



Screening for Post-Traumatic Stress Disorder (PTSD) in Primary Care: A Systematic Review

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PREFACE

Quality Enhancement Research Initiative's (QUERI) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) managers and policymakers, as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout VA.

QUERI provides funding for four ESP Centers and each Center has an active VA affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence,
- guide the implementation of 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.

In 2009, the ESP Coordinating Center was created to expand the capacity of QUERI Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of QUERI field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight, guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP Coordinating Center Program Manager, at nicole.floyd@va.gov.

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EXECUTIVE SUMMARY

BACKGROUND

To minimize treatment delays and to maximize population reach, Veterans Affairs (VA) established a screening program to facilitate identification of post-traumatic stress disorder (PTSD) in their patients as they present in primary care clinics. Such screening programs may be helpful because primary care providers often have difficulty identifying PTSD in their patients and PTSD is frequently undertreated in the primary care setting.^{1,2} The premise of this type of screening program is to facilitate mental health treatment engagement earlier in the course of the illness and to engage patients in treatment who might otherwise not be identified as needing mental health care.³

Recently, the Institute of Medicine (IOM) released a report examining the screening, diagnosis, treatment, and rehabilitation services for military Veterans and service members with PTSD in the Department of Veterans Affairs and the Department of Defense.³ As noted in the IOM report and elsewhere, successful screening programs utilize instruments that are simple, valid, precise, and acceptable both clinically and socially.³⁻⁵ To identify screening tools that are best suited to the primary care setting, this evidence synthesis report reviews the literature on the feasibility and diagnostic accuracy of screening tools used and evaluated with a gold standard in a primary care setting.

We addressed the following key questions:

Key Question #1. What tools are used to screen for PTSD in primary care settings, and what are their characteristics (i.e., length, format/administration, response scale)?

Key Question #2. What are the psychometric properties and utility of the screening tools (sensitivity, specificity, likelihood ratios, predictive values, area under curve, reliability)?

Key Question #3. What information is there about the implementability (e.g., ease of administration, patient satisfaction) of PTSD screening tools in primary care clinics?

Key Question #4. Do the psychometric properties and utility of each of the screening tools differ according to age, gender, race/ethnicity, substance abuse, or other comorbidities?

METHODS

We searched Ovid MEDLINE from 1981 to October 2012 using standard search terms (Appendix A). We limited the search to peer-reviewed articles involving human subjects and published in the English language. We also searched the National Center for PTSD's Published International Literature On Traumatic Stress (PILOTS) database (<http://www.ptsd.va.gov/professional/pilots-database/pilots-assessment.asp>). A similar search strategy was used (Appendix A). Additional citations were identified from reference lists of relevant articles and existing reviews.

Titles, abstracts, and articles were reviewed by researchers trained in the critical analysis of literature. We excluded studies that did not involve screening of adults in primary care settings in the United States, that did not report an evaluation of a tool for screening for PTSD, that did not include a gold-standard assessment of PTSD as a comparator, and that did not report outcomes of interest (diagnostic accuracy or information related to implementation of a screening tool). Qualifying gold-standard interviews used in the included studies are presented in Table 1.

Study characteristics, patient characteristics, and outcomes were extracted by co-investigators under the supervision of the Principal Investigator, a VA psychologist and core investigator. We assessed study quality based on selected criteria from the QUality Assessment of Studies of Diagnostic Accuracy included in Systematic reviews (QUADAS) tool.⁶ We determined levels of evidence according to the system developed for the Rational Clinical Examination series.⁷ Findings were narratively summarized.

DATA SYNTHESIS

We constructed evidence tables showing sample characteristics (screening sample and interview sample), methodological quality, gold standard (diagnostic) assessment method, and outcomes (sensitivity, specificity, positive and negative predictive values, area under receiver operating characteristic [ROC] curve, and positive and negative likelihood ratios) organized by screening instrument. We compiled a summary of findings for each question based on qualitative and semi-quantitative synthesis of the results. We identified and highlighted findings from studies involving Veterans and military personnel.

PEER REVIEW

A draft version of this report was reviewed by technical experts, as well as clinical leadership. Reviewer comments were addressed and our responses incorporated in the final report (Appendix D).

RESULTS

We screened 1998 titles (1302 from MEDLINE and 696 unique abstracts identified in the PILOTS database) and rejected 1844 because they did not meet inclusion criteria. We performed a more detailed review on 154 articles. With one article added from hand searching, we identified fifteen eligible studies that addressed one of the key questions.

Key Question #1. What tools are used to screen for PTSD in primary care settings, and what are their characteristics (i.e., length, format/administration, response scale)?

There were fifteen studies that used gold standard diagnostic clinical interviews to investigate twelve screening tools in primary care settings. Of those twelve tools, seven screen exclusively for PTSD and the remaining five screen for the psychiatric disorders commonly encountered and treated by primary care providers, including PTSD. Most studies had methodologic limitations including non-random screening, selective recruitment for diagnostic interviews, and diagnostic

interviews conducted with knowledge of screen results. These limited the strength of the evidence base and decreased our confidence in study findings. Seven of the studies used Veteran or military samples.

Three of the screening tools also included in the review were truncated versions of longer screens. All screens were self-administered paper and pencil screening tests, and ranged from one to twenty-seven items. Response options for screen items ranged from dichotomous scoring (yes/no) to 5 point graded frequency or severity scales.

Key Question #2. What are the psychometric properties and utility of the screening tools (sensitivity, specificity, likelihood ratios, predictive values, area under curve, reliability)?

Few studies examining the use of PTSD screening tools in primary care settings were of high quality, and only one was conducted in VA.⁸ The Primary Care-PTSD (PC-PTSD), which is the screen currently used in VA, was evaluated in three studies all of moderate methodologic quality.⁹⁻¹¹ In the initial derivative study, the PC-PTSD had a sensitivity of 77% and a specificity of 85%, yielding positive and negative likelihood ratios of 5.1 and 0.27 respectively at the recommended cut-off. Across the three studies, positive likelihood ratios ranged from 3.6 to 5.1, and negative likelihood ratios were less than 0.30.

The most commonly used screening tools (PC-PTSD, SPAN [Startle, Physiological arousal to reminders, Anger, and Numbness], PTSD Checklist, Breslau Scale) demonstrated reasonable performance characteristics with positive likelihood ratios generally ranging from 3.0 to 10.0 and negative likelihood ratios between 0.20 to 0.42. Very short screens (i.e., one or two items) performed less well, with positive likelihood ratios less than 3.0, making them less clinically useful.

The determination of optimal cut scores depends on the prevalence of PTSD in the target population, and whether the primary intent of the screen is to maximize identification of possible patients with PTSD (i.e., sensitivity) or to more precisely deploy limited clinical resources to follow-up positive screens (i.e., maximize specificity). The optimal cut-score for the most commonly used screen, the PTSD Checklist (PCL), varied across clinical settings according to differences in PTSD prevalence rates and sample compositions. Because the 17 item screen has a more graded scoring distribution, optimal cut-scores could be more precisely determined for a given clinical setting. In contrast, across studies, the intermediate length screens all had sharp drop-offs just under the recommended cut-scores. This suggests that the optimal cut score of an intermediate length screen is less likely to vary across populations and settings, and can therefore be more easily adopted by different healthcare systems. However, it also means that there is a steeper trade-off between sensitivity and specificity in cut-scores that differ only by one point, which may have significant policy and resource implications.

Key Question #3. What information is there about the implementability (e.g., ease of administration, patient satisfaction) of PTSD screening tools in primary care clinics?

Although most screens were constructed with brevity and ease of administration in mind, only three studies¹²⁻¹⁴ examined the time it took for patients to complete the screening tools and only

one of these¹² conducted a process evaluation to examine the impact of screen implementation on the clinical process. The longest screening tool (27 items) was reported to have an administration time of only 5-10 minutes to complete, suggesting that none of the screens posed a significant time burden on patients. In the one study that conducted an implementation evaluation, both patients and providers found use of the screening tool helpful and acceptable, and that it facilitated discussion of mental health issues in the clinical encounter.

Key Question #4. Do the psychometric properties and utility of each of the screening tools differ according to age, gender, race/ethnicity, substance abuse, or other comorbidities?

There is very little information about screen performance characteristics across demographic and diagnostic groups. There were two studies that examined differential performance characteristics of the screening tool used by VA (PC-PTSD) and in both there was weak evidence that the PC-PTSD performs less well for women than for men. The reason for this is currently unknown. High quality studies are needed to determine if PTSD in women is missed using the cut-score currently employed in clinical settings.

There is also weak evidence that the PCL performs less well for younger African American Veterans, although performance characteristics are still in the acceptable range. More research would be needed to determine whether use of the PCL in clinical settings leads to race disparities among younger African American Veterans.

Although psychiatric comorbidity among Veterans with PTSD is common, there is no information about the impact of specific psychiatric conditions (e.g., traumatic brain injury) on the performance characteristics of any of the screening tools as administered in the primary care setting.

FUTURE RESEARCH

1. The new Diagnostic Statistical Manual-5 (DSM-5) diagnostic criteria for PTSD are soon to be released. Although it is unlikely that the overall performance of the screening tool used by VA (PC-PTSD) and other tools reviewed in this report will be appreciably altered given the new diagnostic criteria, the importance of PTSD detection and treatment in VA requires a high degree of confidence in tools used in clinical care of Veterans with PTSD. Accordingly, the PC-PTSD should be validated against the DSM-5 PTSD criteria.
2. VA has worked to minimize healthcare disparities. Because there is weak and inconsistent evidence of possible variation in screen performance related to patient characteristics, more information is needed to determine whether screening tools for PTSD work equally well regardless of patient age, gender, race, ethnicity.
3. Although psychiatric comorbidity is common among Veterans with PTSD, there is no information about whether the performance of screening tools is altered in the presence of specific psychiatric comorbidities as they present in primary care clinics.
4. There are no studies examining the impact of mental health screening on the primary care encounter within the VA system, and only one implementation study was done in a

community setting. It would be helpful to have more information about how PTSD screens can be best integrated into clinical practice.

5. The success of a screening program depends on whether identification of the target condition in the population improves the outcome of those who have the condition.^{3,5} As noted in the IOM report,³ this is assumed to be true for PTSD but has never been proven. It would be helpful to know the impact on the mental and physical health of the VA population, as well as the financial and opportunity costs to the VA health care system of PTSD screening implementation. To adequately address this important clinical and research gap, a randomized controlled trial or methodologically sound comparative effectiveness trial of PTSD screening of Veterans in primary care settings is needed.