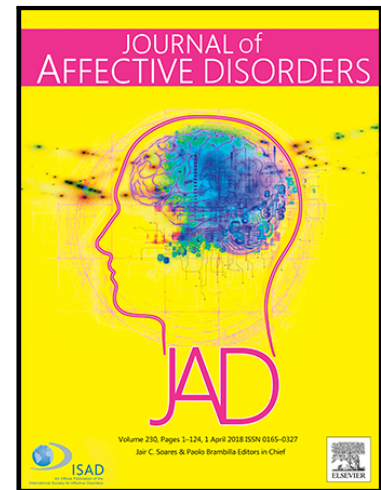


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A Systematic Review of the Clinician Related Barriers and Facilitators to the Use of Evidence-Informed Interventions for Post Traumatic Stress

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Highlights

- Several key barriers and facilitators were identified and synthesised.
- Barriers occurs within four levels: intervention, client, clinician and system
- Key barriers included a lack of training, confidence and support
- Flexibility within fidelity should be explored to support implementation
- These issues should be considered within future training and dissemination efforts

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A Systematic Review of the Clinician Related Barriers and Facilitators to the Use of
Evidence-Informed Interventions for Post Traumatic Stress

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Abstract

Background

A number of evidence-informed interventions for PTSD have been developed and recommended by clinical guidelines. Despite efforts to disseminate these approaches, there remains a gap between evidence and practice, and research has started to identify a number of barriers to the implementation of evidence-informed interventions.

Methods

This systematic review aimed to synthesise the relevant literature, both quantitative and qualitative, relating to clinicians' perceived barriers and facilitators. Literature searches were conducted to identify relevant studies. Data were analysed using content analysis to categorise key barriers and facilitators.

Results

A literature search identified 34 relevant studies. Four levels of barriers and facilitators were identified, covering intervention, client, clinician and system factors. The most commonly cited barriers identified include inflexibility of manualised approaches, fear of increasing client distress, working with comorbidities and a lack of training and support. Quality appraisal rated the majority of studies as strong, with five studies receiving an adequate rating.

Limitations

The review was limited to studies published in the English language, therefore introducing a risk of bias as perceived barriers and facilitators may be culturally influenced.

Additionally the heterogeneity of studies may impact upon comparability, only allowing for a broad analysis and not exploring barriers and facilitators in more detail.

Conclusions

Lack of training, confidence and knowledge relating to the implementation of evidence-informed interventions for PTSD were commonly reported. A better-informed understanding into the challenges and facilitators experienced by clinicians can help inform implementation needs and should be considered in the development and implementation of training initiatives.

Keywords: Post-Traumatic Stress Disorder; Clinicians; Barriers; Facilitators; Evidence-Based Practice

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Introduction

In recent decades, mental health services worldwide have placed a significant emphasis on the development, implementation and evaluation of psychosocial interventions for a range of mental health difficulties (Kadzin, 2008). Evidence-based practice (EBP) is the preferred term to describe how a clinician draws upon the best available evidence to reach a conclusion relating to the care of their client (Sackett, Rosenberg, Gray, Haynes & Richardson, 1996). The American Psychological Association (2006) define EBP as “the integration of the best available research with clinical expertise in the context of patient characteristics, culture and preferences” (p. 273). For the purposes of this paper, evidence-informed practices are those interventions for which an evidence-base exists, and that have been endorsed by national or international practice guidelines.

However, the dissemination and implementation of evidence-informed practices in routine clinical practice goes beyond the distribution of clinical guidelines and recommendations, and instead requires multi-level assimilation of the approaches across healthcare organisations (Ploeg, Davies, Edwards, Gifford & Miller, 2007). Despite the evidence base, several studies have demonstrated that evidence-informed practice is rarely implemented in routine clinical practice (Hoagwood & Olin, 2002). Recent research in the field of implementation science has started to explore the barriers to the implementation of evidence-informed practices in real world clinical settings (Marques et al., 2016).

Post-Traumatic Stress Disorder

A particular area of mental health that has gained increased attention is the treatment of Post-Traumatic Stress Disorder (PTSD). Traumatic events as defined by the DSM-5 are those where a person is exposed to “death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence (5th ed.; Diagnostic and Statistical Manual of Mental Disorders [DSM-5]; American Psychiatric Association,

2013). While worldwide lifetime prevalence rates vary dependent on the definition of a traumatic event, recent research estimates suggest that more than two-thirds of individuals will experience a trauma during their lifetime, where trauma is perceived to be any event that the individual subjectively reports to be 'traumatic' (Kessler et al., 2017). Lifetime prevalence of PTSD among adult Americans has been estimated to be 6.8% (Kessler et al., 2005).

Recommended guidelines for the treatment of PTSD have been produced by various organisations worldwide, including the American Psychiatric Association, the American Psychological Association and the Department of Veteran Affairs (VA) in the United States, the National Institute for Health and Care Excellence (NICE) in the UK, the National Health and Medical Research Council (NHMRC) in Australia and the International Society for Traumatic Stress Studies (ISTSS). The evidence-informed interventions recommended by each of these guidelines as a first line treatment for PTSD are presented in Table 1.

These guidelines are based on a wide range of research that provides evidence for the effectiveness of a number of treatment interventions for PTSD (Bisson et al., 2007; Ehring et al., 2014; Cusack et al., 2016). Increasing recognition of the importance of the timely treatment of PTSD has led to the development of multiple interventions aimed at addressing this issue (Dorsey et al., 2017). Recent meta-analyses suggest that best research evidence currently advocates trauma-focused cognitive behaviour therapy (TF-CBT) as the most effective treatment for PTSD (Watts et al., 2013). TF-CBT according to NICE guidelines incorporates a number of approaches including cognitive processing therapy, cognitive therapy for PTSD, narrative exposure therapy and prolonged exposure therapy in the treatment of PTSD for adults. In addition to TF-CBT, promising evidence has been found for Eye Movement Desensitisation and Reprocessing (EMDR; Chen et al., 2014).

Table 1: Clinical Practice Guidelines for the Treatment of PTSD

Clinical Practice Guideline	Recommended first line intervention
International Society for Traumatic Stress Studies (ISTSS)	Cognitive Behavioural Therapy with exposure elements; Cognitive Therapy; Stress Inoculation Therapy; Eye Movement Desensitisation and Reprocessing; Exposure
National Institute for Health and Care Excellence (NICE)	Trauma-Focused Cognitive Behavioural Therapy; Eye Movement Desensitisation and Reprocessing
American Psychiatric Association	Trauma-Focused Cognitive Behavioural Therapy
American Psychological Association	Cognitive Behavioural Therapy; Cognitive Processing Therapy; Cognitive Therapy; Prolonged Exposure
National Health and Medical Research Council (NHMRC)	Trauma-Focused Cognitive Behavioural Therapy; Eye Movement Desensitisation and Reprocessing
Department of Veteran Affairs (VA)	Prolonged Exposure; Cognitive Processing Therapy; Eye Movement Desensitisation and Reprocessing; Brief Eclectic Psychotherapy; Narrative Exposure Therapy; Written Narrative Exposure; Cognitive Behavioural Therapy for PTSD

Barriers

Despite these guidelines, and a number of training efforts to disseminate evidence-informed practice to clinicians working with those who have experienced trauma, there remains a question in the literature relating to the extent to which these approaches are routinely being used in clinical practice (Ruzek & Rosen, 2009; Hundt, Harik, Barrera, Cully & Stanley, 2016). Indeed, some surveys conducted focusing on military veterans in the USA suggest a large majority of service users presenting for treatment for PTSD do not receive evidence-informed interventions (Tanielian & Jaycox, 2008; Borah, Holder & Chen, 2017). Unfortunately, while there is a strong evidence base for PTSD in military veterans, the results of this research cannot be applied to the general population. Literature searches have revealed that the evidence-base for the general population is much more limited, leading to a restricted understanding of the provision being offered to this population.

Implementation Science

Recent evidence suggests that while clinicians generally hold favourable attitudes towards evidence-informed interventions, there remain a number of barriers to implementation (Gray, Elhai & Schmidt, 2007). Exploring the barriers and facilitators to the implementation of evidence-informed practice is crucial to improving the provision and quality of care received by those who have experienced trauma (Aarons et al., 2010).

Implementation science is an area of research that aims to explore the range of methods and approaches used to implement current research findings into clinical practice and understand the barriers and facilitators to this (Nilsen, 2015). This research attempts to answer the question as to why evidence-informed interventions do not easily translate into real world settings (Marques et al., 2016). A number of models identifying multi-level factors that may influence clinician use of evidence-informed interventions have been developed (Damschroder et al., 2009; Stirman, Gutner, Langon & Graham, 2016).

In particular, clinicians are critical agents in ensuring that evidence-informed treatments are adopted and implemented in clinical practice (Adams et al., 2016). A clearer insight into the challenges and facilitators experienced by clinicians working with this population can help to inform not only the development of new interventions, but also the dissemination process including clinician training, supervision and ongoing implementation needs (Becker, Zayfert & Anderson, 2004; Adams et al., 2016). As proposed in Becker et al. (2004), in order to address the limitations to the use of evidence-informed interventions in routine clinical practice, research must first identify the factors affecting clinical use for those involved in implementation.

One particular model of implementation science, the Consolidated Framework for Implementation Science (CFIR) identifies four levels of implementation factors that have formed the foundation for this review (Damschroder et al., 2009). These are the inner and outer setting in which the intervention is implemented (system level factors); the characteristics of the individuals involved (clinician level factors and client level factors); characteristics of the intervention and the process of implementation.

Objectives

This study aimed to systematically examine and synthesise relevant quantitative, qualitative and mixed-method literature relating to clinicians' perceived barriers and facilitators to the implementation of evidence-informed interventions at all levels of the system for individuals with PTSD. In addition, this review aims to provide recommendations that may help to facilitate the implementation of evidence-informed trauma interventions and provide policymakers and clinicians a comprehensive overview of the available literature.

Methods

A systematic review protocol was developed in line with PRISMA guidelines (Shamseer et al., 2015). The protocol was registered at PROSPERO (January 2018, CRD42018085534). To ensure transparency of the research, the rationale, objectives, methods and the process of data analysis were published.

Search Strategy

Systematic searches were carried out in four electronic databases using specified search terms to identify appropriate evidence. The following databases were searched: PsycINFO, MEDLINE, CINAHL and PILOTS. Search terms were developed following initial scoping searches of the literature to identify alternative terminology. The final search terms were based on the key elements of the review: (1) clinicians or mental health professionals, AND (2) PTSD, AND (3) evidence-based practice, AND (4) barriers and/or facilitators.

Eligibility Criteria

The following criteria were required for the study to be included in the review: (1) explored the views, beliefs and perceptions of mental health professionals working with individuals experiencing PTSD; (2) explored the barriers and facilitators to the use of evidence-informed interventions; (3) published between 1980 and December 2017. The year 1980 was chosen as the earliest date as this coincides with the introduction of the PTSD diagnosis in the third edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-III; 1980); (4) studies published in peer-reviewed journals. Studies were excluded from the review if they: (1) focused on the perspectives of other individuals including patients and other stakeholders; (2) did not involve an evaluation of the barriers and facilitators to the use of evidence-informed interventions, such as studies focusing solely on the effectiveness of an intervention and

clinical or economic outcomes; (3) were not written in English, unless translation was available; (4) were not published in peer reviewed journals. All studies excluded once abstract review had been performed were recorded with a reason, and the number of studies excluded at each stage of the review was documented. All eligible international studies were included.

Study Selection

All studies identified by the search strategy were included in the first stage of the review. Once duplicates had been removed, the initial database searches identified a total of 5,645 references. Study selection was then completed in the following procedure: the lead reviewer (JF) screened the titles and abstracts of the remaining studies to determine whether they met the inclusion criteria. Studies where it was not clear from the title or abstract whether they met the criteria were read in full. A second independent reviewer (LG) then screened a randomised sub-selection of the titles (25%) and abstracts (25%) at each stage to ensure consistency. A total of 5,152 records were excluded following title review, and a further 355 records were excluded following abstract review. Overall 138 references remained to be considered in full. Studies that were considered in full were assessed independently by the two reviewers, using an inclusion checklist developed for the review. Any disagreement regarding full text articles for inclusion were referred to the third author (RMS) for resolution. Following this stage, 104 references did not meet the eligibility criteria and were therefore excluded from the study, leaving 34 studies eligible for inclusion in the final review. A PRISMA flowchart (Moher, Liberati, Tetzlaff & Altman, 2009) detailing the screening and selection process is presented in Figure 1.

Data Extraction

The lead author (JF) extracted the data from the included studies using a data extraction table that was developed for the study in line with PRISMA guidelines (Liberati et al., 2009). A second author (LG) checked a sub-selection (50%) of this data for consistency and accuracy. Key data extracted included: author, year of publication, location, study design, sample size and characteristics, use of specific interventions and reported barriers and facilitators.

Quality Appraisal

The quality of included papers was assessed by one of the authors (JF) using the modified McMaster Critical Appraisal tool (Law et al., 1998; Letts et al., 2007). The tool was developed using guidelines recommended by the McMaster University, which were modified to include a score for each key criteria of study quality, and also adapted the range of included research designs to enable the application of the tool to both qualitative and quantitative studies. Each study is rated as strong, average or poor based upon the total percentage of the criteria fulfilled, allowing for comparison between quantitative, qualitative and mixed-method studies. A second author (LG) critically appraised a sub-selection (50%) of the included studies to ensure rater-consistency. Minor discrepancies were discussed between the two raters and an agreed score determined. Only a few minor discrepancies in scores occurred and these did not influence the overall quality rating.

Data Analysis

Data analysis was conducted using a content analysis format, based upon guidelines for directed content analysis (Hsieh & Shannon, 2005). In line with a directed approach, content analysis begins with a theory which guides initial codes. Within the current systematic review, initial codes were developed according to the Consolidated Framework for Implementation Research model (CFIR), based upon different levels of

factors that may influence a clinician's use of evidence-informed interventions. These factors include system level factors, provider level factors, client level factors and intervention level factors. Content analysis was chosen due to its ability to bridge quantitative and qualitative research methods and using a deductive approach the researcher analyses the data with a coding template in mind (Pope et al., 2007).

In line with content analysis guidelines, the key individual barriers and facilitators reported in each study were identified and extracted (Hsieh & Shannon, 2005). A method of convergent synthesis was employed whereby results from both quantitative and qualitative studies were extracted and transformed into key factors (Frantzen & Fretters, 2015; Hong, Pluye, Bujold & Wassef, 2017). For qualitative studies, all reported barriers were extracted from the study. In the quantitative studies, all barriers were extracted and those reporting the highest percentage of clinicians endorsing each barrier were included.

One author (JF) read each of the articles identified by the search in order to extract all individual barriers and facilitators. A coding frame based upon system level, clinician level, client level and intervention level factors was developed, and each individual code was tabulated within this framework to provide an overview of frequencies for each of the barriers and facilitators identified. Some codes were recorded as both a barrier and facilitator dependent upon the context and were therefore coded separately. A subset of the papers were then reviewed by the second author (LG; 25%) to ensure reliability of the coding framework.

Results

Study Characteristics

In total, 34 studies were included in the systematic review. This included 24 (70.6%) quantitative studies, 8 (23.5%) qualitative studies and 2 (5.9%) mixed method studies. The majority of included papers involved the use of self-report questionnaires (23; 67.7%). Seven further studies included semi-structured interviews conducted either face-to-face or via telephone (20.6%). The remaining studies involved the use of semi-structured focus groups (2; 5.9%), both interviews and focus groups (1; 2.9%) or a self-report survey contained within a randomised controlled trial (1; 2.9%). Further study characteristics are presented in Table 2.

Study Quality

Using the modified McMaster Critical Appraisal tool (Law et al., 1998; Letts et al., 2007), twenty-nine studies were rated as having strong quality, with the remaining five studies receiving an 'average' adequacy rating due to methodological limitations. The main limitations identified in included studies were the inclusion of unreliable or unvalidated measures, no clinical implications of the study results reported, and a lack of detail outlining study characteristics.

Table 2: Study Characteristics

Study, Year & Location	Design	Primary Objective	Method of data collection
Becker et al., 2004	Quantitative	Identify extent to which exposure is used in clinical practice and the factors influencing use.	Survey
Salyers et al., 2004	Quantitative	Identify service needs for adults with PTSD and severe mental illness and the barriers for treatment of PTSD	Survey
Kane et al., 2016	Qualitative	Explore clinician perspectives on new PTSD guidelines	Interviews
Donisch et al., 2016	Qualitative	Explore clinician perspectives of trauma informed practice, resources needed and barriers to use.	Interviews & Focus Groups
Czincz & Romano, 2013	Quantitative	Identify extent to which clinicians use EBP and predictors of EBP use	Survey
Allen et al., 2012	Quantitative	Explore whether clinicians can identify EBPs and training and factors influencing clinician beliefs	Survey
Adams et al., 2016	Quantitative	Investigate clinical practice and barriers to treating PTSD & substance use	Survey
Frueh et al., 2006	Qualitative	Identify clinician perspectives of clinical needs of PTSD population	Focus Group
Kolko et al., 2009	Quantitative	Explore clinician's perceptions of EBP, and the nature of training and supervision received	Survey
Hipol & Deacon, 2012	Quantitative	Examine the use of psychotherapy techniques and determine status of EBP dissemination	Survey

Table 2: Study Characteristics (Continued)

Study, Year & Location	Design	Primary Objective	Method of Data Collection
Langley et al., 2010	Qualitative	Explore potential barriers and facilitators to implementation of EBP in schools	Interviews
Sprang et al., 2008	Quantitative	Explore extent to which clinicians use EBP and factors influencing use	Survey
Ruzek et al., 2014	Quantitative	Explore beliefs and attitudes to EBP and factors associated with beliefs and attitudes.	Survey
Watts et al., 2014	Mixed-Method	Examine the effectiveness of a VA effort to promote EBP	Interviews
Borah et al., 2013	Quantitative	Assess clinicians' interest in using Cognitive Processing Therapy and Prolonged Exposure and factors influencing use	Survey
David & Schiff, 2015	Mixed-Method	Explore degree to which clinicians are using EBP and their experience of using EBP	Focus Group & Survey
Padmanabhanunni & Sui 2017	Quantitative	Explore attitudes to EBP and which factors influence attitudes	Survey
Ruzek et al., 2017	Quantitative	Explore clinician intention to use EBP and clinician factors influencing use	Survey
Barnett et al., 2014	Qualitative	Explore clinician perspectives of EBP and factors influencing knowledge and use	Interviews
Marques et al., 2016	Qualitative	Explore relationships between attitudes to EBP and implementation of EBP	Interviews

Table 2: (continued)

Study, Year & Location	Design	Primary Objective	Method of data collection
Borah et al., 2017	Quantitative	Identify challenges related to training in EBP and provider attitudes towards EBP	Survey
Gray et al., 2007	Quantitative	Explore attitudes towards and use of EBP	Survey
Allen & Crosby, 2014	Quantitative	Explore relationships between beliefs and use of EBP for working with maltreated children	Survey
Hundt et al., 2016	Quantitative	Examine the provider and patient characteristics influencing EBP	Survey
van Minnen et al., 2010	Quantitative	Identify patient and therapist factors that act as barriers and facilitators to use of EBP	Survey
Najavits et al., 2011	Quantitative	Explore clinician views of common treatment models for PTSD and substance use	Survey
Najavits, 2002	Quantitative	Understand difficulties in treating PTSD and substance use and associated clinician characteristics	Survey
Cook et al., 2015	Qualitative	Evaluate the use of CPT and PE and the predictors of use	Interviews
Trottier et al., 2017	Quantitative	Examine attitudes to EBP for PTSD and eating disorders and the specific concerns and barriers	Survey
Najavits, 2006	Quantitative	Explore clinician views of present and past focused treatments for PTSD	Survey

Table 2: (continued)

Study, Year & Location	Design	Primary Objective	Method of data collection
Kirst et al., 2017	Qualitative	Explore the facilitators and barriers to implementing EBP in mental health and substance use	Interviews
Barnard-Thompson & Leichner, 1999	Quantitative	Explore knowledge of EBP, training and sufficiency of treatment resources	Survey
David & Schiff, 2017	Quantitative	Examine the roles of self-efficacy, social network and supervision in use of EBP	Survey
Richards et al., 2017	Quantitative	Explore training, experience and capacity for providing EBP and examine the predictors of use.	Survey

Sample Characteristics

The majority of studies included in the review were conducted in the United States of America (76.5%). Of the remaining studies, three were conducted in Canada (8.8%), two included international samples (5.9%), two were conducted in Africa (5.9%) and the final study was conducted in Scandinavia (2.9%). The review included 10 studies involving samples from clinicians working with the general population (Becker et al., 2004; Gray et al., 2007; Sprang, Craig & Clark, 2008; van Minnen, Hendriks & Olf, 2010; Hipol & Deacon, 2012; Donisch, Bray & Gewirtz, 2016; Hundt et al., 2016; Kane et al., 2016; Marques et al., 2016; Padmanabhanunni & Sui, 2017). A further eight studies involved military clinician samples (Borah et al., 2013; Barnett et al., 2014; Ruzek et al., 2014; Watts et al., 2014; Cook et al., 2015; Borah et al., 2017; Richards et al., 2017; Ruzek et al., 2017), and eight included samples involving clinicians working with children (Barnard-Thompson & Leichner, 1999; Kolko, Cohen, Mannarino, Baumann & Knudsen, 2009; Langley, Nadeem, Kataoka, Stein & Jaycox, 2010; Allen et al., 2012; Czincz & Romano, 2013; David & Schiff, 2015; David & Schiff, 2017). Four samples included clinicians working with both PTSD and substance use difficulties (Najavits, 2002; Najavits, 2006; Najavits, Kivlahan & Kosten, 2011; Kirst, Aery, Matheson & Stergiopoulos, 2017). The final four studies included two studies of clinicians working with severe mental illness (Salyers, Evans, Bond & Meyer, 2004; Frueh, Cusack, Grubaugh, Sauvageot & Wells, 2006), one study of clinicians working with youth with PTSD and substance use difficulties (Adams et al., 2016) and one study of clinicians working with PTSD and eating disorders (Trottier, Monson, Wonderlich, MacDonald & Olmsted, 2017). Studies were published between 1999 and 2017.

The number of participants ranged from 13 to 1,275. In studies where age was reported, mean age ranged from 32.0 to 53.6. Where gender was reported, the majority of

studies had a higher proportion of female participants, with the percentage of female participants ranging from 50% to 94.8%. In 12 studies, ethnicity was reported, with the highest percentage ethnicity being white Caucasian (range 66.7% to 95.9%). Mean years' experience where reported ranged from 5.84 to 20.3.

Barriers and Facilitators

Perceived clinician barriers were reported in 28 of the included studies, and perceived clinician facilitators reported in 26 of the included studies.

Assessment of barriers and facilitators. A variety of methods was used across the included studies to assess the perceived clinician barriers and facilitators to the implementation of evidence-informed interventions for working with trauma. Nine of the studies identified predictors of evidence-informed interventions based on demographic and clinical characteristics and related these to use of evidence-informed interventions (Najavits, 2002; Najavits, 2006; Allen et al., 2012; Czincz & Romano, 2013; Watts et al., 2014; Cook et al., 2015; David & Schiff, 2017; Ruzek et al., 2017; Richards et al., 2017). A further nine studies included specific questions about attitudes towards and use of evidence-informed interventions (Barnard-Thompson & Leichner, 1999; Gray et al., 2007; Kolko et al., 2009; Najavits et al., 2011; Allen & Crosby, 2014; Ruzek et al., 2014; David & Schiff, 2015; Padmannabhanunni & Sui, 2017; Trottier et al., 2017).

Seven of the studies included open-ended questions within surveys, interviews or focus groups about barriers or facilitators, such as what would help or hinder the use of evidence-informed interventions (Salyers et al., 2004; Frueh et al., 2006; Sprang et al., 2008; Barnett et al., 2014; Marques et al., 2016; Borah et al., 2017; Kirst et al., 2017), and a further four included specific questions about barriers and facilitators (Langley et al., 2010; Hipol & Deacon, 2012; Donisch et al., 2016; Kane et al., 2016). Four of the included studies developed a list of barriers based on previous literature and asked respondents to

rate the extent to which they agreed with each item (Becker et al., 2004; van Minnen et al., 2010; Borah et al., 2013; Adams et al., 2016). Finally, one study developed case vignettes and the study identified predictors and facilitators based on participant responses (Hundt et al., 2016).

Perceived barriers and facilitators. Directed content analysis identified key barriers and facilitators from each of the included studies and grouped them according to the coding framework. Each barrier and facilitator was assigned to one of the four key levels where barriers and facilitators are reported by clinicians. Each of these key levels is described in further detail below.

Intervention level barriers/facilitators. Intervention level barriers and facilitators were those identified that influenced the clinician's use of evidence-informed interventions based on the components of the intervention. The intervention level barriers and facilitators are presented in table 3. The barriers and facilitators are ordered based on the total number of studies reporting each barrier, and grouped according to quantitative, qualitative and mixed method studies. The most commonly reported intervention level barriers were clinician preference for individualised approaches, and therefore finding intervention manuals too limited or restricted, or the lack of ability to adapt the intervention manuals. On the other hand, the most commonly reported facilitator was where intervention manuals had the scope to be adapted or flexible.

Client level barriers/facilitators. The client level barriers are those identified that influence clinicians' use of evidence-informed interventions based on characteristics or behaviours of the client referred for the intervention. Client level barriers and facilitators are displayed in table 4, in order of the total number of reported studies. The most commonly reported client level barriers included client comorbidities, clinician concerns about re-traumatising the client or making their symptoms worse, and client's treatment

preferences for other approaches. Client level facilitators were limited in the included studies, with each identified facilitator only being reported in one study.

Clinician level barriers/facilitators. Clinician level barriers and facilitators are those identified that influence the clinicians' use of evidence-informed interventions for trauma based on their own demographic characteristics or clinical experiences. The identified clinician level barriers and facilitators are presented in table 5, ordered by total number of reported studies. The most commonly reported clinician level barriers included a lack of training in trauma approaches and therefore uncertainty of how and when to use approaches, plus concerns about the emotional burdens of working with individuals who have experienced trauma. Clinician level facilitators included increased clinical experience, and positive or favourable attitudes towards evidence-informed interventions (including an understanding of the need for evidence-based practices in healthcare).

System level barriers/facilitators. Finally, the system level barriers and facilitators are those identified that are at the level of the provider or organisation that influence the clinicians' use of or attitudes towards evidence-informed interventions for working with trauma. The system level barriers and facilitators are displayed in table 6. Commonly reported system level barriers included a lack of time available to focus upon the treatment of trauma and dissemination of evidence-based approaches, and access to training and resources. On the other hand, commonly reported facilitators were for organisations where there was good access to training and resources.

Table 3: Intervention Level Barriers

Barrier	Quantitative studies	Qualitative Studies	Mixed-Method Studies
Use of intervention manual components too rigid and preferring an individualised approach	Najavits, 2002; Becker et al., 2004; Najavits et al., 2011; Adams et al., 2016; Trottier et al., 2017		
Difficulty adapting treatment intervention for group-based approach	Najavits, 2006	Frueh et al., 2006; Cook et al., 2015	
Evidence informed intervention not generalisable to the population and disregards individual/social/cultural needs	Gray et al., 2007	Marques et al., 2016	
Treatment length inflexible	Trottier et al., 2017		

Table 3 (continued)*Facilitators*

Facilitator	Quantitative Studies	Qualitative Studies	Mixed Method Studies
Guideline flexibility within approach and use of a variety of modules	Najavits 2002; Najavits et al., 2011; Allen and Crosby, 2014	Cook et al., 2015; Kane et al., 2016	
Robust research base and theoretical depth	Hipol & Deacon, 2012	Cook et al., 2015	David & Schiff, 2015
Ability to adapt approach to meet client's individual needs		Kane et al., 2016; Kirst et al., 2017	

Table 4: Client Level Barriers

Barrier	Quantitative studies	Qualitative Studies	Mixed-Method Studies
Client comorbidities including substance use and suicidality	Najavits, 2002; Becker et al., 2004; Salyers et al., 2004; van Minnen et al., 2010; Najavits et al., 2011; Adams et al., 2016; Trottier et al., 2017	Kane et al., 2016; Marques et al., 2016	
Concerns about re-traumatizing clients or client decompensating as a result of the intervention	Becker et al., 2004; Salyers et al., 2004; Najavits et al., 2011; Allen & Crosby, 2014; Ruzek et al., 2017; Trottier et al., 2017	Frueh et al., 2006;	
Client treatment adherence or treatment preference	Salyers et al., 2004; Borah et al., 2013; Adams et al., 2016	Barnett et al., 2014; Kane et al., 2016; Marques et al., 2016	
Prioritising client needs if other needs or crises are present	Najavits, 2002; Salyers et al., 2004; Adams et al., 2016	Kane et al., 2016; Marques et al., 2016	
Client cognitive impairment	Adams et al., 2016	Langley et al., 2010	
Engaging family and caregivers in the intervention	Salyers et al., 2004	Marques et al., 2016	

Facilitators

Facilitator	Quantitative Studies	Qualitative Studies	Mixed Method Studies
Quality of the therapeutic relationship		Kirst et al., 2017	
Patient preference for treatment approach and motivation to engage		Marques et al., 2016	
Clients access to support network		Marques et al., 2016	

Table 5: Clinician Level Barriers

Barrier	Quantitative studies	Qualitative Studies	Mixed-Method Studies
Lack of training in treatment approach or evidence-informed interventions for trauma	Barnard-Thompson & Leichner, 1999; Becker et al., 2004; Najavits et al., 2011; Czincz & Romano, 2013; Borah et al., 2017; Richards et al., 2017; Trottier et al., 2017	Frueh et al., 2006; Barnett et al., 2014; Donisch et al., 2016; Kane et al., 2016	
Emotional burden of trauma work or clinician burnout	Najavits, 2002; Adams et al., 2016; Ruzek et al., 2017; Trottier et al., 2017	Frueh et al., 2006; Marques et al., 2016	David & Schiff, 2015
Uncertainty of how to acknowledge trauma or when to use exposure appropriately	Najavits, 2002; Najavits et al., 2011	Marques et al., 2016; Kirst et al., 2017	
Competing responsibilities	Ruzek et al., 2014; Ruzek et al., 2017	Langley et al., 2010; Cook et al., 2015	
Lack of knowledge about evidence-informed interventions	Salyers et al., 2004; Gray et al., 2007	Barnett et al., 2014; Kirst et al., 2017	
Clinicians lack of confidence	Salyers et al., 2004; Borah et al., 2013	Frueh et al., 2006	
Fewer years of experience	Becker et al., 2004; Salyers et al., 2004		
Psychodynamic/Humanistic Orientation	Gray et al., 2007; Czincz & Romano, 2013		

Table 5: (continued)*Facilitators*

Facilitator	Quantitative Studies	Qualitative Studies	Mixed Method Studies
Increased clinical experience	Najavits, 2002; Sprang et al., 2008; Najavits et al., 2011; Allen et al., 2012; Ruzek et al., 2014 Hundt et al., 2016; Padmanabhanunni & Sui, 2017; Ruzek et al., 2017; Richards et al., 2017	Frueh et al., 2006	
Endorsement of treatment manuals and belief in treatment credibility	Salyers et al., 2004; Kolko et al., 2009; van Minnen et al., 2010; Allen et al., 2012; Padmanabhanunni & Sui, 2017; Ruzek et al., 2017; Trottier et al., 2017	Frueh et al., 2006; Marques et al., 2016	
Having received additional training or expressed interest in additional training	van Minnen et al., 2010; Allen et al., 2012; Hipol & Deacon, 2012; Hundt et al., 2016; Ruzek et al., 2017	Frueh et al., 2006; Kane et al., 2016; Marques et al., 2016	
Clinician confidence	Salyers et al., 2004; Ruzek et al., 2014; Hundt et al., 2016; David & Schiff, 2017; Ruzek et al., 2017	Marques et al., 2016	

Table 5: (continued)

Facilitator	Quantitative Studies	Qualitative Studies	Mixed Method Studies
Awareness of evidence-informed interventions and increased engagement in continued professional development	Salyers et al., 2004; Gray et al., 2007; Padmanabhanunni & Sui, 2017	Marques et al., 2016	David & Schiff, 2015
Clinician CBT orientation	Gray et al., 2007; Hipol & Deacon, 2012; Allen & Crosby, 2014; Ruzek et al., 2014; Hundt et al., 2016		
Personal experiences of treatment effectiveness	Hipol & Deacon, 2012; Padmanabhanunni & Sui, 2017	Barnett et al., 2014; Cook et al., 2015	Watts et al., 2014
Receiving additional support and supervision	David & Schiff, 2017; Kirst et al., 2017	Donisch et al., 2016; Kirst et al., 2017	
Approach is consistent with familiar clinical style	Hipol & Deacon, 2012; Trottier et al., 2017	Cook et al., 2015	David & Schiff, 2015
Being a younger therapist or having fewer years' experience	Gray et al., 2007; Ruzek et al., 2014; Hundt et al., 2016		

Table 6: System Level Barriers

Barrier	Quantitative studies	Qualitative Studies	Mixed-Method Studies
Lack of time for or access to training	Barnard-Thompson & Leichner, 1999; Becker et al., 2004; Gray et al., 2007; Najavits et al., 2011; Borah et al., 2013; Czincz & Romano, 2013; Borah et al., 2017; Richards et al., 2017; Trottier et al., 2017	Frueh et al., 2006; Barnett et al., 2014; Donisch et al., 2016; Kane et al., 2016	Watts et al., 2014
Lack of resources within organisation	Barnard-Thompson & Leichner, 1999; Salyers et al., 2004; Adams et al., 2016; Trottier et al., 2017	Langley et al., 2010; Cook et al., 2015; Donisch et al., 2016; Kane et al., 2016; Marques et al., 2016; Kirst et al., 2017	
Lack of time to provide treatment or caseload too high	Najavits, 2002; Borah et al., 2013; Adams et al., 2016; Borah et al., 2017	Langley et al., 2010; Cook et al., 2015; Donisch et al., 2016; Kane et al., 2016; Marques et al., 2016; Kirst et al., 2017	

Table 6: (continued)

Barrier	Quantitative Studies	Qualitative Studies	Mixed Method Studies
Lack of support or flexibility within organisation	Najavits, 2002; Gray et al., 2007; Padmanabhanunni & Sui, 2017; Trottier et al., 2017	Donisch et al., 2016; Marques et al., 2016	Watts et al., 2014; David & Schiff, 2015
Lack of supervision	Borah et al., 2013		David & Schiff, 2015
Facilitators			
Facilitator	Quantitative Studies	Qualitative Studies	Mixed Method Studies
Good access to high quality training		Barnett et al., 2014; Cook et al., 2015; Donisch et al., 2016	Watts et al., 2014; David & Schiff, 2015
Access to resources including administration		Barnett et al., 2015; Cook et al., 2015; Kane et al., 2015; Marques et al., 2016; Kirst et al., 2017	
Support to include the approach in schedule	Borah et al., 2013; Ruzek et al., 2017	Kirst et al., 2017	
Strong leadership and management support		Barnett et al., 2014; Cook et al., 2015	
Access to support and supervision		Cook et al., 2015; Kane et al., 2016	

Discussion

The papers included in this review summarised the key barriers to and facilitators for evidence-informed interventions for PTSD. The quality of included papers was mixed; however the majority of papers received a strong quality rating. Several key barriers and facilitators were highlighted. The factors influencing evidence-informed intervention delivery were found to vary in level, from intervention level factors, to clinician level factors, client level factors and finally system level factors. Findings were consistent with previous models of implementation science (Damschroder et al., 2009; Marques et al., 2016; Stirman et al., 2016).

With regards to the use of evidence-informed interventions, flexibility was identified by clinicians as a key facilitator. Clinicians were more likely to endorse evidence-informed interventions if they perceived the treatment approach contained an element of flexibility and adaptability, to allow the approach to meet the needs of their individual clients. Clinicians who perceived the approaches to be too rigid and manualised generally cited this as a barrier to implementation. Flexibility within fidelity is the concept that even within published evidence-informed intervention manuals there is scope for flexibility and adaptability, allowing clinicians to adapt elements of the treatment approach to fit the needs of specific clients, whilst still working within the overall framework of the intervention (Kendall, 2008). To increase clinician acceptability of manualised treatment approaches, it may be beneficial for researchers and treatment developers to explore flexibility within fidelity and specify the boundaries of practice to allow for individual tailoring of evidence-informed approaches (Kendall & Beidas, 2007). The risk of introducing flexibility within evidence-based practices is that research has found inflexibility within treatment protocols can lead to undesirable treatment outcomes (Castonguay et al., 1996). As a result, the concept of flexibility within

fidelity (Kendall & Beidas, 2007) encourages clinicians to practice within basic treatment frameworks without a need for rigid adherence to the exact manual.

Client factors included those characteristics of the client that influenced use of evidence-informed interventions. In particular, clinicians identified their fear of the risk of “retraumatising” the client or exacerbating symptoms as a barrier. This was particularly true for clinicians engaging in exposure-based therapies for PTSD. This is an important issue to address, as research suggests that only approximately twenty percent of clients experience any symptom exacerbation due to PTSD treatment (Foa, Zoellner, Feeny, Hembree & Alvarez-Conrad, 2002; Larsen, Stirman, Smith & Resick, 2016). Additionally, even within this minority, individuals who do experience symptom exacerbation are still highly likely to experience a clinically significant improvement in symptoms after treatment, and symptom exacerbation has not been found to be related to treatment non-completion. This is a significant area for future research and dissemination efforts to address, as exposure techniques are present in the majority of evidence-informed interventions for trauma recommended by national and international guidelines, and it is important for clinicians to understand the risks related to the exacerbation of symptoms in order to prevent this from being perceived as a barrier to the use of interventions utilising exposure techniques.

A second client related barrier identified within the literature was the presence of comorbid difficulties alongside PTSD, and prioritising clients’ other prominent needs. This is an important treatment consideration, as research suggests that approximately 80% of individuals with PTSD will experience a comorbid psychiatric disorder (Foa, 2009). Therefore, it is important to provide clinicians with adequate training that provides knowledge of how to adapt and integrate treatments for PTSD with a range of comorbidities. In addition, research has demonstrated that as comorbidities in PTSD tend to be the rule as opposed to the exception, specific PTSD treatments for differing presenting difficulties

should be developed and evaluated (Brady, Killenn, Breweton & Lucerini, 2000). Given the lack of client level facilitators reported in the literature, future research should aim to explore this area and identify characteristics of service users that may support the implementation of evidence-informed interventions for trauma.

Perhaps the most important level of barriers and facilitators identified in the review were the characteristics of the clinician likely to foster or impede use of evidence-informed interventions, as these are the key variables that can be addressed by training and dissemination efforts. The most dominant theme within clinician related barriers was a lack of training, which further linked to a number of other clinician barriers identified including an uncertainty of how to approach trauma, a lack of knowledge, and a lack of confidence in using evidence-informed interventions. This was further emphasised by the finding that key clinician *facilitators* were increased access to training, knowledge of the evidence base, and increased clinical experience leading to better confidence. Lack of training as a barrier to the implementation of evidence-informed interventions has been heavily endorsed in the literature (Becker et al., 2004; Borah et al., 2013; Czincz & Romano, 2013; Kane et al., 2016), with a number of recommendations made to address this gap. Given that clinicians are key stakeholders in the implementation of evidence-informed and guideline recommended interventions, ensuring adequate training opportunities is a priority (Adams et al., 2016). In particular, training that addresses beliefs in treatment credibility and attitudes towards evidence-informed practice is likely to be beneficial (Allen & Crosby, 2014).

A second key clinician barrier identified in the review is the emotional burden upon the clinician of working with an individual who has experienced trauma. Secondary traumatic stress is becoming an increasingly recognised difficulty for those working in mental health services, and research is underway to develop and implement supportive interventions for this population (Molnar et al., 2017). It is therefore important to ensure that organisations have

adequate support systems in place to provide supervision and promote the wellbeing of staff undertaking this work.

The final level of factors influencing clinicians' implementation of evidence-informed interventions for PTSD were system level factors. These included characteristics of the system or organisation. Linked to clinician level barriers, the most commonly reported system level barrier was the lack of provision for time or access to training or resources to support the implementation of evidence-informed interventions. In addition, the level of support from leadership and management was cited as both a barrier and a facilitator depending on the overall culture of the organisation. This is currently an important issue, with the rapidly developing recognition for the need for trauma-informed services. The Substance Abuse and Mental Health Services Administration of the United States (SAMHSA, 2014) defines trauma informed practice as "a program, organization or system that is trauma-informed realizes the widespread impact of trauma and understands potential paths for recovery; recognizes the signs and symptoms of trauma in clients, families, staff, and others involved with the system; responds by fully integrating knowledge about trauma into policies, procedures, and practices; and seeks to actively resist retraumatization" (p.9). This definition acknowledges the need for organisations to become more focused on trauma and hold the treatment of trauma at the heart of the system to ensure all individuals who have experienced a traumatic event receive timely access to evidence-informed interventions.

Strengths and Limitations

This was the first study to systematically synthesise the literature related to clinicians' perceptions of barriers and facilitators to the implementation of evidence-informed interventions for PTSD. The findings have been discussed in relation to clinical implications and directions for future research. Extending our knowledge of the factors that foster or impede our use of evidence-informed interventions within this population can help to inform

future development of training and dissemination efforts, by ensuring the identified barriers are addressed. In addition, key facilitators can be incorporated within new and existing treatment approaches to develop the best possible treatment interventions for this population.

The systematic review also has a number of limitations. The exclusion of studies published in languages other than English introduces a risk of bias as clinicians in predominantly English-speaking countries may perceive different barriers and facilitators to evidence-informed interventions for PTSD than do clinicians in other countries.

A second limitation identified was the heterogeneity of the included studies. While all of the included studies reported on potential clinician perceived barriers and facilitators, the primary objectives and methods of data collection differed across studies. This may therefore have influenced the comparability of the studies included and made it difficult to investigate the relative importance of different variables. This was particularly important considering the inclusion of both qualitative and quantitative studies in the review. The heterogeneity of study designs included within the review impacted on the ability to robustly extract and quality appraise all papers in the same manner. As a result of the inclusion of both qualitative and quantitative studies, a quality appraisal tool was selected that can be adapted to use with either approach (Letts et al., 2007). This modified tool allows for a range of research designs to be addressed and provide a rating for each study based on the overall study quality (Barras, 2005). However, difficulties were still met when trying to assess studies with vastly differing methods of data collection for identifying the facilitators and barriers to the use of evidence-informed interventions. Despite the methodological diversity in studies the results indicate a broad consensus of reported factors influencing evidence-informed intervention delivery for post-traumatic stress disorder. An additional methodological limitation was the use of directed content analysis as a method of data analysis and synthesis due to the potential for research bias introduced.

In addition to the heterogeneity of the study designs, the review also included studies comprising a range of professionals. Although it is likely that clinicians' attitudes towards and use of evidence-informed interventions are influenced by their background and training, this allowed the study to review factors influencing the use of evidence-informed interventions across a wide range of mental health professionals thus gaining a more comprehensive understanding of practice. However, further research may wish to explore the differences in attitudes between professionals further. This would support the development of more tailored training and dissemination efforts. Finally, further research should explore the links between clinician factors and the actual outcomes of the therapeutic approaches to establish whether there are associations with the effectiveness of the interventions.

Conclusion

The systematic review identified a number of barriers and facilitators to the implementation of evidence-informed and guideline recommended interventions for PTSD perceived by clinicians treating this population. In particular, a lack of training, knowledge and confidence in using these approaches was commonly reported by clinicians across the majority of studies. These issues need to be considered not only in future research, but also in the development, dissemination, implementation and evaluation of all training initiatives. Future research should seek to explore the nature of the training and supervision received by clinicians and address the training-practice gaps that are present.

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Contributors

Author JF designed the study, collected the data, conducted the analysis and wrote the first draft of the manuscript. Author LG supported the systematic searches, study selection, data collection and quality appraisal to ensure consistency and accuracy. Authors RMS and CF provided supervisory oversight for the study and contributed to the manuscript. All authors have approved the final manuscript.

Conflicts of Interest

Author RMS occasionally delivers training in a form of trauma-focused cognitive behavioural therapy with children and adolescents for which he receives payment. All other authors declare that they have no conflicts of interest.

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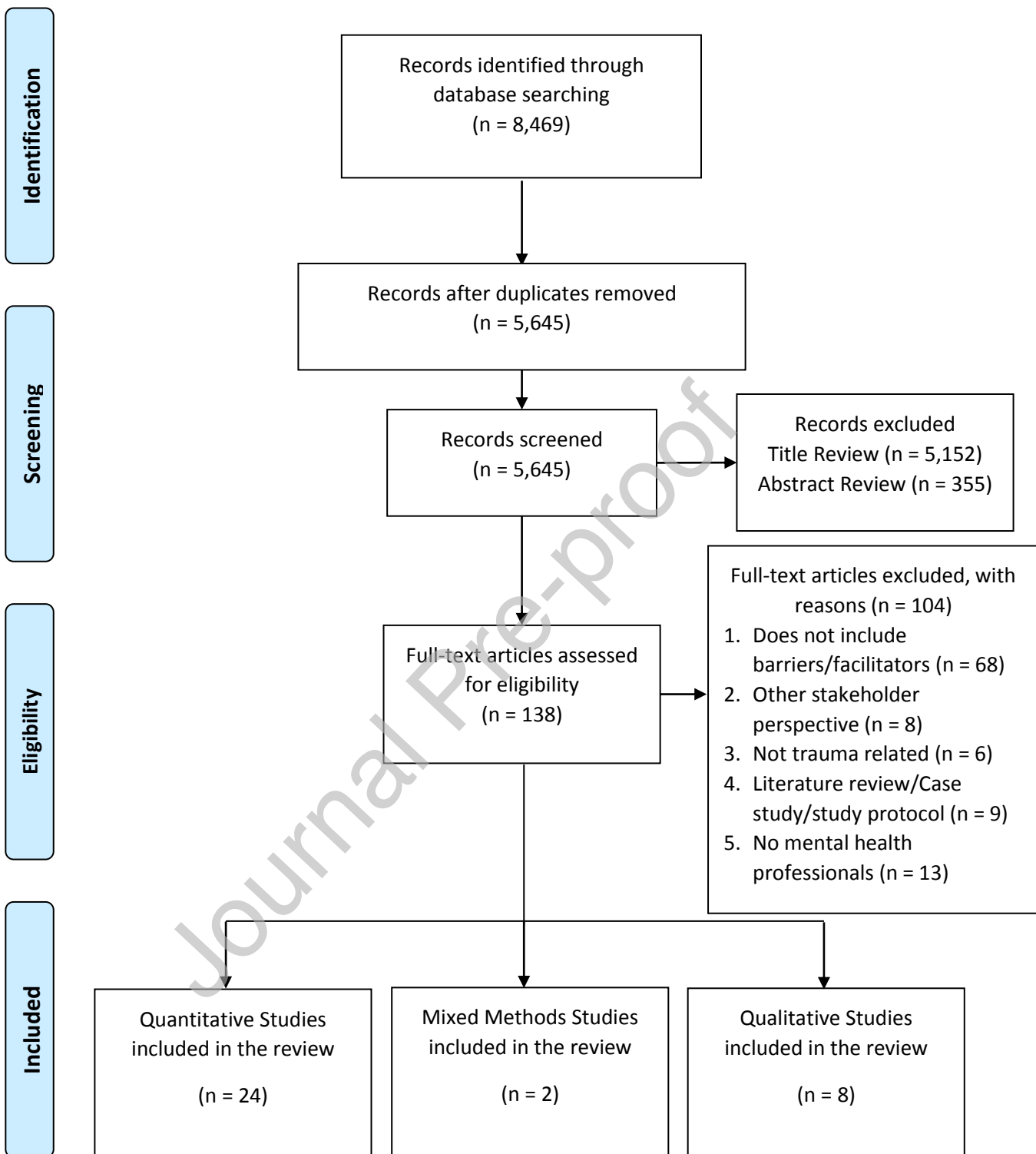


Figure 1 PRISMA Flow Diagram