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Posttraumatic Stress Disorder in Older Adults: A Conceptual Review

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Abstract

Objectives: We provide a review of the literature on posttraumatic stress disorder (PTSD) in older adults, focusing largely on older U.S. military veterans in two primary areas: 1) assessment and diagnosis and 2) non-pharmacological treatment of PTSD in late life.

Methods: We performed a search using PubMed and Academic Search Premier (EBSCO) databases and reviewed reference sections of selected papers. We also drew on our own clinical perspectives and reflections of seven expert mental health practitioners.

Results: Rates of PTSD are lower in older compared with younger adults. The presence of sub-syndromal/partial PTSD is important and may impact patient functioning. Assessment requires awareness and adaptation for potential differences in PTSD experience and expression in older adults. Psychotherapies for late-life PTSD appear safe, acceptable and efficacious with cognitively intact older adults, although there are relatively few controlled studies. Treatment adaptations are likely warranted for older adults with PTSD and co-morbidities (e.g., chronic illness, pain, sensory, or cognitive changes).

Conclusions: PTSD is an important clinical consideration in older adults, although the empirical database, particularly regarding psychotherapy, is limited.

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Disclosure Statement

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Clinical Implications: Assessment for trauma history and PTSD symptoms in older adults is essential, and may lead to increased recognition and treatment.

Keywords

Older adults; posttraumatic stress disorder; psychotherapy; trauma

Introduction

In the U.S. population, 50% to 90% of older adults have been exposed to at least one type of potentially traumatic event (Forman-Hoffman et al., 2012; Monson, Lonergan, Caron, & Brunet, 2016). Estimates of the prevalence of current posttraumatic stress disorder (PTSD) in older adults across ethnic minority and non-minority groups range from .4 to 4.5% (Jimenez, Alegria, Chen, Chan, & Laderman, 2010; Pietrzak, Goldstein, Southwick, & Grant, 2011) and of lifetime prevalence of PTSD and partial PTSD are 4.5% and 5.5%, respectively (Pietrzak, Goldstein, Southwick, & Grant, 2012a). Among older men, combat experience is a particularly relevant traumatic experience, and is associated with elevated risk for combat-related PTSD and other mental health problems (O'Toole, Catts, Outram, Pierse, & Cockburn, 2009). Indeed, older veterans are at risk for experiencing multiple traumatic events over the course of their lifetimes (Pietrzak & Cook, 2013). Thus, PTSD is an important mental health issue for older adults in general, and for aging veterans in particular.

In this article, we provide a conceptual review of the literature on PTSD in older adults, focusing in large part on older U.S. military veterans and two primary areas: 1) assessment and diagnosis and 2) non-pharmacological treatment. We also include an important section that details special considerations for assessment and treatment of late-life PTSD. There is a wide range as to what is considered “older adult,” and the definition varies across studies. Typically when we refer to “older adults,” we mean those aged 65 years and older. This review brings together the literature to examine what is currently known and to provide perspective regarding gaps still to be examined in the research pertaining to older adults with PTSD.

As defined by the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (American Psychiatric Association, 2013), PTSD is a disorder that can develop after a person experiences or witnesses an extremely stressful or traumatic event, such as physical or sexual assault, combat, or a natural disaster (known as a criterion A event). Symptoms include intrusions (e.g., distressing memories, nightmares, flashbacks), avoidance of reminders of the trauma (e.g., thoughts, people, situations), negative alterations in cognition or mood (e.g., negative beliefs or emotional state, feeling detached, inability to experience positive emotions), and hyperarousal (e.g., irritable behavior, hypervigilance, exaggerated startle). To meet criteria, symptoms must begin or increase following the trauma, last for at least one month, and cause clinically significant distress or impairment in functioning.

Most of the assessment and treatment research on PTSD does not include substantial or proportional numbers of adults age 65 and older. Much of the research has been conducted with older veterans in the United States and internationally. The minimal inclusion of older

civilians in PTSD treatment studies is problematic, as the U.S. population is aging. Indeed, as of 2015, 9.7 million U.S. veterans were at least 65 years of age (National Center for Veterans Analysis and Statistics, 2016), with the fastest growing segment those age 75 and older. In addition, assessment, diagnosis, and treatment of PTSD can be challenging in older adults for numerous reasons, including potential cognitive or sensory decline and comorbid mental and physical disorders. In the following sections, we discuss issues with assessment and diagnosis, as well as psychotherapeutic treatment of PTSD in older individuals. We aim to provide a comprehensive conceptual review of the literature—sometimes also referred to as a scoping review and description of the strength of the evidence base in these areas, supplemented with clinical observations as well as implications for practice.

Methods

By the term conceptual (or scoping) review we mean an inclusive review of the literature on late-life PTSD that aims to synthesize knowledge and that is also informed by clinical expertise. A conceptual review may be useful where there is not sufficient data using similar methodologies to conduct a systematic review (e.g., of randomized trials) or meta-analysis.

We approached this article in two main sections: 1) assessment and diagnosis, and 2) psychotherapy. We included an additional section to consider special issues within assessment and treatment, such as the role of comorbidities and specific implications for understanding PTSD at the end of life. To identify relevant articles we performed a literature search using PubMed and Academic Search Premier (EBSCO) databases using the terms “PTSD” and “older/aging/elderly adults/veterans” along with relevant additional terms for each section (e.g., assessment; treatment). We also referred to reference sections of selected papers, as well as to previous papers about PTSD written by the co-authors. We focused on psychotherapy rather than psychopharmacology as that is our area of expertise.

After selecting papers, we carefully reviewed the age-related statistics in the samples, as we had previously noted that some studies purporting to focus on older adults in fact include only a small percentage (< 10%) of individuals 65 and older in the overall sample, or term those age 55–65 as “older.” If a study is age-representative of U.S. adults, 20% should be 65 or older; if age-representative of U.S. Veterans, 47% should be age 65 or older; finally, if focusing only on older adults in the United States, 53% should be aged 65–74, while 47% should be aged 75 and older (Colby & Ortman, 2015). We used these statistics as benchmarks in considering whether studies indeed focus on older adults.

We augmented our reading of the literature with clinical perspectives drawn from our own experiences treating PTSD in older adults. In addition, we obtained the views of seven expert practitioners of psychotherapy with older adult trauma survivors. We queried experts about: assessment and diagnosis (symptom profiles, possible reasons for late-life emergence of PTSD) and treatment (comorbidities, integrated care, and potential differences between those new to therapy versus individuals who have been in psychotherapy before, younger versus older trauma survivors, and differences among various historical cohorts). Throughout this article we provide an integrated synthesis of the literature adding clinical commentary reflecting experiences of the authors or the panel when helpful. We focus

primarily on treatment of PTSD in older adults, most of them male veterans of the U.S. military, as that mirrors the bulk of the literature and our clinical experience. When possible, we generalize findings to other older adults with PTSD.

Results

Late-Life PTSD: Assessment and Diagnosis

PTSD was first included in the official psychiatric nomenclature of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM) in 1980 (American Psychiatric Association, 1980) when the experiences of U.S. Vietnam veterans were particularly considered. Since that time, the diagnosis has changed with each iteration of the DSM. Individuals who are currently in their later years may have met and not met the criteria for PTSD over time, related to both symptom change within the individual and changes in the diagnostic criteria. Additionally, older civilians (veterans and non-veterans) who were exposed to traumatic events early in life may have experienced traumatic stress symptoms before PTSD was formally recognized as a disorder. Clinically, and in contrast to younger cohorts, we have found that some older veterans report not knowing that their symptoms were related to traumatic event(s), did not have a way to describe or understand their experiences, and did not know that anything could be done to decrease their distress.

Prevalence of PTSD in Older Adults—Among U.S. veterans, the prevalence of lifetime exposure to traumatic events ranges from 85–87% (Hankin, Spiro, Miller, & Kazis, 1999; Wisco et al., 2016, 2014). The percentage of older U.S. veterans (in these studies - age 60+ using a nationally representative sample) with symptoms that meet a diagnosis of PTSD is 3% for current and 4% for lifetime PTSD (Wisco et al., 2016, 2014). Among veterans who are seeking treatment for mental health services, the prevalence of PTSD is higher.

The percentage of community-dwelling (civilian, non-veteran) older adults fulfilling a diagnosis of PTSD in recent months (past 1–12 months) ranges from < 1%–3% and with partial PTSD ranges from 7%–13% (Glaesmer, Gunzelmann, Braehler, Forstmeier, & Maercker, 2010; Jimenez et al., 2010; van Zelst, de Beurs, Beekman, Deeg, & van Dyck, 2003), with a lifetime prevalence of PTSD ranging from 2.3% to 5.5% (Jimenez et al., 2010; Pietrzak, Goldstein, Southwick, & Grant, 2012b). There are a number of reasons for discrepant PTSD prevalence estimates across studies, including differing measurement strategies, DSM criteria used, sampling, time of exposure, assessment intervals, recall bias, and trauma experiences (Richardson, Frueh, & Acierno, 2010).

Lifespan Considerations in Symptom Presentation—There is some evidence to suggest that stressors associated with aging can exacerbate PTSD symptoms. Role and functional changes that occur with aging, such as retirement, bereavement, increased physical issues that decrease autonomy, and decreased social support, may be associated with increases in PTSD symptoms (Schnurr, Spiro, Vielhauer, Findler, & Hamblen, 2002; van Zelst et al., 2003). For example, an older combat veteran who develops problems with mobility may be reminded of the experience and accompanying sense of vulnerability he felt when he was injured in combat. A veteran who loses a spouse may experience an increase in

trauma-related distress or increased memories and feelings related to past losses, especially if the spouse had provided support, companionship, and assistance in functioning.

In addition, older veterans with PTSD are more likely to have comorbid physical and medical problems and take multiple medications compared to younger veterans (Thomas, Harpaz-Rotem, Tsai, Southwick, & Pietrzak, 2017). Exposure to combat, to the aftermath of war, and to environmental hazards are associated with poor later-life functional health outcomes (Taylor, Ureña, & Kail, 2016). All of these factors likely contribute to greater functional impairment problems and decreased quality of life in older adults with PTSD. PTSD has also been found to mediate the relationship between military exposures and some physical health problems (Schnurr, Spiro, & Paris, 2000) in older veterans. Further, physical health problems mediate the positive relationship between PTSD symptoms and health care utilization (e.g., (Ford et al., 2004). Even for those veterans who do not develop PTSD, being deployed and experiencing combat can negatively affect physical and mental health later in life (Spiro, Settersten, & Aldwin, 2016). Physical and cognitive comorbidities are discussed in more detail below.

It is helpful to understand that PTSD is not a static condition, and is not experienced in the same way for everyone. For some, PTSD symptoms are chronic and long-lasting; others experience symptoms that fluctuate across the lifespan (Chopra et al., 2016). Symptoms may become worse around specific anniversary dates (e.g., date of the death of a close friend in combat or of a particularly difficult battle) or in response to life stressors, (e.g., worsening physical health). The course of PTSD likely changes over the aging process, and certain symptom clusters appear to have a larger role than others in driving symptom change over time. For example, some evidence suggests that symptoms of hypervigilance predict changes in the other PTSD symptom clusters longitudinally (Doron-LaMarca et al., 2015). Specifically, having sleep problems and feeling on guard can lead to increased emotional disengagement from and avoidance of other people. Further, changes in the physiological response to stress in older adults may impact the experience and expression of PTSD and related symptoms (Kogan, Edelstein, & McKee, 2000).

DSM-5 PTSD Diagnostic Fit for Older Veterans—Much of the current work in PTSD among older adults focuses on prevalence and course of symptoms. However, there is a large literature base that examines the structure of PTSD generally. Two studies examining the dimensional structure of PTSD in older adults (Pietrzak, Van Ness, Fried, Galea, & Norris, 2012; Schinka, Brown, Borenstein, & Mortimer, 2007) found support for factor models describing PTSD symptoms that map onto the DSM-5 diagnostic criteria somewhat closely. For example, among 157 adults aged 60 or older who were exposed to a hurricane and reported at least one criterion A event, a four-factor numbing model (with factors of re-experiencing, avoidance, emotional numbing, and hyperarousal) and a more refined five-factor model (with factors of re-experiencing, avoidance, emotional numbing, dysphoric arousal, and anxious arousal) best fit the data (Pietrzak et al., 2012). The second study also evaluated the factor structure of a PTSD symptom measure in older hurricane survivors. Among 134 older adults, the best fitting model included a four-factor model with factors of re-experiencing, avoidance, numbing, and arousal (Schinka et al., 2007).

Another way to examine the multiple manifestations of PTSD is to consider how symptoms fit into underlying clusters or classes. Bottche, Pietrzak, Kuwert, and Knaevelsrud (2015) examined the symptoms of 164 treatment-seeking older adults in Germany with a history of childhood war-related trauma experienced during or after World War II. Using latent profile analyses, three classes were identified: pervasive disturbance-high avoidance, pervasive disturbance-low avoidance, and intermediate disturbance. Individuals in the pervasive disturbance classes had experienced more traumatic events and reported more comorbid depression, anxiety, and somatization (Bottche et al., 2015). Frequent comorbidity is a reminder of the importance of assessing trauma history and providing treatment for PTSD symptoms in this population.

Finally, in considering nomenclature fit, it is valuable to uncover potentially adaptive strategies that older adults may have developed over a lifetime and to consider how these strategies affect symptom presentation in the past and present. In our clinical experience and those of our colleagues, avoidance is often less common in older veterans seeking treatment. These older adults may not have had a lot of symptoms or were very successful in avoiding internal and external reminders of their traumatic experiences in the past, but avoidance has become more difficult to maintain later in life. For example, an older veteran who worked multiple jobs to keep his mind engaged and fend off trauma memories may upon retirement find that unstructured time results in the resurgence of symptoms. Relatedly, an older adult who previously used reading to distract himself from trauma memories and has declining eyesight may experience an increase in symptoms. Similarly, in our clinical experience, although intrusions are the hallmark of PTSD, older adults who may have 40–70 years of experiencing, coping with, and perhaps extinguishing the prevalence or severity of these experiences may report fewer intrusive symptoms.

Along these lines, King, King, Vickers, Davison, and Spiro (2007) proposed the existence of a late-life phenomenon labeled “late-onset stress symptomatology” (LOSS). LOSS was thought to occur when older combat veterans who had no recognized trauma-related difficulties with functioning throughout most of their lives first expressed combat-related stress symptoms and increased memories of war in old age (King et al., 2007). Qualitative data from focus groups with World War II, Korean War, and Vietnam War combat veterans provided some preliminary evidence for the LOSS phenomena (Davison et al., 2006) and survey data suggested that LOSS may be most salient to those veterans adapting to retirement (Potter et al., 2013). Based on ongoing work, LOSS was recently re-conceptualized and re-named as Later-Adulthood Trauma Reengagement or LATR (Davison et al., 2016) to better reflect not just an elevation in symptoms but the approach towards confronting and re-working wartime memories in an effort to find meaning and build coherence. Through a process of reminiscence, life review, and wrestling with issues, such as integrity versus despair (Erickson, 1968, 1997), older combat veterans may intentionally re-engage with experiences they previously avoided or managed successfully, but did not fully resolve. This process may lead to successful resolution and positive outcomes (such as wisdom, life satisfaction) or increased distress and negative outcomes (e.g., depression, PTSD, substance use). The LATR concept recognizes that some older adults may experience a resurgence of military memories, and a developmentally contextualized re-examination of

these life experiences, that does not completely map on to the diagnostic taxonomy of PTSD.

Assessment of PTSD in Older Adults—There are a handful of studies designed to examine or report on the psychometric properties of PTSD assessment measures in older adults. Whereas there are separate measures specifically designed for use when assessing older adults for anxiety and depression (Pachana et al., 2007; Sheikh & Yesavage, 1986), there is not a separate PTSD assessment tool to use with older individuals, although PTSD can be reliably and validly assessed in older veterans (Cook & O'Donnell, 2005). There are guidelines from several studies recommending the use of a lower cut score to indicate a suggested diagnosis of PTSD on the PCL associated with previous versions of the DSM in older adults versus younger adults (Cook, Elhai, & Areán, 2005; Cook, Thompson, Coyne, & Sheikh, 2003; Pietrzak et al., 2012). Using higher scores may result in more false negatives and a lack of referral for treatment from which individuals could potentially benefit. Although it is helpful to have appropriate norms to use for older adults, many scales do not have such norms available (Thorp, Sones, & Cook, 2011). For those scales that do have age-based norms, this issue will need to be revisited as the DSM-5 versions of measures are adopted.

An important question to ask when working with older adults with PTSD is: what needs to be different when assessing older adults as opposed to younger adults for PTSD? There are a number of relevant issues to consider in response to this question. In our clinical experiences and those of our colleagues, older individuals may be more likely to report physical concerns or pain, sleep difficulties, gastrointestinal issues, cognitive difficulties, or use a general term like “stress” to describe trauma-related difficulties. Older individuals may be less likely to describe emotional struggles using terms such as depression or anxiety, and may not think to connect current concerns with long-removed traumatic experiences (Owens, Baker, Kasckow, Ciesla, & Mohamed, 2005). Of note, older adults may report distress when exposed to trauma-related cues (e.g., loud noises, news about military conflicts) as well as less interest in usual activities (Avrill & Beck, 2000).

Older adults may present to primary care clinics with somatic concerns rather than seek formal mental health services. The stigma of seeking mental health care or the worry about “seeming crazy” may be more prevalent among older adults than their younger counterparts, and these beliefs may influence treatment-seeking behaviors (Sirey et al., 2001). This constellation – presenting emotional syndromes with physical complaints and not accurately identifying or acknowledging symptoms as PTSD makes the task of detecting PTSD by primary care providers particularly challenging. This lack of recognition or misattribution may lead to inadequate treatment plans or provision of poorly focused or inappropriate treatment (Allers, Benjack, & Allers, 1992). There has been some research looking at the concordance between clinician-rated and patient-reported PTSD symptoms among treatment-seeking adults. Although reports were strongly associated, there were some differences by age group and PTSD symptom cluster. In particular, study findings indicated a tendency for PTSD symptoms in older veterans to be under-detected by clinicians (Lunney, Schnurr, & Cook, 2014).

As previously noted, developmental issues relevant to older adults may impact symptom experience and presentation—and they may also affect treatment engagement, adherence, response, delivery, and ultimately outcome. For instance, the reactivation of symptoms in older individuals may be due in part to life changes and losses (Moye, 1997). For some, these developmental issues may bring up a loss of control, reminiscent of the vulnerability associated with trauma, such that treatment for late-life PTSD may need to address the trauma concurrently with the new losses.

Psychotherapy for PTSD in Older Adults

Randomized Clinical Trials of Psychotherapy for PTSD in Older Adults—

Almost all randomized controlled trials (RCTs) of psychotherapy for adult patients with PTSD do not include older adults or include them in sufficient numbers to make age comparisons. A recent systematic review of psychological treatment for trauma in studies with samples of at least 50% adults aged 55 and older identified 20 studies, only two of which were randomized trials (Dinnen, Simiola, & Cook, 2015a); two additional RCTs were published since then (Böttche, Kuwert, Pietrzak, & Knaevelsrud, 2016; Knaevelsrud, Böttche, Pietrzak, Freyberger, & Kuwert, 2017). None of these published RCTs have tested the efficacy of Prolonged Exposure, Cognitive Processing Therapy, or Eye Movement Desensitization Reprocessing—evidence-based psychotherapies (EBPs) for PTSD (Foa, Hembree, & Rothbaum, 2007; Resick, Monson, & Chard, 2016) (Shapiro, 2001)—in older trauma survivors.

This is not to suggest that these EBPs for PTSD are not effective for older adults. Instead, we note that there are insufficient randomized trials with adequate raw numbers and representative proportions of older adults across the late life span to be able to conclude definitively that these treatments are effective for older adults based on clinical trial data alone. By comparison, there is a larger clinical trial literature focusing on psychotherapy for late-life depression (Jayasekara et al., 2015; Lee et al., 2012; Wilson, Mottram, & Vassilas, 2008) that establishes efficacy of various treatment approaches and drills down on specific accommodations relevant to older adults that maximize effectiveness in older populations (Egede et al., 2015; Kiosses et al., 2015; Mackin et al., 2014). Such a body of literature has yet to be developed for late-life PTSD.

The four RCTs of psychotherapy for PTSD in older adults do find a positive benefit of treatment. Bichescu and colleagues (Bichescu, Neuner, Schauer, & Elbert, 2007) found older adults randomly assigned to Narrative Exposure Therapy (NET; (Schauer, Neuner, & Elbert, 2011) for PTSD ($n = 9$, M age = 69.9) to benefit more than those assigned to psychoeducation ($n = 9$, M age = 69.8). Both groups included former political prisoners in Romania (mean years since detention = 42) with current PTSD. NET, developed in Germany, is a short-term treatment that involves the reconstruction of fragmented memories of traumatic experiences into coherent narrations of a survivor's life history. Namely, the patient and therapist create a written autobiography containing the major emotional memories from positive, neutral negative, and traumatic events from birth to the present. Drawing from life review approaches (Butler, 1963), NET helps patients contextualize the traumatic event(s) using a lifespan perspective.

Thus, exposure therapies have been shown to be safe and effective in older adults. However, if clinicians feel uncomfortable in using an exposure-based intervention, certain precautions could be taken, such as monitoring health comorbidities and working to coordinate care with physical health care providers (Thorp et al., 2011).

Age as a Predictor of Treatment Outcome—Some RCT's, while not focused on older adults, include analyses of treatment outcome based on age as a continuous variable or compare younger versus “older adults.” However, most studies define this as age 55 or older, and do not to have sufficient representation of adults age 65 and older. Chard, Schumm, Owens, and Cottingham (2010) examined cohort differences between veterans who served in the wars in Iraq or Afghanistan and those who served in Vietnam before and after completing CPT. Older veterans (M age = 59) had worse outcomes than younger veterans (M age = 31). The authors suggest that treatment of older veterans with PTSD may need to be multi-faceted to address additional issues specifically related to this population such as aging and retirement (Chard et al., 2010). Additional studies that examine age-related differences in samples with strong representation across the age range may be useful in clarifying potential differences in treatment need and response.

Special Considerations for Assessment and Treatment

The Role of Comorbidities—The classification, assessment, and treatment of PTSD may differ by age, in part, due to the complexity and comorbidity present in older adults. Individuals with PTSD are at particular risk for poor health, disability (Avidor, Benyamini, & Solomon, 2016; Goldberg et al., 2014), and accelerated aging – such as early occurrence of medical problems, premature signs of biological aging, and premature mortality (Lohr et al., 2015). Numerous mechanisms for this association and accelerated aging have been proposed. These include cardiometabolic risk factors (Wolf et al., 2016) and inflammatory processes (Lindqvist et al., 2017). Generally speaking, PTSD is related to worse health across many organ systems (Brudey et al., 2015). As a group, individuals with PTSD have higher rates of medical care utilization (Elhai, Don Richardson, & Pedlar, 2007), hospitalizations (Karthan et al., 2008), and earlier mortality (Lohr et al., 2015). Medication management of PTSD and comorbid disorders in late life is complex, and although beyond the scope of this review, needs to be carefully applied and monitored.

When PTSD and chronic illness co-occur, there is some evidence that PTSD may impact coping with the chronic illness. For example, when PTSD and Chronic Obstructive Pulmonary Disorder (COPD) co-occur, adherence with COPD treatment may be worse (Abrams, Blevins, & Weg, 2015), and, conversely COPD exacerbations may worsen PTSD symptoms (Teixeira et al., 2015). Similar bi-directional impact is seen between PTSD and illness coping, exacerbation in cardiovascular disease (Cohen, Edmondson, & Kronish, 2015), and cardiometabolic disease (Levine, Levine, & Levine, 2014), as well as in acute illness associated with surgery and hospitalization. For example, anesthesia use for surgery may trigger PTSD symptoms (Berger & Scharer, 2012). Further, individuals with combat PTSD may be at heightened risk to develop PTSD in response to life-threatening illnesses like cancer (Wachen, Patidar, Mulligan, Naik, & Moye, 2014).

Cognitive changes.: Perhaps one of the most complex issues in considering multi-morbidity and treatment of late-life PTSD is the issue of comorbid cognitive impairment. PTSD is associated with alterations in neurocognitive functioning at the behavioral and neural level (Block & Liberzon, 2016), including impairments in verbal learning, speed of information processing, attention/working memory, verbal memory, and executive function (Horner & Hamner, 2002; Scott et al., 2015). These associations are seen across the age range (Schuitevoerder et al., 2013), but appear to be stronger in older adults.

In addition, PTSD is a risk factor in the development of dementia – referred to in DSM-5 as major neurocognitive disorder (NCD) (Wang et al., 2016). There is an increased prevalence of major NCD in older adults with PTSD versus those without PTSD (Qureshi et al., 2010). Specifically, within a male veteran cohort, those diagnosed with PTSD had almost a two-fold higher risk of developing NCD compared with those without PTSD (Yaffe et al., 2010). When an older adult presents with PTSD and cognitive impairment, neuropsychological testing may be needed to determine if the cognitive impairment is part of the PTSD, or if a neurocognitive illness is present, potentially associated with a history of PTSD.

Adaptations to treatment for older adults with PTSD and cognitive impairment may be similar to adaptations made for other interventions when there is cognitive compromise. For example, treatment could incorporate increased use of calendars, checklists, step-by-step break down of tasks, and involvement of family and caregivers. Such adaptations have proved successful for use with older adults with depression and cognitive impairment (Alexopoulos et al., 2011; Kiosses et al., 2015).

Some caution may be indicated in treatment for PTSD when cognitive impairment is present. Indeed, major NCD can, for some, lead to an exacerbation of PTSD symptoms. There are clinical case reports of older adults displaying de novo symptoms of PTSD with the onset of NCD (e.g., confusion with vocalizations to “secure the perimeter”), perhaps more so at night (Dallam, Mellman, Bhatnagar, Nguyen, & Kurukumbi, 2011).

In our clinical experience and those of surveyed experts, when cognitive impairment co-occurs with PTSD, it can be helpful to unfold PTSD treatment more slowly and carefully track the impact of treatment on functioning. Beginning with education about PTSD, then moving to consider how to improve daily functioning, can be a useful way to start. For example, in our work, we provide simplified handouts about PTSD in older adults and a simplified, large-type, structured “impact statement” that we modified from the CPT impact statement. The impact statement is used in CPT to assist the client in understanding their perceptions of how a traumatic experience has had impact on their life. Similar modifications are available for conducting CPT with people who have experienced head injuries; these worksheets may also be useful in working with patients with cognitive impairment related to mild or moderate NCD (Resick, Monson, & Chard, 2017), or indeed, head injury in older adults. Further, if there is concern that a patient with cognitive impairment is at risk for or is already displaying exacerbated intrusion symptoms of PTSD associated with a loosening of executive controls in major NCD and trauma-focused therapy is still indicated, we may be inclined to adapt a model of CPT which is completed without a trauma narrative (formerly referred to as CPT-C, now known as CPT) (Resick et al., 2008) or

modifications to PE such as extending content across sessions and involving a significant other or caretaker in some sessions to assist with in vivo exposures and homework completion (Duax, Waldron-Perrine, Rauch, & Adams, 2013). In addition, it can be beneficial to provide education to family members, caretakers, and medical staff about the potential associations between past trauma, PTSD, cognitive impairment, and potential behavioral problems in older adults that may be related to trauma memories triggered by certain aspects of the environment (Cook, Ruzek, & Cassidy, 2003).

Sensory changes: hearing and vision.: Knowledge of age-related changes in sensory processes, and modifying interventions to accommodate sensory impairments are core competencies for geriatric practice (Knight, Karel, Hinrichsen, Qualls, & Duffy, 2009). Social withdrawal and isolation are associated with both PTSD and hearing loss in older adults (Mikkola et al., 2016). PTSD is associated with lower self-efficacy in coping with tinnitus (Fagelson & Smith, 2016). Hearing loss puts individuals at risk for mis-hearing and paraphrenias and could increase the risk for voice hearing or dissociation associated with PTSD (Crompton, Lahav, & Solomon, 2016; Longden, Madill, & Waterman, 2012).

Similarly, vision loss may also accompany aging, with age-related eye diseases of glaucoma, macular degeneration, diabetic retinopathy, and cataracts. Adults with PTSD may have lower compliance with eye therapies (Stringham, Ashkenazy, Galor, & Wellik, 2017) and adults with visual impairments may be at risk for mental health symptoms (Heesterbeek, van der Aa, van Rens, Twisk, & van Nispen, 2017), including visual hallucinations (Pang, 2016). Therefore, in addition to the usual accommodations for hearing and vision loss (e.g., adjusting voice tone, speed, and volume; providing amplifiers such as pocket talkers; using large type and well illuminated rooms, etc.), clinicians will want to recognize how sensory changes are inter-acting with PTSD symptoms, and coordinate care with audiology and visual services when appropriate.

Pain.: A large proportion (60–75%) of individuals aged 65 and older report moderate to severe chronic pain (see (Molton & Terrill, 2014) for review). The most frequently reported types of pain in older adults are musculoskeletal, lower back and neck pain, osteoarthritis, rheumatoid arthritis, and migraines (e.g., (Brown, Kirkpatrick, Swanson, & McKenzie, 2011); (Johannes, Le, Zhou, Johnston, & Dworkin, 2010; Molton & Terrill, 2014).

There are robust associations between chronic pain and PTSD (Fishbain, Pulikal, Lewis, & Gao, 2017; Siqueland, Hussain, Lindstrom, Ruud, & Hauff, 2017). Trauma can affect the amount of pain that patients report (Ganzel, 2018). The reverse relationship is also apparent, but this is not well characterized or understood in older adults (Noll-Hussong et al., 2012). Several links between comorbid PTSD and pain have been hypothesized, such as pain perception being enhanced by anxiety (Sharp & Harvey, 2001), and avoidant coping exacerbating both PTSD and pain (Alamdari & Lagana, 2015). In addressing comorbid PTSD and pain, some basic approaches include providing psychoeducation for patients about the relationship between the two conditions (Otis, Keane, & Kerns, 2003), and encouraging patients to report pain, rather than accept it as a normal part of aging (Brown et al., 2011). Others have recommended therapeutic approaches for treating PTSD and chronic pain. For example, given that the association between PTSD and somatic complaints

(including chronic pain) has been found to be accounted for by anxiety sensitivity and depression, it is possible that therapies effective for the latter conditions might also benefit the former (Jakupcek et al., 2006). Otis and colleagues (Otis et al., 2003) recommend the use of cognitive (e.g., restructuring) and behavioral techniques (e.g., exposure) to reduce the negative beliefs and avoidance that serve to maintain both PTSD and pain and consequently decrease quality of life.

Psychiatric conditions: PTSD in older adults frequently co-occurs with other psychiatric conditions, such as depression (Alamdari & Lagana, 2015). Older adults with PTSD and depression are more likely to have multiple past depressive episodes, more chronic physical health conditions, more severe health-related impairment, and lower quality of life (Hegel et al., 2005). Treatment response to depression has been slower (Hegel et al., 2005), and worse (Clark, Rouse, Spangler, & Moye, 2018) for older adults with comorbid PTSD. Substance abuse and partial or full PTSD can also co-occur, although evidence is inconsistent for older adults (Pietrzak et al., 2012b). Older adults do experience alcohol and drug use disorders, but at a lower rate than younger individuals (Hasin & Grant, 2015). It may be that pre-existing psychiatric disorders elevate risk for PTSD, and/or that PTSD elevates risk for depression and substance use (Pietrzak, Southwick, Tracy, Galea, & Norris, 2012). Thus, older adult trauma survivors with comorbid PTSD and other psychiatric conditions may need more intense mental health treatment or longer follow-up.

PTSD at the End of Life: PTSD is a relevant topic for end-of-life care providers, due to its prevalence, corresponding distress (e.g., Alici et al., 2010), and dearth of research attention and clinical guidelines (Grassman, 2009). PTSD symptoms may first appear or be exacerbated at the end-of-life (Alici et al., 2010). Thoughts associated with morbidity and mortality may trigger an increase in PTSD symptoms (Feldman, 2011; Rintamaki, Weaver, Elbaum, Klama, & Miskevics, 2009). In addition, anger outbursts, negative mood states, lack of trust in authority figures, and skepticism of medical advice can lead to problematic interactions with medical providers (Block, 2006; Feldman, 2011; Feldman & Periyakoil, 2006). Furthermore, the moral or spiritual crises that are common at the end-of-life (Chang et al., 2012) may be consistent or co-occur with PTSD. These issues may arise in veterans with PTSD, who may be thinking more about their past war-time experiences, and who may be experiencing related feelings of guilt, shame, anger, and despair. Further complicating presentation and treatment, veterans' stoicism may affect their reticence to seek guidance or assistance at this stage (Fletcher, 2004).

As older adults face end of life, there are a myriad of tasks and decisions to complete. Some may want to focus energy on examining the meaning of life in general, or more specifically of their own life through life review (Kasl-Godley, King, & Quill, 2014). One component of such life review may be to re-examine traumatic experiences and, potentially, to resolve PTSD symptoms and make new meanings. As is true in other settings, but particularly so in end of life care settings, individuals may not be able to describe the trauma (Ganzel, 2018), and symptoms may mirror other conditions such as delirium (Alici et al., 2010) and/or co-occur with other disorders; anxiety and depression, for example (Feldman & Periyakoil, 2006). Patients may be misdiagnosed if symptoms (e.g., nightmares; anger outbursts) are

interpreted as being related to other diagnoses like Alzheimer's Disease (Mevisen, Lievegoed, & de Jongh, 2011; Mevisen, Lievegoed, Seubert, & De Jongh, 2012). Patients may be viewed in a negative light (e.g., as "difficult") due to agitation and confusion if these behaviors are not understood to be occurring within the context of PTSD (Glick, Cook, Moye, & Pless Kaiser, 2018; Grassman, 2009).

At the end of life, traditional treatments for PTSD may be unfeasible or not recommended. Patients may lack the required mental and/or physical resources, the life expectancy enabling them to benefit from therapy after the common increase in distress, (Ganzel, 2018; Sorocco, Bratkovich, Whalen, & Feldman, 2015), and/or privacy that is conducive to therapy (Blair & Bird, 2016; Lichtenberg et al., 1998). In approaching treatment, it may be helpful to be particularly aware of factors that may limit the effectiveness of therapy (Cohen & Block, 2004), prioritizing the most distressing symptoms (Woods, 2003) and focusing on acceptance rather than change (Cohen & Block, 2004; Glick et al., 2018).

General strategies include being attentive (Beng et al., 2013), helping patients feel in control (Feldman & Periyakoil, 2006), listening to and validating the experience of memories related to painful traumatic events, showing appreciation for military service (Laramie, 2007), and focusing on strengths and resilience (Moye & Rouse, 2015). Additional considerations include being aware of the environment and taking steps to reduce distress-increasing situations, and involving families and caregivers as appropriate (Glick et al., 2018; Grassman, 2009).

Discussion

This conceptual review provides details of the existing research and clinical literatures on late-life PTSD in areas of assessment and diagnosis as well as non-pharmacological treatment via psychotherapy. Important issues of medical and psychiatric comorbidities and special considerations for PTSD during end-of-life care are also discussed. Findings from our review of the literature indicate that there are not sufficient studies of assessment and treatment of PTSD in older adults throughout the older age lifespan to allow rigorous meta-analyses. Our review noted that some studies of older adults defined that population to include adults in their 50's, and few provided detailed age-stratified sample descriptions to help us understand how many adults were within various age ranges, for example 65–74, 75–84, 85–94. Even using a cutoff of age 65 to indicate "older adult" leaves a wide age range of relatively younger and relatively older adults with vastly different life experiences, health statuses, levels of functioning, and approaches to treatment who all fall into the same category (Cook & Niederehe, 2007). In the aging literature, it is common to conceptualize older adults as young-old (ages 65–74), middle-old (75–84), and old-old (85 and older; (Neugarten, 1974). The PTSD literature on older adults is relatively small and has not embraced this type of categorization. Keeping these limitations in mind, we next provide our thoughts about the strength of the evidence base in various areas, and conclusions integrating the literature and clinical experience.

There is a decent-size literature base on the prevalence of PTSD in older adults, drawing from several large epidemiological studies that include adequate samples of older adults.

Taken together, the literature suggests that there are lower rates of PTSD in older compared to younger adults, which is consistent with what we see for other mental health disorders. There are several factors that potentially contribute to this observed difference. For example, older adults may be more reluctant to endorse having symptoms (several discussed reasons for this include a tendency to report more physical complaints versus mental health symptoms, stigma), cultural factors, or the DSM criteria may not fit older adults quite as well. Resilience factors and successful recovery from previous symptomatology are other possible explanations for the age differences, although these variables would not explain the lower rates of lifetime PTSD in older adults. Having said that, there is evidence for a re-emergence of PTSD symptoms in late life for some older adults.

In terms of diagnosis and assessment, the strength of the evidence base is moderate. Generally speaking, assessment approaches that work for younger adults are likely to work for older adults, but may require adaptation for potential differences in presentation. Additional study is needed. It is useful to place assessment within a life-span developmental framework recognizing that PTSD symptoms in older adults are occurring within developmental trajectories, including late-life challenges, such as changing social networks and medical conditions, as well as late-life strengths in coping, and a potential late-life press for life review and reconciliation. It remains to be empirically established, but it may be that older adults have lower intensity intrusions due to the implementation of a lifetime of coping strategies. Older adults may also experience less avoidance for several reasons. It may be that avoidance strategies (e.g., work, substance use, cognitive compartmentalization) are less available in late life, combined with a late-life developmental push to approach rather than avoid difficult experiences in the context of life review. Many researchers and clinicians have noted the presence and importance of “sub-syndromal” PTSD. Additionally, alternative formulations for how older adults may re-approach difficult memories, such as the aforementioned “later-adulthood trauma re-engagement” (LATR) concept bear further study.

There has been little systematic study of treatment of PTSD in late life. Broadly speaking, treatment of mental health conditions is as effective in older adults as younger adults, so it is anticipated that treatment for PTSD would be successful as well. Indeed, the existing RCTs and case reports confirm the success of several psychological treatment approaches in late life. What is missing is an understanding of the adaptations that may make treatment more effective in older adults—be these adaptations for comorbidities (e.g., chronic illness, pain, sensory changes, cognitive changes) or adaptations for developmental differences. Treatment of PTSD at the end of life is a particularly special application needing additional attention.

Although the field of psychotherapy for older adult trauma survivors shows some progress, much more work remains to be done. Such as, in the systematic review described earlier, only one case study and no RCTs have evaluated psychotherapy for PTSD in those 75 and older and those with psychiatric comorbidities. Combat has been the most frequent type of trauma studied and there is little research on older adults who have experienced other types of traumas such as natural disasters or interpersonal violence. Additionally, there is a dearth of literature on PTSD in older adults from ethnic minority backgrounds, despite the fact that these groups represents rapidly increasing segments of the aging U.S. population that tend to have more limited access to mental health care (Alegria, 2012). Additional measures may be

needed to capture treatment outcomes when working with older adult trauma survivors as the benefits rendered by psychotherapies for severe, chronic PTSD may not be fully or accurately captured by standard self-report PTSD outcome measures but rather by measures of constructs such as coping, self-efficacy, or quality of life (Cook & O'Donnell, 2005). Indeed, it is our view that psychotherapy for late-life PTSD represents a significant, necessary, and rewarding intervention for the client and the practitioner in which improvement is possible and likely, representing an important opportunity for personal healing and social reconnection.

In conclusion, epidemiologic data suggest that older adults are resilient. The overwhelming majority have experienced trauma in their lifetime, and do not have current PTSD. However, about one in ten older adults does experience current or partial PTSD that warrants skillful assessment, diagnosis, and treatment, mindful of the comorbidities and developmental challenges of late life, including end of life care. Future research needs to include older adults in randomized treatment outcome studies, study various types and timeframes of trauma experienced by older adults, and utilize assessment tools that will provide information about the facets of life most impacted by PTSD symptoms in this population. Finally, future research should extend the evidence base to guide assessment and treatment, including RCTs of evidenced-based treatments with representative numbers of older adults across late-life cohorts.

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Clinical Implications

- It is important to assess for trauma and PTSD in older adults, as PTSD may emerge or re-emerge in late life.
- PTSD in late life is treatable.
- Comorbid PTSD and cognitive/medical conditions may require a modified approach to treatment.