health providers either trained or undergoing training in CPT/ PE.<sup>77,82,87,91</sup> PTSD symptoms were assessed using the PTSD Checklist (PCL), scored as the sum of responses to 17 items regarding symptoms over the past month (score range 17-85).<sup>103,104</sup> Scores of 50 or higher are considered to indicate active PTSD.<sup>103,104</sup> PCL were assessed for patients before, during, and at the end of CPT/PE treatment. Average PCL scores decreased around 20 points from pre to post-treatment.<sup>82,87,91</sup> One article reported that the experience level of the therapist (trainee, completed training, and expert trainer) was associated with increased odds (adjusted odds ratio [AOR] 20.38 [1.03, 5.51]) of treatment response, defined as a decrease of at least 10 points and score less than 50 on PCL at the end of treatment.<sup>77</sup>

Additionally, 2 articles reported reductions in depression symptoms for patients treated by trainees or providers who completed CPT/PE training.<sup>82,87</sup> Depression was assessed using the Beck Depression Inventory-II (BDI-II), scored as the sum of 21 items addressing symptoms over a 2-week timeframe (score range 0-63).<sup>105</sup> BDI-II scores of 20 or higher indicate moderate to severe depression.<sup>105</sup> Comparing pre- to post-treatment, average BDI-II scores decreased 8-11 points.<sup>82,87</sup>

### *Adoption*

Four articles reported on improved provider attitudes and self-efficacy for delivering trauma-focused therapies, as assessed by surveys pre and post-training.<sup>78,80,87,91</sup> For example, among 656 providers who completed PE training, there was higher expectations for positive patient outcomes from PE, and lower expectations for negative patient outcomes, when comparing pre- and post-workshop, as well as post-workshop to post-consultation survey results.<sup>80</sup> There was also greater average self-reported intent to use PE with patients for trainees after the consultation phase.<sup>80</sup>

### *Implementation*

One article surveyed 2 groups of providers trained in CPT (n=325 and 541) regarding reasons they had not started using CPT or could not use it with more patients; the top 2 reasons were “having no or little room in their schedule” and “workload is too heavy.”<sup>87</sup>

### *Maintenance*

One article examined the association of provider attitudes and self-efficacy pre- and post-training with self-reported use of PE at 6 months.<sup>78</sup> Providers reported using PE for 14% of their patients on average, and pre-training expectations for positive and negative patient outcomes were associated with using PE for higher and lower numbers of patients, respectively.<sup>78</sup> Changes in provider attitudes and self-efficacy during and after training were not associated with use of PE.<sup>78</sup> Another article reported survey results for 566 providers, 6 and 18 months after completion of PE training; perceived effectiveness of PE on 6-month surveys predicted providers’ self-reported use of PE at 18 months, assessed as proportion of their patients with PTSD being treated by PE.<sup>76</sup> Additionally, providers’ positive perceptions at 6 months about their ability to generate referrals for PE was also predictive of self-reported use of PE at 18 months.

## **VHA: New Referral Process and Preparatory Group Sessions**

One article reported results from a new referral process for mental health treatment for PTSD.<sup>75</sup> Authors first conducted stakeholder interviews to identify a range of barriers and facilitators, then developed educational materials for PCPs and a referral system involving 1 session of CBT delivered by PCMHI to referred patients. For reach, the primary care clinic using these strategies had 12% of its patients with PTSD (n=34) referred to psychotherapy, and 5% (n=13) attended at least 1 session of CPT/ PE.<sup>75</sup> A comparator clinic (who did not use the new processes) had 4% of its patients with PTSD referred to psychotherapy, and 1% who attended at least 1 session of CPT/PE. The authors intended to examine effectiveness (changes in PTSD symptoms and quality of life after referral), but data were available for only 9 patients who received CPT/PE.

Additionally, 1 article reported on reach and effectiveness of CPT/PE for patients who had first attended preparatory psychoeducation sessions, compared with those who had not.<sup>73</sup> Both groups had decreased symptoms pre- to post-treatment, and authors reported no differences in completion rates. However, providers preferentially referred patients to preparatory sessions if “they had reservations” about CPT/PE; it was unclear how authors addressed bias due to selection, which may have masked the effects of preparatory groups (*ie*, only patients who were less likely to complete treatment were first referred to preparatory groups).

## Barriers and Facilitators in VHA Settings

Fourteen articles addressed persistent barriers and facilitators in VHA settings, using mainly interviews with patients, mental health providers, and clinic and facility leadership; results are summarized in Table 7. Reported results pertained to Intervention Characteristics (n=5),<sup>61,62,65,75,102</sup> Outer Setting (n=7),<sup>61,62,65,67,68,70,102</sup> Inner Setting (n=11),<sup>56,61,62,65,67,68,70-72,75,102</sup> and Characteristics of Individuals (n=10).<sup>58,60,65,68-72,101,102</sup> There were no results applicable to the Process domain.

### *Intervention Characteristics*

Five articles provided results on several subdomains, including Intervention Source, Evidence Strength and Quality, Relative Advantage, Adaptability, and Complexity (Table 7). Mental health providers thought CPT/PE to be generally effective<sup>61,65,102</sup> but were concerned that they may not work for all patients.<sup>61,65</sup> CPT/PE were developed for non-Veterans and may not adequately address comorbidities (both physical and mental health conditions) and complex trauma history commonly seen for Veterans in VHA care.<sup>61</sup> One study interviewed providers from clinics that varied in the proportion of patients receiving psychotherapy who were treated with CPT/PE; providers from clinics using less CPT/PE reported that these therapies “did not live up to expectations” and “described the clinical benefits as ‘partial’.”<sup>65</sup> Providers noted as positives that CPT/PE were short-term and relevant<sup>61</sup> but also thought other treatments can be effective.<sup>61,65,102</sup> Additionally, providers noted the inflexibility of CPT/PE, the need to adapt the manualized content for certain patients,<sup>61,65</sup> and lack of research guiding adaptations.<sup>65</sup> Patients also found referral processes to be complex and burdensome.<sup>62</sup> PCPs noted treatment of PTSD would also benefit management of patients’ physical health conditions.<sup>75</sup>

### *Outer Setting*

Seven articles described results pertaining to patient factors, including Patient Needs and Resources, Knowledge and Beliefs, and Other Attributes (Table 7). Patients reported difficulty attending appointments due to competing personal commitments and medical care burden.<sup>62,68</sup> Some patients also had privacy concerns related to the stigma of mental health treatment.<sup>68</sup> Shared decision-making (with detailed explanations of treatment options), sharing stories of other patients who improved with CPT/PE, and discussing positive research on these therapies were reported to increase patient buy-in.<sup>70</sup> However, some patients did not recall information about CPT/PE, or only had vague recollections, despite medical records that documented discussions.<sup>62</sup> Providers were also concerned that patients who were used to receiving supportive therapy may not find short-term treatment or possible recovery to be credible.<sup>65</sup> Some sites offered preparatory psychoeducation groups to educate patients about CPT/PE and improve coping skills,<sup>65,102</sup> and some screened patients to identify those receptive to CPT/PE.<sup>65</sup> Providers

noted the strong level of VHA support for CPT and PE (External Policies and Incentives), although these therapies were not perceived to fit well within broader community practices beyond VHA (General Practice Climate).<sup>65</sup>

### *Inner Setting*

Eleven articles addressed subdomains including Networks and Communication, Culture, Implementation Climate, Readiness for Implementation, Provider Decision-making, and Patient-Provider Relationships.

#### *Networks & Communication*

In the previously noted study on PTSD clinics that varied in use of CPT/PE, those clinics using CPT/PE with more patients had weekly consultation groups for providers to discuss cases and other issues.<sup>65</sup> Some patients reported frustrations with complexity and “red tape” in VHA processes for referrals and obtaining different services for both mental and physical health conditions, leading to “overall rejection of the system.”<sup>62</sup>

#### *Culture*

Some providers felt pressure to use CPT/PE, reporting that “the VA culture is like it’s [CPT/PE] or nothing.”<sup>61</sup> Provider perceptions of organization culture were not associated with provider use of or adherence to CPT/PE protocols.<sup>71</sup> Some patients believed that VHA had a negative reputation, due to media reports or concerns from individuals in their social networks.<sup>62</sup>

#### *Implementation Climate*

In PTSD clinics using CPT/PE with more patients, staff believed that their main mission was to deliver CPT/PE (Compatibility and Relative Priority); these sites also had databases that tracked patient referrals, attendance, and outcomes, as metrics for feedback to staff and local leadership (Goals and Feedback).<sup>65</sup> Another article reported that mental health and primary care leaders at 1 VHA facility perceived a need to increase the number of appropriate patient referrals for PTSD treatments.<sup>75</sup>

#### *Readiness for Implementation*

PTSD clinics using CPT/PE with more patients had local leaders who were experienced with CPT/PE and highly engaged in implementation of these therapies.<sup>65</sup> These sites also had dedicated resources, including protected time for staff to attend weekly consultation meetings and databases that tracked patient referrals and outcomes.<sup>65</sup> Staff at all sites noted the importance of being able to control their appointment schedules, and 1 site with low use of CPT/PE had given providers more flexibility in their schedules to help increase use of CPT/PE.<sup>65</sup> Workload and scheduling challenges were often noted as barriers,<sup>65,71,102</sup> but 1 study did not find these factors to be associated with providers’ self-reported use of CPT/PE or adherence to therapy protocols.<sup>71</sup> In another study, providers perceived ongoing VHA support for training,<sup>61</sup> but other articles indicated that some clinics lacked trained staff and capacity to deliver CPT/PE.<sup>38,71</sup> For Access to Knowledge, mental health providers reported research results were helpful for treatment decisions, but they had variable confidence in research focusing on different types of PTSD (eg, PTSD with shame).<sup>69</sup> PCPs were noted to need more information about availability

PTSD treatments, recognizing PTSD symptoms, and scripts to help with discussing PTSD treatments with hesitant patients.<sup>75</sup> One article reported some patients disliked VHA facilities, which were maze-like, crowded, and perceived as unsafe.<sup>62</sup>

### *Provider Decision-making*

Several articles highlighted providers' consideration of patient factors in determining if they should offer CPT/PE or other mental health treatments. In addition to patients' comorbidities, coping skill, and home situation, providers also considered patients' history of missed appointments; providers sometimes made decisions without patient input but at other times, collaboratively with patients.<sup>67,68</sup> Explaining treatment options and collaborative decision-making was noted as potentially helping with patient buy-in,<sup>70</sup> although patients who were referred but did not initiate CPT/PE were also mostly satisfied with their involvement in decision-making.<sup>62</sup> More providers preferred PE (vs CPT) for patients with low literacy, poor cognitive functioning, or traumatic brain injury; they preferred CPT for patients with strong guilt or shame.<sup>69</sup>

### *Patient-Provider Relationships*

Among patients who were referred to CPT/PE but did not initiate treatment, some reported history of poor experiences with either providers making referrals or non-mental health clinicians; however, many of these patients also had positive experiences with mental health providers.<sup>62</sup>

### *Characteristics of Individuals*

Ten articles reported results pertaining to subdomains of Knowledge and Beliefs, Self-efficacy, and Other Personal Attributes. With regard to Knowledge and Beliefs, 1 article reported that providers were slowly growing in acceptance of patients improving with short-term therapy and being able to "move on."<sup>102</sup> In the study described above which examined PTSD clinics that varied in use of CPT/PE, mental health providers and leaders at sites using more CPT/PE reported commitment to these therapies; they also believed that use of CPT/PE had benefits for the clinic, including better recruitment and morale among providers.<sup>65</sup> Other studies reported that a variety of provider characteristics had small associations with both positive and negative perceptions of PE,<sup>72</sup> and greater perceived effectiveness of CPT/PE was associated with higher use of CPT/PE.<sup>71</sup> Several articles examined role of cognitive-behavioral orientation, finding that it was associated with perceived effectiveness of PE but not with use of PE,<sup>71</sup> and use of CPT.<sup>60,101</sup> One article reported survey results of 247 mental health providers trained in CPT/PE, finding that 46% preferred PE and 13% preferred CPT; provider characteristics were not associated with preferences.<sup>69</sup> One article noted that PCPs may value more CPT/PE if they were more familiar with the evidence supporting their effectiveness.<sup>75</sup>

One study also surveyed provider self-efficacy for PE, finding small associations between provider characteristics (eg, experience with PTSD treatments) and self-efficacy.<sup>72</sup> Several other articles noted Other Personal Attributes of mental health providers including that graduate training in CBT was not associated with provider use of CPT/PE<sup>58</sup> or provider perceptions of patient preferences for CPT/PE.<sup>60,101</sup> Provider expressions of encouragement and reassuring manner were perceived by patients as helping them to move forward with CPT/PE<sup>70</sup> but some

patients reported interruptions in treatment from providers leaving the facility (temporarily or permanently) due to a variety of reasons.<sup>68</sup>

### **Implementation in Non-VA Settings, and Barriers and Facilitators**

Only 3 articles addressed CPT/PE in non-VA settings. One reported outcomes of a training program for non-VA community mental health providers; this used a combination of in-person workshops and external expert consultation that was similar to VHA programs.<sup>74</sup> Adoption was assessed using surveys of 134 providers at 6 months post-workshop; trainees who were taking part in the consultation (rather than only completing workshops) had higher odds of self-reported use of CPT/PE (OR 11.37 [3.2, 40.3]).<sup>74</sup>

Two articles addressed barriers and facilitators among community providers; 1 surveyed 463 mental health providers in Texas, who reported low overall barriers for using CPT/PE.<sup>63</sup> For example, most (66%) perceived ability to be reimbursed for treating PTSD (Outer Setting—External Policies & Incentives), and most (64-70%) felt that treatments fit well within their existing practice (Inner Setting—Implementation Climate, Compatibility). However, few providers were trained CPT/PE (<25%). The other article reported results from an online survey of 352 mental health providers in New England.<sup>66</sup> Although 70% were comfortable treating Veterans, only 40% were familiar with CPT/PE and 34% had received training (Characteristics of Individuals—Knowledge and Beliefs, Other Attributes). Barriers to training included needing to take time from work and the cost of trainings (Inner Setting—Readiness for Implementation, Available Resources).



**Table 6. Outcomes for Implementation of Trauma-Focused Psychotherapies for PTSD (CPT/ PE)—Results by RE-AIM Categories**

	VHA National CPT/PE Initiatives: Training/Education, Facilitation, & Audit/Feedback (7 articles) <sup>76-78,80,82,87,91</sup>	VHA Preparatory Groups & New Referral Process: Increasing Patient Uptake & Adherence (2 articles) <sup>73,75</sup>	Non-VA Strategies: Training/Education, Facilitation, & Audit/Feedback (1 article) <sup>74</sup>
Reach	<ul style="list-style-type: none"> <li>• Provider characteristics (eg, psychologist or social worker) were not associated with treatment completion by patients<sup>82</sup></li> </ul>	<ul style="list-style-type: none"> <li>• No differences in completion of CPT/PE between patients who had preparatory groups vs those who did not (63% vs 69%), but referral to preparatory groups indicated not being ready for PE or CPT<sup>73</sup></li> <li>• Higher referrals to psychotherapy (12% vs 4%) and more attended ≥ 1 session of CPT/PE (5% vs 0.8%) for PTSD patients in primary care clinic implementing new referral processes, compared with a clinic not using new process<sup>75</sup></li> </ul>	
Effectiveness	<ul style="list-style-type: none"> <li>• ↓ PTSD symptoms (↓PCL 14.1-18.9) for patients treated by trainees or providers who completed training<sup>82,87,91</sup></li> <li>• ↓ depression symptoms (↓ BDI-II 8.3-11.2) for treated patients<sup>82,87</sup></li> <li>• Greater provider PE experience predicted higher odds of improvement (OR 2.38 [1.03, 5.51]) in PTSD symptoms<sup>77</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Smaller reductions in PTSD (↓ PCL 5 vs 12) and depression symptoms (↓ PHQ-9 1.4 vs 3.2) for patients who had preparatory groups vs those who did not<sup>73</sup></li> <li>• No significant changes in PTSD symptoms or quality of life over 3 months for PTSD patients in primary care clinic using new referral processes, but very few received any treatment<sup>75</sup></li> </ul>	
Adoption	<ul style="list-style-type: none"> <li>• ↑ provider confidence and self-efficacy for CPT/PE after training<sup>78,80,87,91</sup></li> <li>• ↓ concerns about PE (eg, therapy distressing patients) decreased after training; beliefs about PE were associated with self-reported intent to use PE<sup>80</sup></li> </ul>		<ul style="list-style-type: none"> <li>• ↑ provider confidence and self-efficacy for CPT/PE after training; 3 months after training, 58% reported using CPT/PE (85% among subset who completed consultation and workshops); 6 months after training, 64% were using CPT/PE (93% among those</li> </ul>

VHA National CPT/PE Initiatives: Training/Education, Facilitation, & Audit/Feedback (7 articles)<sup>76-78,80,82,87,91</sup>

VHA Preparatory Groups & New Referral Process: Increasing Patient Uptake & Adherence (2 articles)<sup>73,75</sup>

Non-VA Strategies: Training/Education, Facilitation, & Audit/Feedback (1 article)<sup>74</sup> completed consultation and workshop)<sup>74</sup>

- Implementation
  - 71-89% of providers who completed CPT training would like to use CPT with more patients; top reasons for not using CPT were heavy workload, and having no or little room in schedules<sup>87</sup>
- Maintenance
  - 6 months after training, 77% of providers used PE with ≥ 1 PTSD patient, mean 2.3 patients treated per provider, factors significantly associated with higher numbers of patient receiving PE from that provider<sup>78</sup>:
    - working in a PTSD clinic
    - having more PTSD patients and larger caseloads before training
    - positive beliefs pre-training
    - increased self-efficacy during training
  - 71% of providers who completed PE training 18 months prior were using PE, mean 1.93 patients treated per provider; working in PTSD clinic, being male, and some positive provider beliefs about PE (at 6 months) were associated with more patients being treated per provider<sup>76</sup>

**Abbreviations:** BDI-II=Beck Depression Inventory; CPT=cognitive processing therapy; OR=odds ratio; PCL=PTSD Checklist; PE=prolonged exposure therapy; PTSD=posttraumatic stress disorder; VA=Veterans Affairs; VHA=Veterans Health Administration



**Table 7. Barriers and Facilitators for Uptake of Trauma-Focused Psychotherapies for PTSD (CPT and PE)—Results by CFIR Domains**

	VHA (12 articles) <sup>58,60-62,65,67-71,101,102</sup>	Non-VA Community Settings (2 articles) <sup>63,66</sup>
I. Intervention Characteristics	<p><b>Intervention Source</b></p> <ul style="list-style-type: none"> <li>CPT/PE developed and tested in civilians, Veterans are more complex with greater comorbidities<sup>61</sup></li> </ul> <p><b>Evidence Strength &amp; Quality</b></p> <ul style="list-style-type: none"> <li>Generally effective,<sup>61,65,102</sup> but not for all patients<sup>61,65</sup></li> </ul> <p><b>Relative Advantage</b></p> <ul style="list-style-type: none"> <li>Other mental health treatments can be effective<sup>61,65,102</sup></li> <li>In PTSD clinics using CPT/PE with more patients, providers perceived other treatments as less effective<sup>65</sup></li> <li>PCPs noted treating PTSD would also help with physical health conditions<sup>75</sup></li> </ul> <p><b>Adaptability</b></p> <ul style="list-style-type: none"> <li>Lack of flexibility in protocol, providers felt need to adapt some parts or duration<sup>61,65</sup></li> <li>More research needed to guide adaptation, lack of adaptability contributes to patient drop-out<sup>65</sup></li> </ul> <p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>CPT/PE are short-term and relevant,<sup>61</sup> but referral processes are complex and burdensome for patients<sup>62</sup></li> </ul>	<p><b>External Policies &amp; Incentives</b></p> <ul style="list-style-type: none"> <li>66% of mental health providers in Texas reported ability to be reimbursed for PTSD care<sup>63</sup></li> </ul>
II. Outer Setting	<p><b>Patient Needs &amp; Resources</b></p> <ul style="list-style-type: none"> <li>Barriers to attendance—work or school, transportation, physical health, caretaking responsibilities, anticipated redeployment<sup>62,68</sup></li> </ul> <p><b>External Policies &amp; Incentives</b></p> <ul style="list-style-type: none"> <li>Providers perceived strong VHA support for CPT/PE and importance of VA’s commitment to training<sup>65</sup></li> </ul>	

VHA (12 articles)<sup>58,60-62,65,67-71,101,102</sup>

Non-VA Community Settings (2 articles)<sup>63,66</sup>

**Patient Knowledge & Beliefs about Intervention**

- Detailed orientation to treatment before beginning CPT/PE, sharing of providers' successes with other patients, and information on positive research outcomes all increased patient buy-in<sup>70</sup>
- Patients often did not remember CPT/PE being discussed during referral processes or only recalled vaguely, and some did not buy in to treatment rationale<sup>62</sup>
- Some had privacy concerns about who would know about treatment<sup>68</sup>
- Clinic directors and providers noted that preparatory groups help inform patients about CPT/PE and improve coping skills<sup>65,102</sup>
- PTSD clinics using CPT/PE with more patients tended to have preparatory groups and screening procedures<sup>65</sup>
- Providers noted that some patients had received supportive psychotherapy for a long time, they (and their therapists) may not find short-term treatments or potential recovery to be credible<sup>65</sup>

**Other Patient Attributes**

- Provider concerns that CPT/PE does not work for all patients, many Veterans are complex with more comorbidities<sup>61,67,68</sup> and some may not have skills or be in safe situation for CPT/PE<sup>67,68</sup>

**General Practice Climate & Patterns**

- Providers perceived that CPT/PE did not fit with “emphasis on psychodynamic psychotherapies within the larger community”<sup>65</sup>

III. Inner Setting

**Networks & Communication**

- PTSD clinics using CPT/PE with more patients had peer consultation groups that staff attended weekly<sup>65</sup>
- Patients frustrated by complexity and bureaucratic “red tape” of VHA care, leading to “overall rejection of the system”<sup>62</sup>

**Implementation Climate:**

- **Compatibility**
  - Most surveyed providers (in Texas) reported PTSD treatments fit well with their work (64%), and would be easy to



**Culture**

- Some providers felt pressure to use CPT/PE: *“It is pretty much all we offer...the VA culture is like it’s [CPT/PE] or nothing”*<sup>61</sup>
- Perceptions of organizational politics and fair treatment were not associated with provider use or adherence to CPT/PE<sup>71</sup>
- Some patients perceived that VHA had negative reputation, due to media stories or concerns within their social circle<sup>62</sup>

**Implementation Climate:**

- **Tension for Change**
  - Mental health and primary care leadership perceived need to increase appropriate referrals for PTSD treatment<sup>75</sup>
- **Compatibility; Relative Priority**
  - In PTSD clinics using CPT/PE with more patients, staff perceived that their *“primary mission [was] to deliver PE and CPT... ‘It’s always been made clear the kind of program this is...If that does not fit with your orientation, that’s OK but we’re not going to change, that’s what you are going to be doing if you come in here...’ ”*<sup>65</sup>
- **Goals & Feedback**
  - PTSD clinics using CPT/PE with more patients often had databases tracking patient referrals, attendance, and outcomes<sup>65</sup>

**Readiness for Implementation:**

- **Leadership Engagement**
  - Leaders of PTSD clinics using CPT/PE with more patients were experienced with CPT/PE and engaged in implementation<sup>65</sup>
- **Available Resources**
  - PTSD clinics using CPT/PE with more patients had resources including databases to track patient outcomes, protected time for staff to participate in weekly consultation meetings<sup>65</sup>

incorporate (70%); few thought it would be complicated to use (18%)<sup>63</sup>

**Readiness for Implementation:**

- **Available Resources**
  - Most surveyed providers (in New England) were interested in training (87%), but noted barriers including needing to take time away from work (56%) and high training costs (52%)<sup>66</sup>

VHA (12 articles)<sup>58,60-62,65,67-71,101,102</sup>Non-VA Community Settings (2 articles)<sup>63,66</sup>

- Providers noted importance of controlling their own appointment schedules<sup>65</sup>
- Providers often reported workload and scheduling challenges<sup>65,71,102</sup> but these factors were not associated with use or adherence to CPT/PE<sup>71</sup>
- Providers perceived VHA support for ongoing training and resources<sup>61</sup>
- Not enough trained staff or capacity to deliver CPT/PE<sup>68,71</sup>
- Some patient concerns with VHA buildings being “*like a maze*” and crowded, feeling unsafe especially for those with PTSD<sup>62</sup>
- **Access to Knowledge & Information**
  - Providers reported research was helpful for treatment decisions, with variable confidence in research focusing on specific types of PTSD (eg, PTSD with disgust vs with shame)<sup>69</sup>
  - PCPs need more information on availability of PTSD treatment services, help with recognizing PTSD symptoms, and scripts to help with talking to hesitant patients<sup>75</sup>

**Provider Decision-making**

- Provider concerns that some patients may not have skills or be in safe situation for CPT/PE<sup>67,68</sup>
- Providers used clinical judgments to decide whether to offer CPT/PE for certain patients, not necessarily discussing some considerations with patients (eg, missed appointments in the past) but also reaching joint decisions with patients in other circumstances (eg, home safety situation)<sup>67</sup>
- Providing and explaining treatment options may increase patient buy-in<sup>70</sup>
- Patients who did not initiate CPT/PE were mostly satisfied with their involvement in deciding between treatment options<sup>62</sup>
- Providers preferred PE (vs CPT) for patients with low literacy, cognitive impairment, or TBI; but preferred CPT (vs PE) for

VHA (12 articles)<sup>58,60-62,65,67-71,101,102</sup>

Non-VA Community Settings (2 articles)<sup>63,66</sup>

those with strong guilt or shame; most valued patient preferences<sup>69</sup>

**Patient-Provider Relationships**

- Some patients who did not initiate CPT/PE reported poor experiences with providers making referrals or others in non-mental health contexts, but many also reported positive experiences with mental health providers<sup>62</sup>

IV. Characteristics of **(Provider) Knowledge & Beliefs about Intervention** Individuals

- Providers slowly “leaning more toward the idea” that patients can “move on” and not need long-term therapy<sup>102</sup>
- In PTSD clinics using CPT/PE with more patients, providers and leaders were committed to these therapies and believed their use helped with recruitment of providers and boosting morale<sup>65</sup>
- Variety of provider characteristics had small associations with positive and negative perceptions of PE<sup>72</sup>
- Greater perceived effectiveness was associated with higher adherence to CPT/PE manuals and use of CPT/PE<sup>71</sup>
- Providers with cognitive-behavioral orientation:
  - More likely to perceive PE as effective but no associations with use of PE or adherence to manuals<sup>71</sup>
  - More likely to use CPT and report patients prefer CPT<sup>60,101</sup>
- Among providers trained in CPT/PE, 46% preferred PE, 13% preferred CPT and 41% had no preference; provider characteristics were not associated with preference for CPT or PE<sup>69</sup>
- PCPs may value CPT/PE more if they knew evidence base for these<sup>75</sup>

**(Provider) Self-efficacy**

- Provider characteristics having small associations with self-efficacy for PE: having more experience treating PTSD and working in specialty PTSD (vs general mental health) clinic<sup>72</sup>

**(Provider) Knowledge & Beliefs about Intervention**

- Among surveyed mental health providers (in Texas), psychologists were more aware of treatment guidelines for PTSD (61% vs 37% of masters-level providers), but few knew about VHA guidelines (25% of psychologists, 12% masters-level providers)<sup>63</sup>

**(Provider) Self-efficacy**

- Among surveyed mental health providers (in Texas), more psychologists were confident with PTSD assessments (65% vs 48% of masters-level providers); confidence with CPT/PE associated with self-reported use (OR 5.7-9.1)<sup>63</sup>

**(Provider) Other Personal Attributes**

- Few mental health providers were trained in CPT (23-28%) or PE (8-16%)<sup>63,66</sup>; prior training associated with use of CPT/PE (OR 23-34)<sup>63</sup>



VHA (12 articles)<sup>58,60-62,65,67-71,101,102</sup>Non-VA Community Settings (2 articles)<sup>63,66</sup>**(Provider) Other Personal Attributes**

- Graduate school training in CBT not associated with provider use of CPT/PE<sup>58</sup> or perceived patient preferences for CPT/PE<sup>60,101</sup>
- Some providers gave gentle encouragement and expressed confidence in patients, empowering them to try CPT/PE<sup>70</sup>
- Treatment interruptions occurred due to providers leaving for various reasons<sup>68</sup>

**Abbreviations.** CPT=Cognitive processing therapy; OR=odds ratio; PCP=primary care provider; PE=prolonged exposure therapy; PTSD=posttraumatic stress disorder; VA=Veterans Affairs; VHA =Veterans Health Administration



## CBSST, DBT, MET, AND CONTINGENCY MANAGEMENT (KQ 2)

### Key Results

- Barriers for CBSST included
  - understaffed/overworked teams, additional administrative demands needed to deliver treatment, negative impact on provider productivity requirements
  - perceived burden of delivering treatment
- Facilitators for CBSST included
  - government/regulator rules, guidelines, and resources that could be used to support implementation
  - leadership engagement
  - training support and monitoring, and resources including training materials and tools
  - networks/communication among providers to track progress
  - provider positive beliefs, openness to try new things, confidence delivering treatment
  - direct or indirect experience with positive outcomes attributed to CBSST
- MET knowledge and skills increased during VHA national training, with 53% of therapists using MET routinely after training.
- Over two-thirds of clinics integrated the standard course of CM in outpatient SUD treatment setting, with most operational over 40 months post-training.
- Leadership engagement and provision of resources facilitated implementation of DBT in VHA, but providers had difficulty completing online training during working hours.

### Section Overview

One article addressed barriers and facilitators for CBSST in US community treatment teams.<sup>99</sup> A total of 87 participants from 6 different stakeholder groups participated in 14 focus groups: 2 client groups (n = 8), 6 team service provider groups (n = 54), 3 team supervisor groups (n = 11), 1 agency administrator group (n = 5), 1 public sector administrator group (n = 5), and 1 group for CBSST developers/trainers (n = 4).

Four other articles examined implementation outcomes following training for DBT, MET, and CM in VHA.<sup>79,95,96,100</sup> Two focused on VHA national initiatives to implement MET<sup>79</sup> and CM.<sup>100</sup> The VHA MET training included 264 mental health providers who participated in a 3.5-day training workshop followed by 6 months of consultation with a training consultant, including

review of audiotapes, during 2012-2013.<sup>79</sup> We classified this implementation strategy as training/education, facilitation, and audit/feedback.

The VHA CM training consisted of 4 separate trainings (each 1.5 days) during April-July 2011<sup>100</sup> Following training, clinicians participated in at least 2 conference calls during which implementation issues were further discussed. The article evaluated implementation outcomes 55 months after the start of training at 94 VHA sites. We classified the implementation strategies in this study as training/education and facilitation.

Additionally, 1 article reported outcomes following web-based DBT training of 44 mental health providers at 10 VHA medical centers.<sup>96</sup> Following training, providers met monthly with 1 of 2 DBT facilitators over 9 months to discuss use of engagement and facilitation techniques. We classified the implementation strategies in this study as training/education and facilitation.

The other article was a VHA national program evaluation of DBT implementation at 59 sites, including interviews with clinical providers and administrators involved in DBT implementation at 8 high- and 8 low-performing sites.<sup>95</sup> The authors indicated that DBT is not nationally implemented and disseminated by VHA, but a community of practice has been created as a way to connect providers and share resources. We classified this implementation strategy as learning collaborative.

Below, we first summarize results for the article addressing barriers and facilitators to uptake of CBSST, and then describe remaining studies on implementation outcomes for MET, CM, and DBT. Detailed characteristics and results for these articles are found in Appendix Table G2 and Appendix Table G3.

## **Barriers and Facilitators for CBSST**

### *Intervention Characteristics*

This article addressed Adaptability and Complexity as barriers or facilitators to implementation of CBSST, including the provider's ability to apply the treatment flexibly "on the fly" during regular visits, and having enough time during scheduled visits to go as "deep" as needed for the treatment.<sup>99</sup>

### *Outer Setting*

External Policy and Incentives was a facilitator for implementation of CBSST, including government/regulator factors such as external rules, guidelines, and resources that could be used to support implementation, including funding, data systems, and official recognition of treatment as an effective approach.<sup>99</sup> This article also identified Other Patient Attributes impacting implementation, including relevance of CBSST concepts/ideas to clients, openness of clients to structured material (*eg*, workbooks, homework) and client motivation/buy-in to do CBSST.<sup>99</sup>

### *Inner Setting*

For Readiness for Implementation, the article reported Available Resources was a barrier or facilitator to implementation of CBSST, including understaffed/overworked teams, additional administrative demands needed to deliver treatment, impact on provider productivity requirements, initial and ongoing training support and monitoring of the implementation (*ie*, time

allotted for training/supervision), and training resources such as materials and tools to support implementation. Leadership Engagement was important to implementation, including leadership buy-in of and support for treatment, prioritization of treatment by leadership and communication about importance of treatment from supervisors and leads.

This article addressed Implementation Climate, identifying Compatibility as important to implementation, including the extent to which CBSST complements and improves treatment process and structure and can be successfully implemented within the treatment program.<sup>99</sup> This study also identified Networks and Communication as an important implementation factor, including effectiveness of systems/processes to communicate client CBSST information among existing providers, making sure providers have tools to track/monitor client progress, and seeing other providers succeed in delivery CBSST.<sup>99</sup>

### *Characteristics of Individuals*

The article identified Knowledge and Beliefs about the Intervention as important to uptake,<sup>99</sup> including provider beliefs about whether CBSST improves client outcomes (*eg*, level of provider “buy-in” or enthusiasm for treatment), provider perception of usefulness/relevance of CBSST skills to other interventions, perceived burden of delivering CBSST, and direct or indirect experience with positive outcomes attributed to CBSST (*eg*, receiving positive feedback from clients about CBSST).<sup>99</sup> This study also identified Self-efficacy, including provider confidence in delivering CBSST, and Other Personal Attributes, including provider openness to try new things.

### **Implementation of MET, CM, and DBT**

Four articles evaluated various VHA implementation efforts for these EBPs, using survey data from trainees and those who completed training, and information about patients treated by providers and clinics implementing these EBPs. Reported outcomes addressed Reach, Effectiveness, Adoption, Implementation, and Maintenance.<sup>79,95,96,100</sup>

The article evaluating pre-post outcomes following VHA national training initiative for MET; of 264 therapists, 80.7% ( $n = 213$ ) successfully completed all training requirements.<sup>79</sup> Regarding adoption outcomes, MET-specific knowledge increased significantly from pre-training to post-workshop and post-consultation, and 53% of therapists reported using MET routinely.<sup>79</sup>

The article evaluating implementation outcomes for CM reported reach outcomes, stating that 94 VHA SUD programs made CM available to 2060 patients, an average of 22 patients per site over the study period of 55 months.<sup>100</sup> The 94 participating programs extended throughout the US, from White River Junction, Vermont to Seattle, Washington. Three-quarters of the sites (70 of 94) participated in at least 5 coaching calls over 12 months after beginning delivery of the treatment. In terms of effectiveness, of the 27,850 submitted urine samples, 91.9% ( $n = 25,593$ ) tested negative for the targeted substance(s). For adoption, 94 VHA SUD treatment programs adopted CM from June 6, 2011 (when the first of the 94 programs began delivering CM) to December 31, 2015. For implementation, over two-thirds of clinics integrated the standard course of CM (12 weeks of twice-weekly sessions targeting stimulants with an 8-draw cap) in an outpatient SUD treatment setting. For 4 indices of CM implementation fidelity, 96% of programs related prizes to abstinence, 81% asked about desired prizes, 67% distributed reminder slips, and

54% had test results immediately available. For maintenance outcomes, the majority of CM programs were operational for over 40 months post-training.

One article evaluated pre-post outcomes following online training and external facilitation of DBT skills for 44 providers at 10 VHA medical centers; of 44 participating providers, 93% (n = 41) completed training and 74% attended every facilitation call.<sup>96</sup> For adoption, 6 weeks post-training, 22 of 26 respondents completing an evaluation reported conducting a DBT skills group. For implementation, many providers (73%) had difficulty completing online training during working hours. Total personnel hours for the DBT skills training (for facilitation experts, facilitators, and participants) were 1,298. The 2 facilitators spent 90 hours in support of the training, and participants spent roughly 1,189 total personnel hours in the training (average = 29 hours each). Additional non-personnel costs totaled \$17,894, which included \$16,928 for access to the web-based modules for 46 people (44 participants and 2 facilitators) and \$966 for copies of the Skills Training book. For maintenance, at 5-month follow-up, 54% (n = 22) of participants reported conducting a DBT group.

The article reporting a VHA national program evaluation of DBT implementation reported barriers and facilitators to implementing DBT, stating that “logistical, structural, and local policy changes facilitated implementation.” These changes were related to leadership engagement and provision of resources.<sup>95</sup> For example, clinicians were given job flexibility and time to get DBT programs up and running. Sites created DBT programs that cut across clinics and modified VHA policy to allow clinicians to call patients outside of business hours.

## SUMMARY AND DISCUSSION

### SUMMARY OF KEY FINDINGS

In this systematic review, we sought evidence relevant to implementation of EBPs for chronic pain and chronic mental health conditions, focusing on 1) barriers and facilitators at the patient, provider, and system levels; and 2) results of various implementation strategies aimed at promoting uptake of and engagement with EBPs. We identified 67 eligible articles, with most of these addressing CBT or CPT/PE. Additionally, the vast majority of studies were conducted in VHA, with the exception of those for MBSR and ACT, which occurred in non-VA US community settings or non-US countries, respectively. Key findings include:

- Evidence on CBT for chronic pain mostly addressed individual therapy (via telehealth or in person), while MBSR and ACT occurred in group settings in person.
- Barriers to CBT for chronic pain included cultural, communication, and logistical barriers; mismatch between patient knowledge and beliefs about pain and EBP principles; logistical conflicts for patients; and patient attributes including high pain-related interference.
- Facilitators of CBT for chronic pain included positive patient-therapist dynamics; good match between patient knowledge and beliefs about pain and EBP principles; patient readiness for change; and telehealth availability.
- One article showed that CBT and MBSR for chronic pain were cost-effective for improving quality of life.
- Barriers to MBSR and ACT for chronic pain included mismatch between patient knowledge and beliefs about pain and EBP principles; the physical discomfort of being seated for sessions; and logistical conflicts.
- Facilitators of MBSR and ACT for chronic pain settings included positive group dynamics and good match between patient knowledge and beliefs about pain and EBP principles.
- Barriers of CBT for chronic mental health conditions included lack of resources and referring provider knowledge about CBT, and patient factors (eg, comorbidities, cultural and communication barriers, transportation barriers).
- Facilitators of CBT for chronic mental health conditions included: scalability and convenience of CBT tools and resources; local champions and leadership support; and strong networks and communication across clinics and teams.
- Barriers to CPT/PE in VHA settings included inflexibility of treatment protocols, complex referral processes, patient complexity and competing needs, and negative perceptions of VHA care.

- Facilitators of CPT/PE in VHA settings included strong support for training, perceived effectiveness for patients and benefits for clinics, and positive patient experiences and relationships with providers.
- In non-VA community settings, mental health providers generally had low concern for barriers, but few had been trained in CPT/PE.
- Barriers for CBSST included workload and staffing challenges. Facilitators were supportive external policies and resources, leadership engagement, training support and materials, networks and communications among providers, and positive provider perceptions and experience.
- Facilitators for DBT included leadership engagement and training resources, but providers had difficulty completing online training during working hours.
- National or local VHA training initiatives for CBT, ACT, and CPT/PE involved training/education, facilitation, and audit/feedback.
- Large numbers of mental health providers have completed VHA national training programs for EBPs, leading to improved provider perceptions, self-efficacy, and providers skills for delivering EBPs, but persistent barriers limit reach and adoption.
- VHA implementation of CBT for chronic pain and chronic mental health conditions, ACT for depression, and CPT/PE reduced symptoms and improved quality of life for patients.
- Over two-thirds of VHA SUD treatment clinics (that participated in national VHA initiative) implemented standard CM, with most operational 40 months post-training.
- Non-VA providers who underwent a training program for CPT/PE reported higher self-efficacy post-training, and use of CPT/PE at 3 (58%) and 6 months (64%).

Results regarding barriers and facilitators to uptake of CBT, MBSR, and ACT for chronic pain mainly addressed patient-level factors. We classified these as pertaining to the CFIR domain of Outer Setting, including common subdomains Patient Needs and Resources and Patient Knowledge and Beliefs. A commonly perceived barrier to uptake of all 3 EBPs was mismatch between patients' pain beliefs and experiences and patients' perceptions of core EBP concepts, while a good match was a facilitator. Logistical barriers were common for patients within all 3 EBPs, and telehealth overcame some of these barriers within tCBT. High pain-related interference was associated with poor adherence to some CBT and MBSR interventions. Patient demographics did not consistently predict adherence to CBT, MBSR, or ACT; however, 1 study developing group CBT for a rural, low-literacy population with chronic pain found that lower educational attainment was associated with both declining to participate and not completing the intervention. Only 2 articles addressed barriers and facilitators at the provider or system level: 1 cost-effectiveness analysis of MBSR and CBT versus UC and 1 analysis of GP interviews about chronic pain treatments including CBT. Definitions of chronic pain and inclusion/exclusion criteria varied across studies.

Evidence on barriers and facilitators for EBPs for chronic mental health conditions addressed patient, provider, and system factors, and pertained to a variety of CFIR domains. Shared barriers across these EBPs included workload and scheduling challenges for providers, lack of educational resources and training for referring providers, transportation needs and competing responsibilities for patients, and variable patient buy-in to treatment rationale. Shared facilitators were leadership engagement, training and treatment delivery resources, communications and networks for continuing provider education, and positive patient-provider relationships. It is important to note that these psychotherapy approaches are distinct from those employed for chronic pain management and focus on independent non-pain conditions. For example, CPT/PE focuses on trauma processing and CBT-I focuses on regularizing the sleep-wake cycle. Although it is likely that some barriers and facilitators generalize to chronic pain treatments, especially at provider and system levels, therapies for non-pain conditions may have unique challenges to implementation relative to EBPs for chronic pain.

VHA national training programs for a variety of EBPs increased provider self-efficacy and improved perceptions of EBP, particularly after completion of expert consultation, suggesting that there is additional benefit to audit and feedback. However, it is unclear the degree to which these initiatives increased uptake by appropriate patients and overall adoption by providers. It is also unclear whether external facilitation has added benefits. National VHA training initiatives provided centralized facilitation resources, including salary support for clinicians; patient-facing EBP materials and tools; and coordination and organizational support for training and problem-solving. It is unclear to what degree these resources enhanced adoption in addition to training and audit/feedback. Only 1 small study examined external facilitation independently of training, finding no added benefit for facilitated participants in terms of specific CBT knowledge and skills at 3 months post-workshop.

In general, VHA training programs for a variety of EBPs led to sustained effects on provider use of EBPs but with persistent concerns about level of uptake by patients who would benefit from these treatments. Across EBPs, there was variable contribution of patient barriers to reach (*eg*, lack of acceptability for patients) and provider barriers to adoption (*eg*, workload and scheduling challenges) that resulted in lower numbers of patients receiving EBPs. In some cases, there were likely interactions between patient and provider factors, where lower patient acceptability may have contributed to provider concerns regarding appropriateness or prioritization of certain EBPs. In other cases, lower levels of uptake may primarily have been due to lack of capacity for treatment delivery (*eg*, competing work demands for providers).

These results indicate that VHA national initiatives for EBPs have largely not focused on patient barriers and facilitators for uptake, or addressed potential heterogeneity in treatment response due to patient factors. A notable exception may be the interactive decision aid for PTSD (developed by the VA National Center for PTSD) that provides tailored treatment information and recommendations according to patient preferences and values.<sup>106</sup> Additionally, there may be important tradeoffs to consider for options that address transportation barriers and competing responsibilities during the workday. For example, EBPs may be delivered via telephone or videoconferencing, to address transportation and time barriers, but this may negatively impact development of therapeutic alliance due to lack of in-person contact. Moreover, our results show that different patients may have strong and opposing preferences for formats (*eg*, telephone vs in-person sessions) or communication styles (*eg*, group facilitators maintaining structured control vs letting participants tell their own stories at length), which may be difficult for mental health

clinics and providers to accommodate. It also remains unclear how options in EBP format or tailoring may improve treatment uptake and response.

Finally, our results showed variation in the formats and duration of certain EBPs. These differences likely reflect consideration of resources (space and provider capacity) and patient needs (extending sessions to account for patient progress). Such variability present substantial challenges in distinguishing the “core” of essential treatment characteristics from the “adaptable periphery” of elements that may be modified without threatening efficacy. Additionally, some implementation strategies aimed at increasing patient readiness for EBPs (eg, patient preparatory groups) may constitute distinctive treatments that warrant high-quality studies examining efficacy along with implementation outcomes. However, our results also suggest that efforts to clearly define EBP content and duration may lead to greater provider barriers to adoption of EBPs, due to higher perceived inflexibility and lack of adaptability.

## IMPLICATIONS FOR VA POLICY

VHA has made substantial investments in providing high-quality EBPs and remains committed to improving access to mental health services for Veterans. Our results indicate that VHA national training programs for EBPs have greatly increased the number of mental health providers who are prepared to deliver EBPs. However, our results on persistent barriers to uptake suggest that VHA national initiatives for EBPs should focus on additional avenues to further increase the reach of these therapies. First, there may be value in coordinated efforts to address patient-level barriers to uptake. While VHA has developed patient-facing EBP educational materials, these may not adequately address patient concerns; for the most part, these materials generally describe treatments for various conditions and are not otherwise tailored to patient needs or goals.<sup>107,108</sup> To be successful, informational materials may need to be tailored to address specific concerns and optimized for dissemination to particular groups. Thus, development and dissemination of improved patient-facing resources may help increase patient awareness and buy-in.

Additionally, national VHA programs may consider guidance or support for delivery formats or options beyond in-person meetings during the workday. During the COVID-19 pandemic, there were rapid shifts to EBPs delivered via telehealth,<sup>109</sup> including for VHA mental health services. VHA has started to evaluate the current experience with EBP via telehealth, as compared with in-person treatment (VHA mental health leadership, personal communication, 2021). Hopefully, these evaluations will deepen our understanding of the impacts and trade-offs between different delivery formats, thereby helping to inform best practices that can be disseminated across VHA facilities.

It may also be important for VHA initiatives to provide additional support and information for facilities regarding how to organize and integrate mental health services. For example, how should local leadership evaluate their capacity for delivering various EBPs and balance competing demands and priorities between EBPs? There may also be opportunities to improve efficiency and enhance uptake by integrating mental health services with primary care or other specialty care services. Efforts to simplify referral pathways and streamline treatments for mental and physical health may simultaneously reduce barriers for referring providers and address patient reticence. For example, we identified 1 article reporting the development of new referral processes within primary care to streamline next steps for patients and providers and increase



patients' positive attitudes towards EBPs for PTSD. Modified, brief therapy protocols for providing treatment in primary care for anxiety and depression, PTSD, and insomnia, have shown promise, although additional work is needed to establish efficacy.<sup>86,110-112</sup> Given the potential diversity in local resources, needs, and priorities, national VHA initiatives may consider providing guidance on performing local needs assessments and matching strategies or resources to those results (*eg*, strategies to enhance leadership engagement, train local champions, and facilitate communication across primary care and specialty clinics).

Therefore, we suggest the following:

- Develop and disseminate tailored patient-facing resources to increase awareness and buy-in.
- Evaluate outcomes for alternative EBP delivery formats (individual vs group therapy, brief vs longer treatment duration), and when appropriate, support increased options for session formats.
- Evaluate outcomes for telehealth versus in person EBP delivery, and where appropriate, support increased options for both formats and scheduling flexibility.
- Evaluate and support strategies for streamlining EBP referral processes.
- Provide guidance on local needs assessment for implementation readiness and matching of strategies and resources.

## RESEARCH GAPS/FUTURE RESEARCH

There was very limited evidence on provider- and system-level barriers and facilitators for EBPs for chronic pain. Because we anticipated this potential gap, we undertook a broader review that examined evidence for provider and system factors for EBPs for chronic mental health conditions. However, there are likely some factors that are unique to EBPs for chronic pain, including provider views about effectiveness or acceptability of EBPs, availability of resources, and interactions with other VHA initiatives (*eg*, regarding opioid safety). These factors may contribute to provider referral patterns that are distinct from EBPs for chronic mental health conditions. We recommend further study of provider- and system-level barriers and facilitators to EBP for chronic pain. Additionally, most analyses of patient-level barriers and facilitators for EBPs for chronic pain, particularly for ACT and CBT, were conducted within effectiveness RCTs rather than in non-research clinical contexts. As barriers and facilitators to adherence likely vary meaningfully between clinical trials and clinical practice, we recommend further study of barriers and facilitators to EBPs for chronic pain within clinical practice settings.

Results related to EBPs for chronic pain suggest there may be substantial heterogeneity in relationships of patient-level factors to treatment uptake. Some of these, such as patient beliefs about therapy and about pain, may also be related to treatment effects, and we lack evidence on how EBPs may be tailored to patient-level factors to improve both uptake and outcomes. Heterogeneity in relationships of patient-level factors to treatment effects is also evident within EBPs for chronic pain and is becoming a methodological focus of future pain treatment research and of behavioral health research in general.<sup>113-119</sup> More systematic assessment of heterogeneity

of treatment effects as well as of treatment uptake may identify specific patient-level targets suitable for future implementation or hybrid effectiveness-implementation work. More research is also needed to identify and clarify cultural and social factors that may mitigate both effectiveness and patient adherence for EBPs for chronic pain, in order to inform culturally and socially relevant adaptations where needed. While quantitative analyses using electronic medical record data on patient “race” and “ethnicity” did not identify barriers to adherence, these indicators are of unclear quality and are poor proxies for patient cultural and social experience. Similarly, while quantitative analyses including either “sex” or “gender” did not identify barriers to adherence, clear variable definitions were not provided, so it is unclear whether “sex” or “gender” would accurately apply: an important distinction that affects interpretation of results.<sup>120-122</sup> No studies explored roles of culture, race, sex, gender, or social factors in patients’ views or experiences of EBPs.

The vast majority of results on implementation efforts for EBPs were from VHA national training programs. These included education/training, audit/feedback, and external facilitation. While some results indicated that audit/feedback may be important for improving provider perceptions and skills, there was a lack of evidence evaluating the impact of external feedback. This may be especially crucial to understand for healthcare systems that have fewer resources than VHA and thus lack capacity for external facilitation on the same scale as VHA initiatives. Additionally, evaluations of VHA national training programs generally did not address reach (*ie*, the proportion and representativeness of patients who initiated or completed EBPs). Although reach may be challenging to measure, even for large integrated systems such as VHA, it is nevertheless critical to assess how many (and which) patients benefit from treatments. The ultimate metric for evaluating success of any implementation strategy must be whether it increased the reach of effective treatments, leading to better outcomes for more individuals. Particularly for chronic pain treatments, evaluation of reach across a variety of clinical settings should occur in conjunction with further research into provider- and system-level factors that contribute to differences in referral rates and treatment engagement.

Few studies utilized comprehensive theoretical frameworks for assessing barriers/facilitators, examining process of change in implementation trials, and reporting outcomes. Future implementation work should be guided by theoretical domains linking barriers to strategies, examining processes of change, and comprehensively evaluating outcomes in key domains. The new CFIR subdomains that arose from this work, including Patient Knowledge and Beliefs, Other Patient Attributes, Group Dynamics, and Patient-Therapist Dynamics, may be helpful in future efforts to examine patient-level barriers to engagement with EBPs.

No studies analyzed barriers, facilitators, or implementation strategies for group CBT for chronic pain, individual ACT for chronic pain, or individual MBSR for chronic pain. While MBSR was developed in a group format for chronic pain as well as for other mental health conditions,<sup>123,124</sup> both CBT and ACT are provided regularly in both group and individual formats. Future research should analyze both efficacy and implementation for group CBT formats and individual ACT formats as treatments for chronic pain.

Finally, future research is needed to evaluate asynchronous digital and brief formats as possible avenues to increase reach of EBPs by addressing patient-level barriers (*eg*, transportation, time, and geographical distance). Ongoing work shows promise in establishing the efficacy and effectiveness of asynchronous digital formats for delivering EBP. Although these digital

interventions may eliminate some barriers, it is currently unclear if they can consistently achieve the same benefits in symptom reduction and quality of life as traditional synchronous EBPs.<sup>41,125-128</sup> Furthermore, examination of implementation outcomes will also be needed to identify potentially unique barriers for these interventions. Similarly, brief formats for EBPs are another promising strategy for enhancing reach and reducing patient and provider barriers. In the case of CBT-I, initial work has demonstrated effectiveness of a brief format, while ongoing studies are exploring the effects on reach, adoption, implementation, and maintenance.<sup>112,129-132</sup>

Therefore, we recommend the following for future research:

- Examine provider- and system-level barriers and facilitators for CBT, MBSR, and ACT for chronic pain using comprehensive frameworks and in clinical practice settings.
- Evaluate patient-level factors contributing to heterogeneity of treatment effects and treatment uptake for EBPs for chronic pain and identify targets for future effectiveness and implementation work.
- Evaluate patient-level sociocultural and demographic factors including sex, gender, race and ethnicity accurately and with clear analytic purpose, recognizing the importance of clear definitions consistent with data analyzed and the roles of demographic indicators as limited proxies for sociocultural experience.
- Evaluate the added value of external facilitation when used with education/training and audit/feedback.
- Describe reach for EBPs associated with implementation strategies, such as VHA national training programs for EBPs.
- Use implementation frameworks to guide future evaluations of barriers and facilitators, processes of change, and outcomes in key domains.
- Evaluate efficacy and implementation outcomes for group CBT formats and individual ACT formats as treatments for chronic pain.
- Evaluate efficacy and implementation outcomes for asynchronous digital and brief formats for various EBPs.

## LIMITATIONS

We aimed to be inclusive in examining evidence on barriers, facilitators, and implementation outcomes for a broad range of EBPs for chronic mental health conditions. But given our focus on those results that would be most applicable to VHA settings and the implementation of EBPs for chronic pain, we included EBPs that were recommended for eligible conditions and were available in VHA. Thus, we did not include EBPs that may be recommended for particular conditions but were not accessible in VHA. We also sought to focus on provider- and system-level barriers and facilitators for implementation of EBPs for chronic mental health conditions, due to the greater applicability of such results for implementation of EBPs for chronic pain. However, results often involved interrelationships between patient, provider, and system factors.

Additionally, some patient factors appeared consistent across the types of EBPs, such as transportation barriers and competing work and family responsibilities. Therefore, we elected to include results on patient-level barriers and facilitators for EBPs for chronic mental health conditions. We limited eligibility to English-language studies conducted in the US or in a small set of non-US countries with comparable economic, cultural, and public health contexts (Canada, UK, Ireland, and Australia). Although evidence from excluded countries would likely have been less applicable, it is possible that it may have provided some relevant information.

## CONCLUSIONS

Studies of barriers and facilitators to EBPs for chronic pain focused largely on patient-level findings, with little provider- or system-level information. VHA training programs for a variety of EBPs for chronic pain and mental health conditions led to sustained effects on provider use of EBPs but with persistent concerns about level of uptake by patients who would benefit from these treatments, and maintenance of effects for providers who deliver these treatments. Shared barriers across EBPs included workload and scheduling challenges for providers; lack of educational resources and training for referring providers; transportation needs and competing responsibilities for patients; and variable patient buy-in to EBP rationale. Shared facilitators were leadership engagement; training and treatment delivery resources; communications and networks for continuing provider education; and positive patient-provider relationships. Future work is needed to explore heterogeneity of treatment effects within EBPs for chronic pain, as well as provider- and system-level barriers and facilitators for EBPs for chronic pain. Additionally, VHA national initiatives for EBPs have largely not focused on patient factors affecting uptake and heterogeneity in treatment. It may be useful to develop and disseminate patient educational materials to increase awareness and acceptability of EBPs. It will also be important to evaluate outcomes for alternative EBP delivery formats and modalities. At a provider and system level, VHA facilities may benefit from strategies to streamline EBP referral processes, and guidance for conducting local needs assessment on implementation readiness and matching of strategies and resources.

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