



FEATURE ARTICLE

Treatment of post-traumatic stress disorder in patients with severe mental illness: A review

Linda Mabey¹ and Gwen van Servellen^{1,2}

¹College of Nursing, Brigham Young University, Provo, Utah, and ²School of Nursing, University of California, Los Angeles, California, USA

ABSTRACT: *Although the prevalence of post-traumatic stress disorder (PTSD) is high among those with severe mental illness, little is known about the use of interventions to lessen the burden of PTSD in this population. Currently, there are limited data about safe and effective interventions to treat these individuals. This systematic published work review presents the scientific published work reporting studies of psychological treatment approaches for individuals with comorbid PTSD and severe mental illness. A secondary aim of this study was to identify the specific models implemented and tested, and their impact upon patient outcomes. A review of the published work from January 2001 through January 2012 of English-language publications retrieved from the Cumulative Index of Nursing and Allied Health Literature (CINAHL), MEDLINE, and the American Psychological Association generated abstracts (PsycINFO) databases was conducted. Six studies met the inclusion criteria for the review. The treatment programs described were cognitive-behavioural therapy, psychoeducation, exposure-based cognitive-behavioural therapy, and eye movement desensitization and reprocessing. Evidence of the effectiveness of these programs is examined. Data to support the use of these interventions are limited, indicating the need for further research and efficacy trials. Future areas of research and implications for nursing are discussed.*

KEY WORDS: *post-traumatic stress disorder, serious mental illness, severe mental illness, treatment approaches.*

INTRODUCTION

Post-traumatic stress disorder (PTSD) is disproportionately high in patients with severe mental illness (SMI). Although the lifetime prevalence of PTSD is estimated to be 7–12% in the general population (Kessler 2000; Kessler *et al.* 1995; 2005), it is significantly more widespread among individuals with SMI. Rates of PTSD in people with SMI reportedly range 14–43% (Mueser *et al.* 2004) and 19–30% (Cusack *et al.* 2006). Often a chronic and debilitating disorder, the condition presents significant consequences for the quality of life and functional

status of millions of individuals worldwide and is one of the most costly mental illnesses, with loss of productivity estimates at \$3 billion per year in the USA (Brunello *et al.* 2001; Kessler 2000).

Post-traumatic stress disorder results from exposure to a traumatic situation that engenders intense fear for the safety of self or others. Three neurobehavioural symptoms are necessary to make the diagnosis of PTSD: avoidance of reminders of the trauma, re-experiencing aspects of the trauma, and hyperarousal. Sufferers often experience flashbacks of the event, nightmares, increased startle reflexes, and emotional numbing as additional symptoms (American Psychiatric Association 2000).

Though a serious and sometimes chronic disorder, PTSD is treatable. There are a number of published guidelines to promote evidence-based care. The US Government's Veterans Administration/Department of

Correspondence: Linda Mabey, 553 SWKT College of Nursing, Brigham Young University, Provo, UT 84602, USA. Email: linda-mabey@byu.edu

Linda Mabey, DNP, APRN.

Gwen van Servellen, RN, PhD, FAAN.

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Defence (VA/DoD) 2010 guidelines endorse cognitive therapy, exposure therapy, stress inoculation training, and eye movement desensitization and reprocessing (EMDR) as evidence-based practices (Veterans Administrative Department of Defense 2010). The Australian Centre for Post-traumatic Mental Health guidelines (2007) support trauma-focused cognitive-behavioural therapy (TFCBT) and EMDR. The Cochrane Review of psychological therapy for PTSD states that TFCBT, EMDR, stress management, and group TFCBT are recommended treatments (Bisson & Andrew 2009). Practice guidelines published by the International Society for Stress and Traumatic Studies (Foa *et al.* 2009) emphasize cognitive-behavioural therapy (CBT), exposure, EMDR, and group therapy. CBT, in a variety of delivery models, has been the most studied (Foa *et al.* 2009). A brief explanation of these models follows.

All but one of the major modalities of treatment for PTSD fall into the two broad categories of cognitive therapy or behavioural therapy, the exception being EMDR. Cognitive therapy (CT), sometimes referred to as 'cognitive restructuring', focuses on challenging trauma-associated beliefs, and replacing irrational thoughts with more realistic ones. Individuals with PTSD often have exaggerated beliefs regarding their current risk of danger and personal culpability for the traumatic event. For example, a survivor of the 11 September 2001 attacks on the World Trade Centre with PTSD may experience intrusive and unrealistic thoughts that walking in midtown Manhattan puts her in immediate danger. This belief is often extended to include that the world is unsafe and people cannot be trusted. CT focuses on disputing these thoughts and replacing them with more rational, alternative beliefs such as: 'The attack is over. I did the best I could do. I am no longer in danger.' CT can take a variety of forms, but in the treatment of PTSD, the beliefs surrounding the trauma are the focus of therapy.

In contrast, behavioural therapy emphasizes altering problematic behaviours by changing stimulus-response and reward patterns. Exposure therapy is a common behavioural approach, and consists of repeated confrontation with memories of the traumatic event, as well as triggering stimuli. This confrontation can occur either in the actual environment of the event (*in vivo* exposure), or in the therapist's office utilizing imaginal recall (*in vitro* exposure). The repeated exposure to the actual trauma memory or reminders of the event gradually desensitizes the individual's reaction to them, until the patient is no longer physiologically or emotionally distressed when confronted with a reminder or memory. Exposure

directly challenges the PTSD symptom of avoidance. In the case of the World Trade Centre survivor, exposure may be accomplished by repeatedly walking past the former Twin Towers site, or alternatively, within the therapist's office, repetitively recalling in detail the memory of the attack. In both cases, with therapist support, the ensuing distress is endured until it subsides. *In vivo* and *in vitro* exposure experiences can be combined as part of treatment. In reality, most treatment models for PTSD combine a variety of behavioural and cognitive approaches, which are broadly referred to as CBT (Foa *et al.* 2009; Veterans Administrative Department of Defense 2010). Bisson and Andrews' (2009) Cochrane Review of psychological treatments for PTSD combines these various cognitive behavioural approaches together under the term TFCBT. TFCBT is defined as 'any psychological treatment delivered individually that predominantly used trauma focused cognitive, behavioural or cognitive-behavioural techniques' (p. 3), and is recognized in the review as efficacious for the treatment of PTSD.

An example of a TFCBT intervention is stress inoculation training. This method utilizes cognitive techniques such as positive self-talk and thought stopping (forcefully thinking 'stop!' when a negative thought arises), as well as behavioural methods such as assertiveness training, breathing retraining, and relaxation. Stress inoculation training has been recognized by the VA/DoD as an effective treatment for PTSD (Veterans Administrative Department of Defense 2010), and is reported as 'generally supported' by research by the International Society of Stress and Traumatic Studies (Foa *et al.* 2009; p. 552).

In PTSD treatment utilizing EMDR, a specific trauma memory is recalled, with its accompanying negative self-beliefs, physical sensations, and emotions. The patient focuses on these components while simultaneously attending to a form of bilateral stimulation (auditory tones, taps, or eye movements). Symptom relief is theorized to occur as a result of accessing adaptive stored memories that supplant emotionally charged trauma memories (Shapiro 2001). EMDR differs from CBT and exposure therapies in several ways. CBT and exposure therapies commonly require the client to practice CBT and exposure skills outside of the therapy session (referred to as 'homework'). Accomplishment of homework assignments has been linked to the effectiveness of treatment (Mueser *et al.* 2008). EMDR includes some elements of cognitive techniques and exposure, but does not require the client to do homework or participate in prolonged exposure to the traumatic memory, *in vivo* or *in vitro*. Instead, the client is taught techniques to

visualize the traumatic memory 'at a distance', as if viewed through the window of a passing train (Shapiro 2001).

Whereas effective treatment for PTSD in the general population is found in the published work, less is known about efficacious treatment for PTSD in populations with SMI, despite the fact that populations with SMI are frequently exposed to and impacted by traumatic events. Cusack *et al.* (2006) found that 87% of 142 patients with mental illness surveyed had experienced at least one trauma in their lifetime. The most common traumatic events experienced by those with SMI are assault and sexual abuse, occurring in both childhood and adulthood. Studies examined in a review article by Grubaugh *et al.* (2011) reported that childhood sexual abuse occurred in 13–62% (mean, 34%) of individuals with SMI, and physical abuse in 11–66% (mean, 53%). Distant past abuse is not the only concern. In a survey of 782 adult patients served by public mental health systems in four states in the USA, Goodman *et al.* (2001) found that one-third of women reported being physically or sexually assaulted within the previous year. Thirty-four percent of men with SMI were found to have suffered an assault during the same time period.

These childhood and adult exposures to traumatic events result in an increased risk for the development of PTSD. Mueser *et al.* (2004) reviewed the prevalence of PTSD in seven studies of patients with SMI and found the rates to be between 14% and 43%. The number of exposures to trauma, severity of trauma, and traumatization during childhood correlated with the severity of PTSD symptoms in these studies. Cusack *et al.* (2006) found a lifetime PTSD prevalence rate of 19–30% among patients seeking treatment in a community mental health centre. In studies using the 'gold standard' Clinician Administered PTSD Scale (CAPS), Grubaugh *et al.* (2011) reported a prevalence rate of 13–46% in patients with SMI.

These high rates of PTSD impact the physical as well as mental health of patients with SMI. In a multisite study of 782 patients with SMI, Mueser *et al.* (2004) found that 34.8% of patients had PTSD, which was associated with more alcohol disorders, increased recent psychiatric hospitalizations, health problems leading to subsequent doctor visits, and hospitalizations for these medical problems. Cusack, Frueh and Brady (2004) also found PTSD in patients with SMI to be positively associated with poorer physical and mental health.

Because of the high cost to individuals and systems of untreated PTSD in the population of people with SMI, treatment approaches for these individuals are being adapted from evidence-based PTSD interventions,

and are just beginning to be studied. Early results of these adaptations are promising in mitigating deleterious effects of PTSD in patients with SMI, if not eliminating it. It is the purpose of this systematic published work review to identify clinical trials and experimental studies which evaluate treatment effects on symptoms, functional status, and quality of life in patients with SMI who have experienced PTSD. Evidence of the effectiveness of these programs is examined. Future areas of research and implications for nursing are discussed.

Search method

The published work review was conducted in the winter of 2012. The studies for this systematic published work review were derived from three major computerized databases, MEDLINE, CINAHL, and PsycINFO. Search criteria included: peer-reviewed articles written in English and published between January 2001 and January 2012; varying methodologies (case reports, clinical trials (I–V), comparative studies, controlled clinical trials, and randomized controlled trials); a clear measure of PTSD; and research objectives that included investigating outcomes of interventions with individuals with SMI who are experiencing PTSD.

The Brigham Young University research librarian conducted the initial MEDLINE, CINAHL, and PsycINFO database published work search with the guidance of the co-authors. This search was forwarded to the co-authors and then cross-checked by title and abstract. The initial search terms included 'PTSD', 'severe mental illness', and 'serious mental illness'. This search yielded 172 articles.

To examine the possibility that articles may exist exploring PTSD treatments with specific DSM-IV-TR diagnoses associated with severe or serious mental illness, a second search was conducted including the following mental illnesses as search terms: 'psychosis', 'psychotic disorder', 'schizophrenia', 'bipolar', and 'major depression'. 'Therapy OR intervention' was also added to this search. This second search produced 2036 titles.

Given the large number of titles, a third search was initiated excluding the specific mental illnesses listed above. 'Severe mental illness', 'serious mental illness', 'PTSD', and 'therapy OR intervention' were retained as terms in the third search. This search resulted in 119 articles.

The authors independently reviewed the titles and abstracts of these articles to determine whether studies met inclusion criteria, then resolved any discrepancies in judgment. Following this process, the relevant articles ($n = 32$) were retrieved in full and the authors again reviewed these to determine which met inclusion criteria.

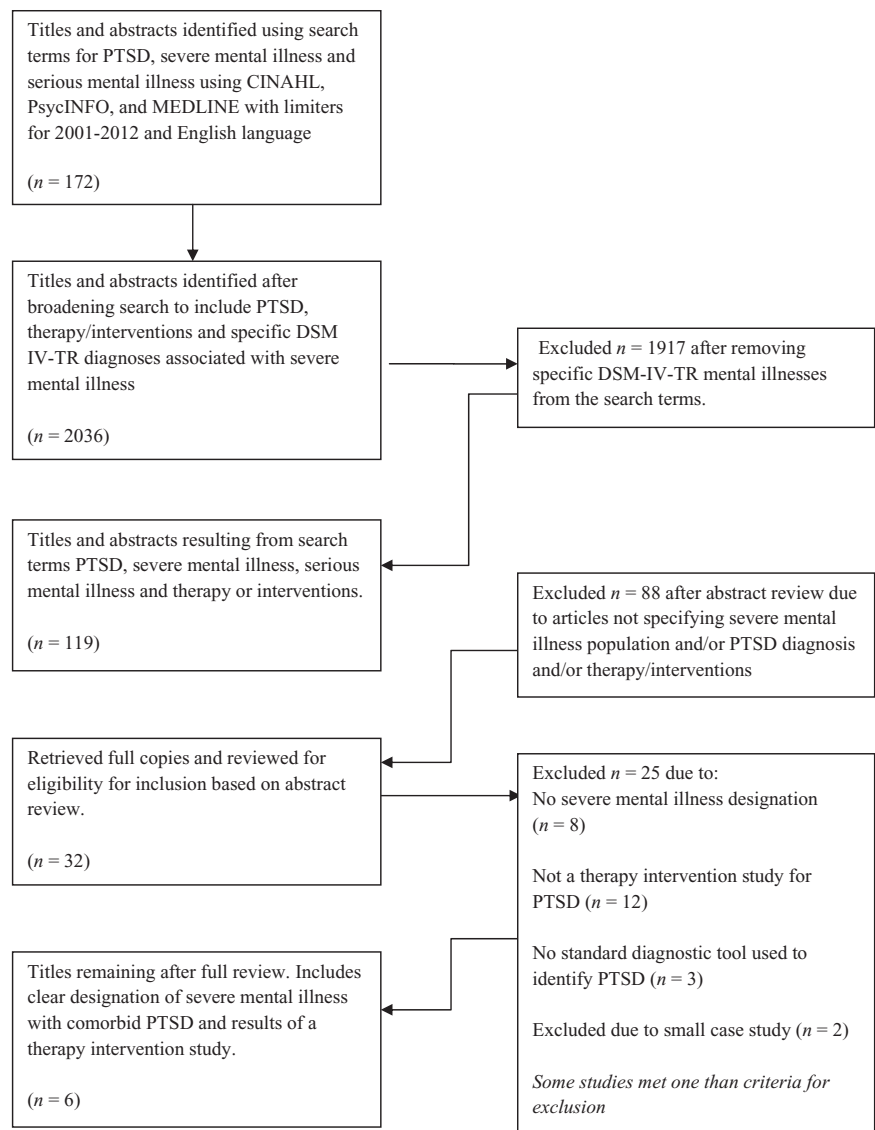


FIG. 1: Flow chart of study selection process. PTSD, post-traumatic stress disorder.

Articles from peer-reviewed journals were excluded if they did not describe how the diagnosis of PTSD was derived. Additionally, all studies needed to clearly specify the study population as having a severe or serious mental illness. Finally, studies were excluded that did not report therapy intervention outcomes. To enable us to be convinced of the thoroughness of our review, we examined previously published systematic reviews on topics related or semi-related to our focus. Figure 1 summarizes the process of study retrieval and acceptance or rejection of identified articles.

The next step of the review was to abstract data from the reported studies. Data were extracted in order of: (i) intervention focus; (ii) author, date, and country of the study; (iii) study design; (iv) intervention components; (v)

population and sample characteristics; (vi) measure(s) of PTSD; and (vii) study outcomes. A description of the data abstracted on review checklists is summarized in Table 1.

RESULTS

This systematic review identified six articles that met study inclusion criteria and evaluated the effectiveness of therapy interventions with patients with SMI experiencing PTSD. All of the studies were published between 2001 through 2012. Five were conducted in the USA, and one in the Netherlands. There was one randomized trial. The remaining five studies were open trial, pilot feasibility studies. Sample sizes in these studies ranged 20–108. A summary of intervention models, study

TABLE 1: Studies addressing psychological treatment of PTSD in patients with SMI

Intervention	Author (year) (country)	Study design	Intervention components	Population/sample characteristics	PTSD measures	Therapeutic outcomes
EMDR	van den Berg & van der Gaag (2012) (the Netherlands)	Open trial uncontrolled feasibility pilot study	Eight-phase procedure adapted in Dutch. Client asked to imagine representative distressing picture of trauma. Bilateral stimulation applied until no further distress is experienced. Each distressing memory targeted in this manner.	Outpatient adults with schizophrenia spectrum disorder and comorbid PTSD. Intervention trial: $n = 27$, 22 completed treatment.	CAPS, PSS-SR	Response: 5/27 patients dropped out; of the 22 completers, five still met criteria for PTSD. Improvement in symptom severity: treatment did not lead to symptom exacerbation. Symptom improvement: significant CAPS improvement from session 1 to session 6.
Exposure-based CBT	Finkel <i>et al.</i> (2009) (USA)	Open trial evaluation	Manualized multi-component CBT program. One session of psychoeducation, two sessions of anxiety management, seven sessions of social skills and anger management, four sessions of trauma issues management, eight sessions of exposure therapy, and homework assignments.	Patients diagnosed with schizophrenia or schizoaffective disorder within a public community mental health system. Excluded: patients with current substance dependence, history of hospitalization or suicide attempt in previous 2 months. Intervention group: $n = 20$.	TAA; CAPS; PCL; MINI	Symptom remission: PTSD symptom improvement, maintained at 3-month follow up. Response: 12/13 completers no longer met criteria for PTSD or were judged to be treatment responders. Decrease on CAPS of 20–30 points for completers. Significant improvement PCL symptoms from session 1–22, $t = 3.32$ (12), $P = 0.006$. Treatment satisfaction: high.
CBT for PTSD in SMI	Mueser <i>et al.</i> (2008) (USA)	RCT	Components and goals listed in article, p. 262. Twelve to sixteen sessions using structured format with handouts, worksheets, and homework assignments, completed in participants' local community mental health centre.	Patients at community health centres diagnosed with major depression, bipolar, schizoaffective or schizophrenia. Excluded patients with hospitalization or suicide attempt within last 3 months, current DSM-IV substance dependency. Analysis run on: intervention group, $n = 54$, TAU = 54.	SCID-I and SCID-II; THQ; CAPS; negative trauma related beliefs measured by PTCL.	PTSD diagnosis: no differences on CAPS under 65 (effect size 0.12). Effect size 0.59 for CAPS > 65; d.f. 1, 57, $F = 9.16$, $P < 0.004$. Negative trauma-related beliefs: PTCL improved with effect size of 0.51, d.f. 1, 78 $F = 14.19$, $P < 0.001$.
Trauma recovery group: A CBT program for PTSD in persons with SMI	Mueser <i>et al.</i> (2007) (USA)	Pilot evaluation preliminary analyses	Twenty-one-week group with seven components: introduction breathing retraining, education about PTSD, cognitive restructuring, coping with persistent PTSD symptoms, developing personal recovery plan, termination. Results from 11 completed groups.	Patients at a community health centre with chart description of PTSD. Exclusions: patients with hospitalization within last month, floridly psychotic. $n = 80$ completed baseline assessment. Treatment completers with pre- and post-treatment scores: $n = 31$ Treatment non-completers with pre and post-treatment scores: $n = 9$.	PCL; Modified THQ; PTCL.	PTSD symptoms (PCL): treatment completers had significant improvement in PTSD symptoms from baseline to follow up, mean 48.50, standard deviation 15.79, $P < 0.001$. PTSD symptom improvement trailed improvement in negative trauma-related beliefs. Negative trauma-related beliefs (PTCL) improved. Significant differences on PTCL for treatment completers from baseline to follow up: $t = 4.86$, d.f. = 30, $P < 0.001$.
Psychoeducational program	Pratt <i>et al.</i> (2005) (USA)	Pilot feasibility study	Videotape of three simulated individual sessions with clinician and client discussing trauma and PTSD. Interactive learning, stopping to discuss questions. Patients provided with handouts summarizing information.	State hospital inpatients who met criteria for PTSD. Final sample: $n = 70$. Thirty-three clients completed all three sessions.	Modified THQ; PCL; Knowledge of PTSD Test.	PTSD knowledge: improved with exposure to program ($F = 14.54$, d.f. = 1, 69, $P < 0.0001$). Satisfaction with program: high; few reported significant effects on PTSD symptoms.
CBT of PTSD in SMI	Rosenberg <i>et al.</i> (2004) (USA)	Pilot study	Twelve to sixteen-week individual CBT program with three components: psychoeducation, breathing retraining, and cognitive restructuring.	Veterans Administration hospital and community mental health centre. Inclusion criteria: schizophrenia, schizoaffective, bipolar, major depression or psychosis NOS. Exclusion criteria: no grave threat to self or others, no recent hospitalization or suicide attempt past 2 months. Treatment completion: $n = 12$. Total sample engaged: $n = 22$.	PCL; structured clinical interview (CAPS) to assess intensity and frequency of symptoms.	CAPS improvement: t (10) = 3.26, $P < 0.01$. PTSD diagnoses: no change from baseline to post-treatment; but change in status from baseline to follow up, significant with two-tailed binomial value of 1/32, $P < 0.03$. Symptom severity (BPRS subscale): baseline to follow-up t (11) = 2.96, $P < 0.01$ for affective subscale. Other subscales from baseline to follow up not significant.

CAPS, Clinician Administered PTSD Scale; CBT, cognitive-behavioural therapy; BPRS, Brief Psychiatric Rating Scale; EMDR, eye movement desensitization and reprocessing; MINI, Mini-International Neuropsychiatric Interview; NOS, not otherwise specified; PCL, PTSD Checklist; PSS-SR, PTSD Symptom Scale Self-report; PTCL, Post-traumatic Cognitions Inventory; PTSD, post-traumatic stress disorder; RCT, randomized controlled trial; SCID, Structured Clinical Interview for DSM; SMI, severe mental illness; TAA, Trauma Assessment for Adults; TAU, treatment as usual; THQ, Trauma History Questionnaire.

designs, population characteristics, PTSD measures, and therapeutic outcomes is provided in Table 1.

Study populations

All participants included in these studies were adults. Four of the studies were conducted with outpatients at community mental health centres, one took place at an inpatient state hospital, and one utilized a veteran's hospital as well as an outpatient clinic. Patient diagnoses varied in the studies, including schizophrenia, schizophrenia spectrum disorder, major depression, bipolar disorder, schizoaffective disorder, and psychosis not otherwise specified. The variation in clinical diagnoses can be attributed to the fact that a number of psychiatric illnesses in their severe form can result in significant disability for a prolonged period of time. All participants were identified as having PTSD, though the studies utilized different measures to arrive at the diagnosis. Two studies utilized the CAPS as their primary source of PTSD diagnosis, while two studies employed the PTSD Checklist (PCL). Clinical interviews established diagnoses in two studies (Frueh *et al.* 2009; Mueser *et al.* 2008), with CAPS as a secondary measure.

Exclusion criteria among the studies also varied, from no exclusions other than age of less than 18 years (Pratt *et al.* 2005), and age of less than 18 years plus IQ of less than 70 years (van den Berg & van der Gaag 2012), to the most common exclusion criteria of current substance dependence, and recent history of hospitalization or suicide attempt. One study additionally excluded those with active psychosis (Mueser *et al.* 2007).

Measures of therapeutic outcome in PTSD diagnosis

Therapeutic outcomes in all studies were measured by CAPS and/or PCL scores. Additional measures were employed to assess other outcomes, depending on the focus of the study. For example, Mueser *et al.* (2007) and Mueser *et al.* (2008) directly measured negative trauma-related beliefs using the Post-traumatic Cognitions Inventory, and Pratt *et al.* (2005) measured improvement in knowledge about PTSD utilizing the Knowledge of PTSD Test.

Therapy interventions

Interventions explored in these studies included EMDR, exposure-based CBT, a psychoeducational program, and CBT. Length of intervention varied from three sessions (EMDR and psychoeducational program) to 22 sessions (exposure-based CBT). Those delivering the interventions included clinical psychologists and masters' level

clinicians, as well as pastoral counsellors in the case of the psychoeducational intervention study. All interventions were highly structured.

Effectiveness of therapy interventions: PTSD diagnosis and associated symptoms

Cognitive-behavioural therapy results were mixed. In a small open pilot study of a structured 12–16-session CBT program, Rosenberg *et al.* (2004) demonstrated a clinically significant improvement in CAPS scores at 3-month follow up, but only marginally significant changes in PTSD diagnostic status (two-tailed binomial value of 1/32, $P < 0.03$). There were significant decreases in anxiety and depression symptoms as measured by the Brief Psychiatric Rating Scale. In contrast, in this review's only randomized controlled study ($n = 108$), a similarly structured individually delivered CBT program did not reduce the diagnosis of PTSD when compared to treatment as usual. However, it did significantly reduce severity of PTSD symptoms, decrease negative trauma-related beliefs, improve knowledge about PTSD, and decrease health concerns. As with the Rosenberg, Mueser and Jankowski study (2004), the intervention group also improved significantly in anxiety and depression symptoms (Mueser *et al.* 2008).

Contrasting results were reported by Frueh *et al.* (2009). Combining exposure therapy with common CBT components such as psychoeducation, anxiety management, and social skills training in a small open trial ($n = 20$), Frueh *et al.* (2009) found no significant improvements in depression, generalized anxiety, or perception of physical health status. However, PTSD diagnosis was eliminated in 10 of 13 study completers. Quality of social relationships and general mental health also improved, as indicated by self-report. Also significant, there were fewer participant reported visits to primary care providers during the study period.

One study explored EMDR in an open trial with patients diagnosed with a psychotic disorder and PTSD ($n = 27$). EMDR has cognitive components in that negative cognitions related to traumatic events are generated and addressed in the intervention, but it differs in significant ways and is considered its own treatment model. After a maximum of six sessions, 17 of the 22 completers no longer met PTSD criteria as measured by CAPS, and significant improvements were also made in anxiety, depression, delusions, self-esteem, and auditory hallucinations (van den Berg & van der Gaag 2012).

Two group open pilot studies meeting inclusion were retrieved in the published work review: one delivering a CBT outpatient intervention treatment, and one focused

on inpatient psychoeducation program evaluation. Group models have the advantage of being less costly to deliver, as well as providing the opportunity for group members to learn from each other and provide mutual support. The CBT group ($n = 80$) consisted of 21 structured sessions provided at a community mental health centre. The co-educational CBT group focused on psychoeducation and skill development in breathing, cognitive restructuring, coping skills, and developing a recovery plan. Treatment completers ($n = 68$ having attended >11 sessions) significantly improved in PTSD symptoms, depression, and trauma-related cognitions (Mueser *et al.* 2007). By contrast, the psychoeducational inpatient group ($n = 70$) consisted of three sessions of videotaped simulations and discussion focused on understanding the characteristics of PTSD and common symptoms. Group attendance increased knowledge about PTSD, but as expected, did not decrease PTSD symptoms (Pratt *et al.* 2005).

DISCUSSION

Studies have shown that the prevalence of PTSD in patients with SMI is considerably higher than in the general population. This population is especially vulnerable because of childhood and adult emotional, physical, and sexual assault. Research has identified not only the prevalence but also negative consequences of ongoing PTSD in this population, including increased risk for continued assaults, exacerbation of psychiatric symptoms, drug and alcohol abuse, impaired function, and high utilization of health-care services.

Despite higher prevalence of PTSD in the population of persons with SMI and its cost to individuals, families, and health-care systems, investigation into effective treatments is in its early stages. It was the purpose of this study to review the scientific published work reporting studies of interventions for PTSD in the population of persons with SMI. Further, a secondary aim was to identify the specific models implemented and tested, and their impact upon patient outcomes. Inclusion criteria for this review were: peer-reviewed articles written in English and published between January 2001 and January 2012; varying methodologies (case reports, clinical trials (I–V), comparative studies, controlled clinical trials, and randomized controlled trials); a clear measure of PTSD; and research objectives that included investigating outcomes of interventions with the individuals with SMI who are experiencing PTSD.

The net retrieval of studies directly investigating interventions for PTSD in patients with SMI from this review was small ($n = 6$), with only one randomized con-

trolled study. The paucity of studies meeting inclusion criteria provides evidence of a need for further research. This lack of research is in part due to the fact that the patients with SMI are often excluded as PTSD study subjects (Grubaugh *et al.* 2011; Spinazzola, Blaustein & van der Kolk 2005). According to Grubaugh *et al.* (2011), the concern that interventions for PTSD in patients with SMI may ‘potentially exacerbate patients’ primary symptoms and/or cause relapse’ is one contributing factor of exclusion (p. 893). Clinicians treating the population of persons with SMI also share this apprehension. Frueh *et al.* (2006) argue that ‘trauma has acquired a mystique that leaves clinicians fearful of addressing it’ (p. 1029).

Despite these concerns, there is evidence of forward momentum in the published work, as evidenced by this review. These studies demonstrate that initial programs for treatment of PTSD in patients with SMI are being adapted from evidenced-based guidelines recommended for a variety of populations with PTSD. Accordingly, researchers cited in this review noted the need for patient preparation for treatment, coordination of services, and careful titration of interventions for individuals with SMI (Mueser *et al.* 2008; Rosenberg *et al.* 2004). This review provides preliminary data that evidence-based therapy approaches effective for patients with PTSD and without SMI, with attention to the population with SMI’s specific needs, may be efficacious in treating PTSD in patients with SMI.

Of the evidenced-based treatments for PTSD, CBT approaches were more prevalent in this review. This may be because some researchers believe CBT in the form of cognitive restructuring is likely to be better accepted and tolerated by the population of persons with SMI than exposure therapy (Mueser *et al.* 2007). However, both the exposure therapy program (Frueh *et al.* 2009) and EMDR pilot study (van den Berg & van der Gaag 2012) reviewed in this paper reported no adverse effects for study completers. In fact, in the exposure component of Frueh *et al.*’s (2009) pilot program, there were no dropouts. It should be noted that in this study of exposure therapy, patients with SMI received extensive preparation and support, including education, anxiety management, and social skills and communication training.

Although the pilot studies on EMDR and exposure therapy are small and uncontrolled, the results raise the question as to whether individuals with SMI are better able to withstand the stress of direct confrontation with distressing memories than previously thought. However, as stated by Grubaugh *et al.* (2011), ‘there is also a need

to explore ways to maximize retention and treatment response in this population' (p. 894). Factors that contribute to patients with SMI dropping out of PTSD research should continue to be elucidated, as the dropout rate for these studies ranged 18–41%.

The studies in this review point to how significant treatment can be, even if PTSD is not completely eliminated as a diagnosis. Improvements noted in these studies occurred in anxiety, depression, negative trauma-related beliefs, general mental health, social and therapy relationships, as well as decreased anger. These are significant findings that have the potential of greatly improving the quality of life of patients with SMI and PTSD, as well as contributing to better functioning in families and communities. Research in effective treatment for PTSD in this population should continue to examine these and other outcomes.

The findings of this review of the published work contribute to existing knowledge of the programs that have been implemented and tested for their effectiveness in treating SMI populations exhibiting PTSD. There is initial evidence that programs such as these, particularly CBT therapies, can be successfully implemented and evaluated for their effectiveness in modifying symptom presentation and quality of life. However, this limited number of studies cannot lead to conclusive evidence about the effectiveness of these approaches. Additional information is needed, including the characteristics of patients most able to tolerate and make use of specific therapeutic approaches, and whether such programs could be tailored for early intervention. In the final analysis, there is unlikely to be a 'one size fits all' treatment approach to PTSD for patients with SMI due to the heterogeneity of diagnoses, needs, and functionality of this population. It is likely that any specific protocol or treatment model needs to be individualized in aspects of intensity, timing, and approach.

There are a number of limitations to our review. We restricted our search to English-language publications, introducing the possibility of language bias. An additional limitation is the variety of definitions of SMI found in the published work (Parabiaghi *et al.* 2006; Spollen 2003). Due to this, we relied on the definition of SMI supplied by study authors. Because the research design, population characteristics, and measures of PTSD differed in the studies retrieved from this review, no conclusions can be drawn regarding the superiority of any one model. In addition, five of the six studies were pilot studies, indicating the nascent state of the published work on evidence-based treatments for PTSD in patients with SMI.

Implications for mental health nursing

Nurses are at the forefront of providing care for individuals with SMI in inpatient and outpatient facilities, both in medical and psychiatric settings. The high cost to patients and society of not identifying and treating PTSD in the population of persons with SMI is of concern to the profession. In this time of hyper-focus on economically viable health care, identification of patients with SMI suffering from PTSD and implementation of effective treatment models that decrease costs and improves care is vital. Mental health nurses in particular are in a position to identify trauma exposure and PTSD symptoms in individuals with SMI.

Strategies that improve patient stability while undergoing trauma treatment are an integral part of the CBT, EMDR, and exposure models discussed in this review, and include anxiety management techniques such as breathing retraining, relaxation, and social skills training. Nurses need the knowledge and expertise to teach these skills to patients with SMI as a component of the PTSD protocol. Further, because patient adherence with practicing CBT skills outside of the therapy situation ('homework') was found to improve treatment response, nurses should encourage and reinforce these skills.

As this review indicates, evidence is beginning to elucidate that even in its early stages, effective treatments for this population are beginning to be identified. Informing patients with SMI of this forward momentum in PTSD research as a part of psychoeducation conveys hope. Psychoeducation is a common nursing intervention. Providing patients with SMI with education about the prevalence, common symptoms, and comorbidities of PTSD may improve patient understanding of PTSD and decrease misinterpretation of PTSD symptoms, such as mistaking flashbacks for hallucinations (Pratt *et al.* 2005).

Advanced practice psychiatric nurses can advance the further development of evidence-based practice for PTSD in patients with SMI by developing, testing, and implementing treatment models. Teams of researchers are exploring these models, and nurses should be a part of these efforts. As evidence for the effectiveness of treatment for PTSD in the population of persons with SMI continues to develop, psychiatric nurses can formulate treatment guidelines and protocols. There will also be a pressing need to move research into clinical practice, and advanced practice nurses who are trained in delivering evidence-based models will be needed, particularly in the public mental health sector where the majority of patients with SMI receive care.

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