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Exploring the role of social connection in interventions with military veterans diagnosed with Post Traumatic Stress Disorder (PTSD): Systematic narrative review.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

Author contribution statement

RG contributed to the data analysis, was the primary author of the manuscript and had overall responsibility. MK contributed to the data analysis and co-authored the manuscript. JK contributed to the data analysis and co-authored the manuscript. GWM contributed to the data analysis and co-authored the manuscript. DF and GO co-authored the manuscript. All authors contributed to the article and approved the submitted version.

Keywords

Loneliness, Mental Health, military, Post-traumatic stress disorder, psychosocial, Social Isolation, veteran

Abstract

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Background: It has been identified that military veterans have distinct experiences of loneliness and social isolation and, when comparing this community to other client groups with a PTSD diagnosis, veterans respond less favourably to treatment. However, the link between PTSD and loneliness for veterans remains insufficiently researched and it is unclear if there are effective interventions tackling this distinct experience of loneliness.

Aims: This systematic narrative review aimed to synthesize existing evidence incorporating elements of social connection, social isolation, and loneliness within interventions for military veterans with a diagnosis of PTSD, consequently aiming to examine the impact of such interventions upon this community.

Methods: Six databases were searched, utilising relevant search criteria, with no date restrictions. Articles were included if they involved intervention or treatment for military veterans with PTSD and considered elements of social connection, social isolation, and/or loneliness. The initial search returned 202 papers. After exclusions, removal of duplications, and a reference/citation search, 28 papers remained and were included in this review.

Results: From the 28 studies, 11 directly addressed social isolation and two studies directly addressed loneliness. Six themes were generated: (i) rethinking the diagnosis of PTSD, (ii) holistic interventions, (iii) peer support, (iv) social reintegration, (v) empowerment through purpose and community, and (vi) building trust.

Conclusions: A direct focus upon social reintegration and engagement, psychosocial functioning, building trust, peer support, group cohesiveness and empowerment through a sense of purpose and learning new skills may mitigate experiential loneliness and social isolation for veterans with PTSD. Future research and practice should further explore the needs of the PTSD-diagnosed veteran community, seek to explore and identify potential common routes towards the development of PTSD within this community and consider bespoke interventions for tackling loneliness.

Contribution to the field

The field of military veteran Post-Traumatic Stress Disorder (PTSD) identification, treatment and mitigation remains significantly dominated by traditional psychotherapy-related practices. Furthermore, research which seeks to change the narrative to include more holistic, peer-centric, interventions and practices remains very much centered within the USA. Therefore, this paper provided an original contribution to the evidence base through the systematic synthesis of research involving interventions tackling the social isolation and loneliness of military veterans with a diagnosis of PTSD. From the 28 papers included in this review it was evident that holistic interventions, which can mitigate experiential loneliness and social isolation for veterans with PTSD, include the following characteristics: social reintegration and engagement, psychosocial functioning, building trust, peer support, group cohesiveness and empowerment through a sense of purpose and learning new skills. By both quantifying the currently relevant research, and highlighting where best practice exists, it becomes possible to focus where future UK-centric research, and subsequently designed interventions, need to be concentrated.

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Generated Statement: The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

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Keywords: loneliness[1], mental health[2], military[3], veteran[4], post-traumatic stress disorder[5], psychosocial[6], social isolation[7].

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isolation for veterans with PTSD. Future research and practice should further explore the needs of the PTSD-diagnosed veteran community, seek to explore and identify potential common routes towards the development of PTSD within this community and consider bespoke interventions for tackling loneliness**.**

Introduction

The effects of trauma upon the function of the human brain have been known for millennia, reported diversely across ancient Greek, Roman and Hebrew literature, to name a few. Wherever global armies battled the effects of trauma upon the combatants was later reported and recorded for posterity. Under the guise of many different monikers, Shell Shock, Battle Fatigue, Soldier's Heart to name three, the consequences of combat upon cognitive function have been laid bare. These studies became more formalised in the 19th Century, culminating in Post-Traumatic Stress Disorder (PTSD) becoming a diagnosable condition in 1980, when the American Psychological Association included it in the Diagnostic and Statistical Manual of mental disorders (DSM), 3rd Edition. 8% of the general population will be affected by PTSD, at some stage in their life, figures which do not take into account the inevitable consequences of Covid upon many emergency service and public-facing occupations, a rate which is doubled for active duty service members and veterans (Judkins et al, 2020). In comparison, 17% of UK troops who were deployed in combat roles, during the Iraq and Afghanistan conflicts, later developed symptoms of PTSD; compared with 6% for those who were not deployed (Stevelink et al., 2018). This juxtaposition of PTSD prevalence rates is perhaps indicative of both the disparate nature of trauma faced by active-duty service personnel and the potentially incongruous, outdated and non-sufferer centric diagnostic, support and therapeutic processes instituted for the PTSD diagnosed, military and veteran, communities? (Ginzburg et al, 2010; Iversen et al, 2009)

PTSD is a prevalent and debilitating disorder amongst military personnel (serving and veterans) globally, having a long-term impact and creating a significant public health challenge (Steenkamp et al., 2015). It has been found to be associated with transition out of the military, taking hold of an individual potentially once they enter the void of psychological inactivity and lack of direction that faces many whom leave with little, or no, planning and preparation. It is, furthermore, associated with social exclusion and higher rates of deprivation (Karstoft et al., 2015; Sayer et al., 2015; Murphy et al., 2016). There is a certain latency with the development of PTSD, sometimes many years after transition (Marmar et al., 2015). Since 2001, in excess of 280,000 UK Service personnel have been deployed to combat zones in Iraq and Afghanistan (Carlson et al., 1998), and approximately 11-15,000 UK service personnel currently make the transition into civilian life each year (Ministry of Defence, 2021). Advances in the treatment and diagnosis of PTSD have led to the differentiation between PTSD and Complex PTSD (C-PTSD) (Powers et al., 2017), whereby it is now recognised that early life traumatisation, prolonged and multiple traumas, deep-seated and unresolved symptoms may prove to be the catalysts for the complex derivative of the disorder; significantly diagnosed within the military and veteran communities due, potentially, to the recruitment dynamic of those who join the military and the idiosyncratic nature of training, experience and culture (Wilson, Hill and Kiernan, 2018). Parallel advances in the identification, and detailed examination, of loneliness and its psychological correlates, such as feelings of shame and guilt, difficulty controlling emotions, dissociation, feeling cut off from family and friends and risky behaviour (Walton et al., 1991) have led to an increasing awareness of the true experience of loneliness and social isolation. These symptoms are not captured in the existing PTSD diagnostic criteria in either the International Classification of Diseases (ICD), 11th edition or the DSM 5 (World Health Organisation, 2020; American Psychiatric Association, 2013) (see Table 1). Amongst this

panoply of additionally recognised symptoms and consequences are experiences that can be associated with loneliness and social isolation.

Table 1. Symptom capture and limitations on existing PTSD criterion

Symptoms captured by existing PTSD criterion (ICD-11/DSM 5)	Symptoms not captured by existing PTSD criterion (ICD-11/DSM 5)
○ Fear ○ Re-experiencing ○ Avoidance behaviour ○ Hypervigilance ○ Horror ○ Helplessness ○ Challenge to physical integrity ○ Psychogenic amnesia ○ Reduced affect ○ Dissociation ○ Anger ○ Impact on functioning ○ Self-blame ○ Self-destructiveness ○ Alterations in world view	○ Depression ○ Guilt ○ Shame ○ Psychosexual difficulties ○ Betrayal ○ Stigmatisation ○ Self-medicating activity ○ Increased vulnerability to re-traumatisation

Loneliness is a subjective social and emotional experience, often traditionally characterized as the difference between the social relationships individuals actually have and those that they aspire to having (Walton et al., 1991). Conversely, social isolation is an objective experience which considers the integration of the individual into their social environment, the frequency of their social interactions and their integration within social networks (Cacioppo et al., 2006). Research shows that loneliness and social isolation are linked to poor physical health and wellbeing, including high blood pressure, cognitive decline, depression, and mortality (Cacioppo et al., 2006; Steptoe et al., 2013; Holt-Lunstad et al., 2010) and are global issues affecting individuals of all ages.

Evidence demonstrates the unique experiences and needs of military veterans in terms of social isolation and loneliness (Wilson, Hill, & Kiernan, 2018). These unique experiences stem from both intrinsic and extrinsic factors related to military life, such as military-related trauma and PTSD. Transition, and losing touch with comrades was another factor which influenced experiences of loneliness and social isolation (Wilson, Hill, & Kiernan, 2018). Further recent research from two of the largest UK military charities, Royal British Legion and the Soldiers, Sailors, Airmen and Families Association (RBL, 2014; SSAFA, 2017) indicates that 41% of veterans surveyed (over 2000 veterans, aged 18-64, participated) had personally experienced loneliness or social isolation and 27% had experienced suicidal ideation, since transitioning from the military to civilian life.

Shepherd et.al. (2020) highlight the many challenges of transition and throw light upon cultural and structural differences between the military and civilian communities which facilitate and

aggravate these difficulties. A recent US military family lifestyle survey (Sonethavillay et al., 2018) reported that 47% of veteran families had a difficult or very difficult transition experience due to loss of connection and purpose, stress, depression and suicidal thoughts. It is argued that these were exacerbated by frequent relocations and disruption of the established friendship bonds and community links (Stapleton, 2018). Woodward and Jenkings (2011) encapsulated the term 'fictive kinship' to describe the practice of considering the military as 'family'. The potential loss of this military family becomes a catalyst for 'experiential isolation', the truly unique and extraordinary psychological circumstances that veterans find themselves in; suddenly unable to bond psychologically with members of their family and friends and being unable to share a common empathy or moral compass (Stein et al., 2014; 2015). Previously accepted and established value-system goalposts are suddenly moved, and ethical and social signposts are taken away; leaving the transitioning veteran isolated and estranged.

It is argued that a comorbidity exists between loneliness and PTSD symptomology. Ypsilanti et al (2020) concluded that self-disgust and loneliness simultaneously predict PTSD symptomology, and these two measures play a cooperative role in predicting anxiety and depression. Research affirms that loneliness and social isolation are uniquely linked to PTSD symptomology via the catalyst of Combat Stress Reaction (Solomon et al., 1984; 2013); idiosyncratic trigger points that relate to military culture, lived experience and the distinctive pressures exerted by transitioning from the military to civilian life (Keats, 2010). These issues are known to be aggravated by mental health stigmatisation, denial and avoidance within the military and veteran communities (Rozanova et al., 2015). A comorbidity potentially exists between PTSD, loneliness, and suicide (Yael and Yager, 2019; Pietrzak et al., 2017). A systematic review and meta-analysis of the link between loneliness and suicidal ideation concluded that loneliness was indeed a significant predictor of suicidal ideation in select communities (McClelland et al., 2020). However, more focused research is now required to gain a better understanding of the unique veteran experience of loneliness, and to subsequently aid the design of interventions aimed at reducing loneliness, social isolation and the consequent rates of suicide and suicidal ideation amongst this community.

Aims of Current Study

This systematic narrative review aims to synthesize existing evidence incorporating elements of social connection, social isolation, and loneliness within interventions for military veterans with a diagnosis of PTSD, consequently aiming to examine the impact of such interventions upon this community.

Method

A systematic narrative literature review was conducted. Ethical approval was not required due to it being a review only. Six identified databases were searched (see Table 2; Popay et al., 2012; Snilstveit et al., 2012). Inclusion / exclusion criteria were applied that the accepted studies must involve intervention or treatment for military veterans with PTSD and consider elements of social connection, social isolation, and/or loneliness. Papers must have been written in English and, could not be review papers (see Table 2).

Source	ASSIA ETHOS PsycARTICLES Science Direct Freedom Collection Scopus Web of Science
Search field	Title and abstract
Exclusion	Non-English language Literature reviews
Year of publication	All years
Search Terms	(Veteran OR ex-servic* OR ex-forc* OR ex-militar*) AND (social isolation OR lonel*) AND (post traumatic stress OR post traumatic stress disorder OR PTSD OR trauma*)

Table 2. Systematic search strategy

A total of 202 articles were identified from the title and abstract search (Figure 1; Moher et al, 2009). However, 162 were removed as they did not meet the inclusion criteria, i.e., they were not written in English, did not include any aspect of social connection within the intervention, or did not include military veterans diagnosed with PTSD. Fifteen papers were duplicates and thus, were removed. From the 25 remaining studies, a full-text search was conducted, and two further papers were excluded as it was found that they also did not fulfil the inclusion criteria. A reference and citation search was carried out on all included papers, and this resulted in five further papers being included. A total of 28 papers were included in this review (see supplemental online material).

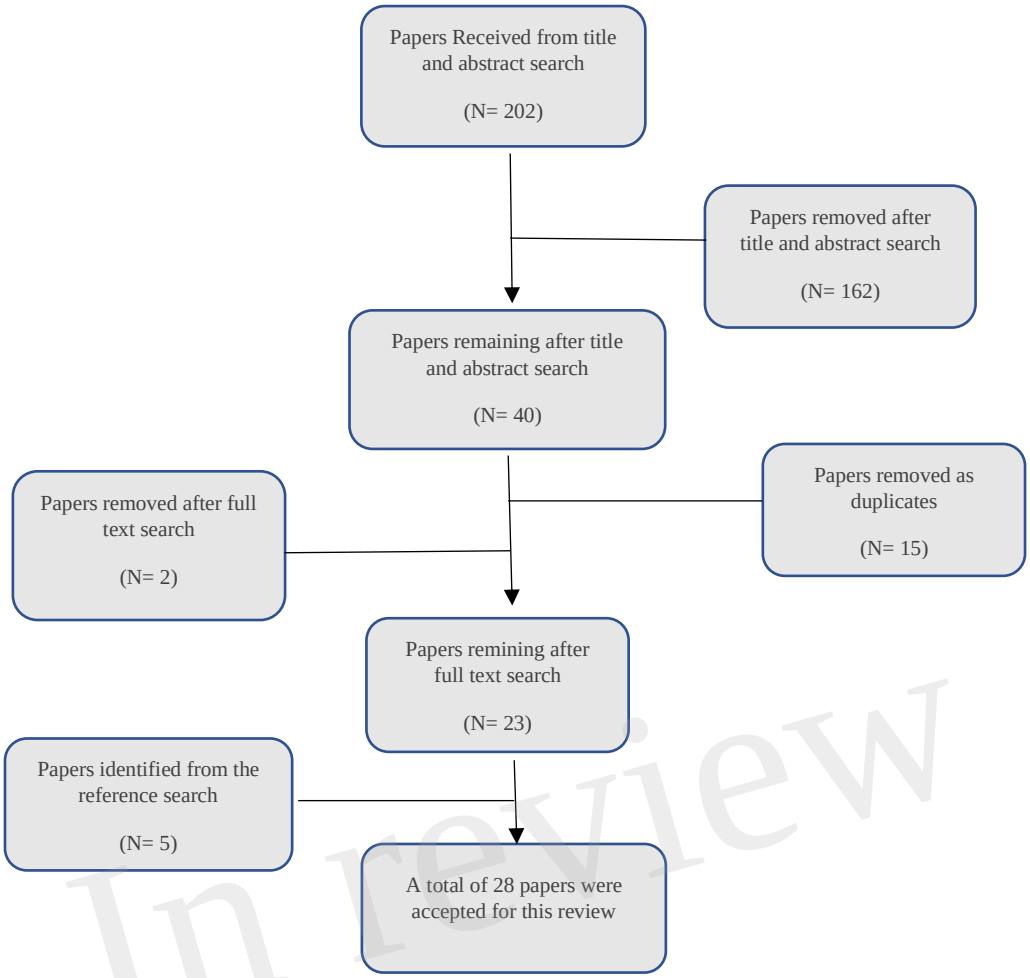

Figure 1. Search strategy used within the systematic search (Moher et al, 2009).

Data analysis was undertaken, using reflexive, deductive thematic synthesis (Braun & Clarke, 2006; 2014; 2019) to generate themes. Specifically, the six stages of Thematic Analysis were followed: generating initial codes; searching for themes; reviewing themes; defining and naming themes; and producing the report (Braun & Clarke, 2006). A collaborative approach to coding and data analysis was taken by members of the research team. Initial codes and were discussed between the research team and final themes/sub-themes were generated based on this collective analysis. Given that this is a review into a novel, and potentially pioneering, aspect of military veteran PTSD prognosis and support, it was decided not to utilise any quality assessment tool, such as CASP for this systematic literature review as it would have been counter-productive to exclude any of the identified papers based upon their conceived quality of contribution.

Results

Six main themes were generated reflecting the findings of the 28 identified studies: (i) rethinking the diagnosis of PTSD;(ii) holistic interventions; (iii) peer support; (iv) social reintegration; (v) empowerment through purpose and community, and; (vi) building trust.

The age of veterans differed between the studies, most being non-specific with regards to age. Seventeen studies included veterans of all ages (Azevedo et al., 2016; Bauer et al., 2021; Beidel et al., 2017; Bensimon et al., 2008; Bensimon et al., 2012; Bergen-Cico et al., 2018; Bolman, 2019; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Holliday et al., 2015; Johnson et al., 2018; Jones et al., 2000; Lobban and Murphy, 2018; Lobban and Murphy, 2020; McLaughlin and Hamilton, 2019; Pezzin et al., 2018; Weiss et al., 2018), whereas four studies were age-specific by virtue of the criteria that they sought veterans from the Vietnam War (1961-75) (Johnson et al., 2004; Obenchain and Silver, 1991; Otter and Currie, 2004; Ragsdale et al., 1996) or Post-9/11 / Iraq and Afghanistan veterans (Beidel et al., 2016; Cushing et al., 2018; Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017). Three studies focused solely on female veterans, with two of these relating to rural female veterans who had suffered military sexual trauma (Azevedo et al., 2016; Weiss et al., 2018), and the other relating to a single case study (Trahan et al., 2016).

Eight studies utilised animal-focused interventions (Bergen-Cico et al., 2018; Crowe et al., 2018; Galsgaard et al., 2020; McLaughlin and Hamilton, 2019; Nevins et al, 2013; Johnson et al., 2018; Trahan et al., 2016 and Bolman, 2019). Three studies investigated the efficacy of music related interventions (Bensimon et al., 2008; Bensimon et al., 2012; Pezzin et al., 2018). One study focused upon yoga as an intervention (Cushing et al., 2018), one upon an adventure-activity intervention (Ragsdale et al., 1996), whilst three studies examined the power of civic service to ameliorate PTSD symptomology (Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017). One study focused upon military museums and art therapy (Lobban and Murphy, 2020), another solely upon art therapy (Lobban and Murphy, 2018), whilst another investigated the efficacy of virtual reality exposure as a suitable medium for PTSD intervention (Beidel et al., 2016). One study involved exercise to mediate PTSD symptomology (Otter and Currie, 2004), whilst one (Johnson et al., 2004) sought to incorporate a veteran's family into the whole treatment and support process.

The vast majority of studies (n=21) were carried out in the USA (Azevedo et al., 2016; Bauer et al., 2021; Beidel et al., 2017; Bergen-Cico et al., 2018; Bolman, 2019; Crowe et al., 2018; Holliday et al., 2015; Johnson et al., 2018; Jones et al., 2000; Pezzin et al., 2018; Weiss et al., 2018; Johnson et al., 2004; Obenchain et al., 1991; Ragsdale et al., 1996; Beidel et al., 2016; Cushing et al., 2018; Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017; Trahan et al., 2016) whilst two were conducted in Israel (Bensimon et al., 2008; 2012), two in the UK (Lobban and Murphy, 2018; 2020), one in Denmark (Galsgaard and Eskelund, 2020) and two in Australia (McLaughlin and Hamilton, 2019; Otter and Currie, 2004).

Seven studies used a mixed-methods approach (Beidel et al., 2017; Bensimon et al., 2008; Bensimon et al., 2021; Bergen-Cico et al., 2018; Lobban and Murphy, 2020; Johnson et al., 2004; Beidel et al., 2016), twelve studies used a quantitative approach (Bauer et al., 2021; Holliday et al., 2015; Johnson et al., 2018; Lobban and Murphy, 2018; Pezzin et al., 2018; Weiss et al., 2018; Ragsdale et al., 1996; Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017; Trahan et al., 2016) and nine used a qualitative approach (Azevedo et al., 2016; Bolman, 2019; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Jones et al., 2000; McLaughlin and Hamilton, 2019; Obenchain and Silver, 1991; Otter and Currie, 2004; Cushing et al., 2018). Within each broad methodological approach a variety of methods were employed; eleven studies employed focus groups or a group-centric approach (Bensimon et al., 2008; Bensimon et al., 2021; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Jones et al., 2000;

Lobban and Murphy, 2018; Lobban and Murphy, 2020; Johnson et al., 2004; Obenchain and Silver, 1991; Otter and Currie, 2004; Ragsdale et al., 1996), eight used semi-structured interviews (Beidel et al., 2017; Bensimon et al., 2008; Bensimon et al., 2012; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Johnson et al., 2004; Beidel et al., 2016; Cushing et al., 2018) and sixteen utilised questionnaires (Azevedo et al., 2016; Bauer et al., 2021; Beidel et al., 2017; Holliday et al., 2015; Johnson et al., 2018; Lobban and Murphy, 2018; Lobban and Murphy, 2020; McLaughlin and Hamilton, 2019; Weiss et al., 2018; Beidel et al., 2016; Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017; Trahan et al., 2016). Two studies were quasi-experimental (Bergen-Cico et al., 2018; Ragsdale et al., 1996), two studies utilised a randomised trial (Johnson et al., 2018; Pezzin et al., 2018) and two a controlled trial (Beidel et al., 2017; Beidel et al., 2016). Five studies were pilot analyses (Beidel et al., 2017; Bensimon et al., 2012; Galsgaard and Eskelund, 2020; Pezzin et al., 2018; Weiss et al., 2018).

Of the studies using questionnaires, six specifically measured loneliness, using either the SELSA (Johnson et al., 2018) or UCLA loneliness self-report scales (Lobban and Murphy, 2020; Ragsdale et al., 1996; Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017).

Main Theme 1: Rethinking the diagnosis of PTSD

A central banner that emanates from almost all of the identified studies, other than those focused on talking therapies such as Cognitive Processing Therapy (CPT; Holliday et al., 2015) and Cognitive Behaviour Therapy (CBT; Trahan et al., 2016), is an acceptance that the current parameters of PTSD diagnoses and treatment are, perhaps, too narrow and restrictive. The strength of the interventions explored here emanates from their recognition of the need to tackle loneliness and social isolation. The diagnosis and treatment of PTSD has, potentially, been viewed in too reductionist a fashion, relying too heavily on the traditional views and approaches; rather than seeing the existential and moral dimensions of treating the whole person holistically (Walton et al., 1991; Ginzburg et al, 2010; Iversen et al, 2009).

Walton et al (1991) and Cacioppo et al (2006), assisted by Wilson, Hill and Kiernan (2018) who provide the bespoke nature of military and veteran community, assist moving the dialogue, relating to what the true inherent ingredients of loneliness and social isolation really are, to where it needs to be to be current and relevant for military and veteran PTSD. Such red flags as depression, guilt, shame, psychosexual difficulties, betrayal, stigmatisation, self-medication and addiction and increased vulnerability to re-traumatisation all contribute to the destructive cocktail that manifests in the loneliness and social isolation of those living with a PTSD diagnosis in these communities (Walton et al., 1991; Ginzburg et al, 2010; Iversen et al, 2009; Van Ommeren et al, 2002; Palic and Elklit, 2011). Any fit for purpose system, therefore, which seeks to diagnose, signpost and support these communities must acknowledge and accommodate these catalysts.

Main Theme 2: Holistic interventions

Studies within this review identify the use of animals (Bergen-Cico et al., 2018; Bolman, 2019; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Johnson et al., 2018; McLaughlin and Hamilton, 2019; Matthieu et al., 2017), music (Bensimon et al., 2008; 2012; Pezzin et al., 2018), art and museums (Lobban and Murphy, 2018; Lobban and Murphy, 2020) and

adventure training (Ragsdale et al., 1996) as holistic interventions, which seek to offer the PTSD diagnosed veteran meaningful engagement, social connections, and a sense of purpose, thus ameliorating the negative mindset maintained by loneliness and social isolation; holistic in as much as they offer a treatment of mind and body as a whole, via the conduit of addressing the often ignored social, emotional and personal catalysts. Four studies found that dogs offered a non-judgmental, unconditional, support and buffer, facilitating responsibility and a sense of purpose (Bergen-Cico et al., 2018; Crowe et al., 2018; Galsgaard and Eskelund, 2020; McLaughlin and Hamilton, 2019). The study that focused on caring for a traumatised parrot fostered a sense of 'becoming well together' and mutually shared suffering and empathy (Bolman, 2019). The studies that explored horse riding therapy found that the veterans were able to build mastery, improve mindfulness skills, and were able to connect with the animal (Johnson et al., 2018; Nevins et al, 2013). These animal-centric studies assessed outcomes via a combination of PTSD, loneliness, and social isolation metrics and group interviews. One study (Obenchain and Silver, 1991) provided Vietnam veterans an opportunity to address social isolation and 'alienation' via the affirmation provided through a 'Welcoming Home' ceremony, which aided societal participation and reintegration. The efficacy of these interventions appears to be that they focus on improving the overall wellbeing of the veteran, considering the various social and personal contributors to their difficulties, rather than focusing on PTSD symptomology in isolation.

Main Theme 3: Peer support

A dominant theme running through the identified studies was the power of peer support in fostering a suitable environment for an intervention to be effective; a significant number adopting a group focused delivery approach (Bensimon et al., 2008; 2012; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Jones et al., 2000; Lobban and Murphy, 2018; 2020; Johnson et al., 2004; Obenchain and Silver, 1991; Otter and Currie, 2004; Ragsdale et al., 1996), and many others taking advantage of this group dynamic indirectly through the creation of a 'team atmosphere'. The worth of creating an environment which is accepting, normalizing, and non-judgmental for PTSD diagnosed veterans is clear; an atmosphere of shared understanding empowering the healing process (Lobban and Murphy, 2018; 2020; Obenchain and Silver, 1991). This approach acknowledges and utilizes a strength of the military and veteran communities; its sense of brother/sisterhood, its 'fictive kinship' (Woodward and Jenkings, 2011), that helps veterans re-engage and re-motivate each other and take a lead in their own respective recovery journeys.

Main Theme 4: Social reintegration

Through the mitigation of a veteran's estrangement from their community, loved ones, friends and family, it is possible to cultivate an environment where mindfulness, self-awareness and motivation is developed; in contrast to an individual treatment that focuses solely on tackling PTSD symptoms. Within the veteran community, difficulties with social interaction predict lower reductions in PTSD symptomology after treatment interventions such as CPT, CBT and pharmacology (Holliday et al., 2015; Trahan et al., 2016). However, the holistic interventions, which address the disenfranchisement and estrangement experienced by a transitioning veteran and their family (Azevedo et al., 2016; Bauer et al., 2021; Bensimon et al., 2008; 2012; Bergen-Cico et al., 2018; Bolman, 2019; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Johnson et al., 2018; Jones et al., 2000; Lobban and Murphy, 2018; 2020; McLaughlin and Hamilton,

2019; Pezzin et al., 2018; Weiss et al., 2018; Johnson et al., 2004; Obenchain and Silver, 1991; Otter and Currie, 2004; Ragsdale et al., 1996; Cushing et al., 2018; Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017; Trahan et al., 2016), generally show either a direct reduction of PTSD symptomology (Bauer et al., 2021; Beidel et al., 2017; Bergen-Cico et al., 2018; Galsgaard and Eskelund, 2020; Johnson et al., 2018; Lobban and Murphy, 2018; Pezzin et al., 2018; Weiss et al., 2018; Ragsdale et al., 1996; Beidel et al., 2016; Lawrence et al., 2017; Lawrence et al., 2019; Matthieu et al., 2017; Trahan et al., 2016; Nevins et al., 2013) or an indirect reduction of such via mitigation of social estrangement and isolation (Bauer et al., 2021; Beidel et al., 2017; Bergen-Cico et al., 2018; Holliday et al., 2015; Johnson et al., 2018; Lobban and Murphy, 2018; Weiss et al., 2018; Johnson et al., 2004; Obenchain and Silver, 1991; Matthieu et al., 2017; Nevins et al., 2013). More inclusive interventions, which seek to target the panoply of social integration and quality of life issues, would appear to address the whole lifestyle and culture of symptomology that is endemic within veteran PTSD; taking account of the unique community that the veteran has emerged from, providing a bespoke alternative to focused talking therapy or medication, allowing the veteran to take control over their prognosis and empowering their drive to recovery. Some studies (Bensimon et al., 2008; 2012; Pezzin et al., 2018) targeted group cohesion, togetherness, and connectedness, empowering veterans to gain a sense of control and esteem through mastery of a new skill. Retention and attrition rates are improved through the distraction and mindfulness facilitated by learning a musical instrument (Pezzin et al., 2018). The art and museum interventions (Lobban and Murphy, 2018; 2020) developed a sense of belonging, group bonding and self-efficacy through targeting experiential avoidance and assessing this progress through workshops and interviews. ‘Sanctuary Trauma’, the internal conflict within veterans relating to the apparent deficiency of their home environment, once they transition from the military, was addressed by the application of a ‘Welcome Home’ ceremony to Vietnam veterans in one of the studies (Obenchain and Silver, 1991); aiming to focus upon their sense of social isolation and ‘alienation’ through a process of re-affirmation, reintegration, and societal participation. It is, perhaps, surprising that only one study (Johnson et al., 2004) sought to involve the family of diagnosed veterans within the treatment and support process. Family-centric preventive interventions have habitually manifested a high efficacy for promoting positive outcomes with the PTSD diagnosed veteran and supporting family unit, and for encouraging consistent engagement, retention and focus upon the recovery journey (Lester et al., 2016).

Main Theme 5: Empowerment through purpose and community

Empowerment of PTSD diagnosed veterans through the facilitation of hope, purpose, challenge, direction and community (Bauer et al., 2021; Beidel et al., 2017; Lobban and Murphy, 2018; Weiss et al., 2018; Obenchain and Silver, 1991; Beidel et al., 2016; Cushing et al., 2018; Lawrence et al., 2017) creates motivation, self-efficacy and opportunity for the veteran, via skill-building interventions, increasing their employability (Azevedo et al., 2016; Bauer et al., 2021; Weiss et al., 2018) and enabling their enrolment in voluntary schemes that contribute to the good of the community; promoting pride, improved self-esteem, increased confidence, courage and resilience (Lawrence et al., 2017; 2019; Matthieu et al., 2017).

Main Theme 6: Building trust

None of the above-mentioned themes would have any efficacy or power without the full investment, engagement and commitment of the PTSD diagnosed veterans who need support,

guidance and signposting, many at the nadir of their respective journeys. Levels of veteran attrition and disengagement are high for the traditional PTSD therapies that they are directed towards (Haveman-Gould, 2018), this being contingent upon endemic levels of distrust amongst this community regarding the relevance and appropriacy of these measures and the disconnect they see between themselves and the 'white coat' experts who tell them what is best for themselves. Effective interventions must, therefore, be able to empower and facilitate high levels of trust amongst the PTSD diagnosed veteran community. Holistic therapies succeed in fostering the required levels of trust by placing the veteran more centrally in the process, empowering them to feel as if they driving their own recovery, and not merely a passenger in someone else's vehicle (Azevedo et al., 2016; Bauer et al., 2021; Beidel et al., 2017; Weiss et al., 2018; Johnson et al., 2004; Obenchain and Silver, 1991; Lawrence et al., 2017; 2019; Matthieu et al., 2017).

Discussion

The purpose of this review was to explore the effectiveness of interventions for tackling loneliness and social isolation in PTSD-diagnosed military veterans. Six themes were generated: (i) rethinking PTSD as a diagnosis; (ii) holistic intervention;(iii) peer support; (iv) social integration;(v) empowerment through purpose and community, and; (vi) building trust. The papers highlighted that holistic interventions which can mitigate experiential loneliness and social isolation for veterans with PTSD include the following characteristics: a direct focus upon social reintegration and engagement, psychosocial functioning, building trust, peer support, group cohesiveness, empowerment through a sense of purpose and learning new skills. Peer and group-oriented holistic interventions were able to effectively target loneliness, and social isolation through improvements in the veterans' social and community engagement, self-efficacy, self-purpose, and through instilling hope and direction.

This review highlights the importance of socially reintegrating a PTSD-diagnosed veteran back within their community and with their loved ones. This social reintegration is a prerequisite of an effective treatment and a positive recovery journey; fostering growth and engagement through the conduit of group cohesion, togetherness, and connectedness. Linking the veteran back in with their vital support structures and, most importantly, empowering them to be able to communicate openly and honestly with that network, is paramount (Azevedo et al., 2016; Bauer et al., 2021; Weiss et al., 2018; Obenchain and Silver, 1991; Lawrence et al., 2017; 2019; Matthieu et al., 2017). As the studies suggest, the issues of alienation and stigmatization can be countered effectively, but also subtly (Bensimon et al., 2008; 2012; Bergen-Cico et al., 2018; Bolman, 2019; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Johnson et al., 2018; Lobban and Murphy, 2018; 2020; McLaughlin and Hamilton, 2019; Pezzin et al., 2018; Ragsdale et al., 1996; Cushing et al., 2018). The panoply of issues, logistical and psychological, encountered by a veteran transitioning from the military to civilian life need to have been effectively identified, pre-empted and addressed (Azevedo et al., 2016; Bauer et al., 2021; Weiss et al., 2018; Johnson et al., 2004; Obenchain and Silver, 1991; Lawrence et al., 2017; 2019; Matthieu et al., 2017) as is highlighted in recent research and policy focused on understanding the needs of, and supporting, veterans through transition (RBL, 2014; SSAFA, 2017; Shepherd et al., 2020; Sonethavillay et al., 2018; Keats, 2010; Cooper et al., 2018; MoD, 2021; NHS, 2019; HM Government, 2018).

A significant number of the studies also highlight the importance of trust (Azevedo et al., 2016; Bauer et al., 2021; Beidel et al., 2017; Weiss et al., 2018; Johnson et al., 2004; Obenchain and Silver, 1991; Lawrence et al., 2017; 2019; Matthieu et al., 2017). Engagement with any support

and recovery mechanism is contingent upon the veteran trusting the process; trust of those involved in the process, trusting the agenda, and trusting the aspirations of the process. Trust takes time to build, especially within the PTSD-diagnosed veteran community which has become alienated and estranged from both their natural environment, the military community which it has now left, and from their new civilian environment, which it fails to identify or reconcile with. Awareness of the needs for interventions to 'culturally adapt' to uniquely homogenous communities is evolving, even within the military and veteran worlds, but lessons learned need to be consolidated and cultivated further (Whealin et al., 2017). Transparency, openness and listening sincerely to the needs, aspirations and fears of the veteran community are key. As highlighted by recent UK Government strategies and NHS trusts, effective intervention should accommodate these needs, and seek to build the necessary trust (MoD, 2021; NHS, 2019; HM Government, 2018; Whealin et al., 2017). Active involvement of the PTSD-diagnosed veteran community within care planning and transition (NHS, 2019; HM Government, 2018) and within the design and construction stages of interventions through research (Bortoli, 2021) are some ways of effectively achieving this.

The power of peer-centred support and mutual understanding provides a sense of non-judgemental acceptance and normalisation (Bensimon et al., 2008; 2012; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Jones et al., 2000; Lobban and Murphy, 2018; 2020; Johnson et al., 2004; Obenchain and Silver, 1991; Otter and Currie, 2004; Ragsdale et al., 1996) and supports the mitigation of loneliness within PTSD. This camaraderie is especially important at the time of transition, when a serving member of the armed forces becomes a veteran. This is due to the potential sudden loss of social connectedness and intense bonds of friendship that they had during military service (Cooper et al., 2018; MoD, 2021; NHS, 2019). A PTSD diagnosed veteran is more so able to normalise, accept, and consequently manage, their symptomology once they are around their similarly diagnosed comrades (Bensimon et al., 2008; 2012; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Jones et al., 2000; Lobban and Murphy, 2018; 2020; Johnson et al., 2004; Obenchain and Silver, 1991; Otter and Currie, 2004; Ragsdale et al., 1996). The commonality of suffering and common language of military / veteran PTSD, built upon the forged 'fictive kinship' (Woodward and Jenkins, 2011), is a powerful conduit to achieve these monumental and necessary steps towards normalisation, acceptance, and management; and the fostering of the necessary purpose, meaning, and hope (Bauer et al., 2021; Beidel et al., 2017; Lobban and Murphy, 2018; Weiss et al., 2018; Obenchain and Silver, 1991; Beidel et al., 2016; Cushing et al., 2018; Lawrence et al., 2017). In this manner, peer support becomes a complimentary mechanism for increasing treatment engagement and reducing negativity, pessimism, and dropout from veterans who are receiving ongoing support, through investing them in a process in which they feel central (Hundt et al., 2015).

Symptom-centric interventions tend to focus upon mental health professionals 'doing' interventions to the veterans, but research indicates that patients are likely to drop out of treatment if they do not receive what it is they feel they need (Veeninga and Hafkenscheid, 2004). The findings of this review suggest that holistic, non-symptom focussed, interventions have a productive role to play in the mitigation of veteran PTSD symptomology, its treatment and support, especially perhaps during the period of transition (Azevedo et al., 2016; Bauer et al., 2021; Bensimon et al., 2008; 2012; Bergen-Cico et al., 2018; Bolman, 2019; Crowe et al., 2018; Galsgaard and Eskelund, 2020; Johnson et al., 2018; Jones et al., 2000; Lobban and

Murphy, 2018; 2020; McLaughlin and Hamilton, 2019; Pezzin et al., 2018; Weiss et al., 2018; Johnson et al., 2004; Obenchain and Silver, 1991; Otter and Currie, 2004; Ragsdale et al., 1996; Cushing et al., 2018; Lawrence et al., 2017; 2019; Matthieu et al., 2017; Trahan et al., 2016); perhaps working in collaboration with, and sometimes working in place of, more traditional medical, psychological and pharmacological approaches. These interventions appear to be effective because they target the overall wellbeing of the veteran, rather than focussing on PTSD symptomology in isolation. The studies identified in the review broach this issue by fostering an atmosphere of trust, normalisation, and mutual endeavour, which may facilitate the PTSD diagnosed veterans' investment in the whole process of 'therapy' and taking personal ownership of their recovery pathways. Recent research developments, regarding holistic, non-trauma focussed, interventions, coupled with the raising of awareness levels of what it is to be a transitioning veteran, (Cooper et al., 2018; MoD, 2021; NHS, 2019; HM Government, 2018; Hundt, 2015; McGill, 2019; Wilson, 2018; 2020) should include a focus on the effective mitigation of the loneliness and social isolation elements of veteran PTSD symptomology, in accordance with the Defence holistic transition policy (MoD, 2021).

The implementation of a holistic and personalised approach, and empowering veterans to be involved in their recovery, was a running theme within the studies included in the review. This is in line with the UK Government and the Ministry of Defence strategy, which addresses the needs, concerns and aspirations of the military and veteran communities with regards to their mental health and general wellbeing, especially during the period of transition (MoD, 2021; NHS, 2019; HM Government, 2018). Levels of engagement and acceptance, within both the military and civilian worlds, of holistic, peer focussed and delivered, interventions have accelerated in recent years, as well as a wider acceptance of the power of targeting both mind and body (Hundt, 2015; Veeninga and Hafkenscheid, 2004; McGill, 2019). By promoting, and securing, the effective transition of our military personnel we empower them to become the valuable, contributory, members of society that they have the potential to be; fully utilising all the skills, abilities and positive characteristics of their military careers (MoD, 2021; NHS, 2019; HM Government, 2018). To achieve this, however, requires the full collaboration, investment and coordination of organisations and charities within the sector, and the full endorsement of this ethos by the Government, Ministry of Defence, National Health Service and third sector organisations. This emerging, holistic, viewpoint has a strong synergy with the principles of Trauma-Informed Care (TIC) that are becoming more accepted and instrumental within the approach taken by the National Health Service when addressing the needs of the nation's mental health care and support (NHS, 2020). At the heart of TIC is a focus upon the causes of the presented malady and a move away from the previous focus on symptoms.

Strengths and Limitations of Review

This review seeks to be pioneering and ground-breaking in it's proposal to re-assess and re-engage with a vulnerable population which has conceivably been ostracised and estranged by traditional and reductionist outlooks and values. The power and strength of this review, therefore, lies in it's desire and aspiration to remove the blinkers, throw away the rule book and begin to move the dialogue to where it needs to be; to be current, relevant, and authentic to the needs, concerns and hopes of this population. A conscious decision was made to not utilise any quality assessment tool, such as CASP, upon the identified papers and to cast as wide a net as possible, to gather and glean as much evidence of good practice and strategy, with regards to loneliness and isolation within the PTSD diagnosed veteran community, as is

feasible. Only by the laying of such broad and diverse foundations can the true worth of holistic interventions be effectively gauged, and the direction of the journey forwards be charted.

That said, the review has it's limitations. Only papers written in English, from the selected sources and utilising the chosen search terms, were examined. Therefore, any papers outside of these parameters were excluded. The chosen search terms, and sources selected from, could be viewed as subjective and biased perhaps, depending upon one's previous experience within the use of holistic, non-traditional, interventions to mitigate loneliness and social isolation within the PTSD diagnosed veteran community?

There are several limitations to the studies identified, and as a consequence, areas for further research are identified below. Global research which directly addresses loneliness and social isolation within veteran PTSD is both limited and localised. Only 2 out of 28 studies were UK-based (Lobban and Murphy, 2018; 2020), whereas 21 were US studies (Azevedo et al., 2016; Bauer et al., 2021; Beidel et al., 2017; Bergen-Cico et al., 2018; Bolman, 2019; Crowe et al., 2018; Holliday et al., 2015; Johnson et al., 2018; Jones et al., 2000; Pezzin et al., 2018; Weiss et al., 2018; Johnson et al., 2004; Obenchain et al., 1991; Ragsdale et al., 1996; Beidel et al., 2016; Cushing et al., 2018; Lawrence et al., 2017; 2019; Matthieu et al., 2017; Trahan et al., 2016), two were conducted in Israel (Bensimon et al., 2008; 2012), one in Denmark (Galsgaard and Eskelund, 2020) and two in Australia (McLaughlin and Hamilton, 2019; Otter and Currie, 2004). Endemic cultural differences exist between the UK and the other countries, extending to their respective armed forces and veteran communities, raising the need for more UK-centric veteran research to be carried out.

Service user/carer involvement in the design of the identified studies was not mentioned. It is important that service user/carers are involved in the research process to ensure the design of interventions that the community can trust and invest in. Future research should embrace service user/carer involvement in the design of appropriate interventions, in compliance with the National Institute for Health Research (NIHR) (Bortoli, 2021).From the 28 identified studies, fifteen directly address loneliness and social isolation, via the conduits of promoting social engagement and functioning (Azevedo et al., 2016; Bauer et al., 2021; Beidel et al., 2017; Bensimon et al., 2008; 2012; Crowe, 2018; Johnson, 2018; Pezzin et al., 2018; Weiss et al., 2018; Johnson et al., 2004; Obenchain et al., 1991) and psychosocial functioning (Holliday, 2015; Lawrence et al., 2017; 2019; Matthieu et al., 2017). This trend must be cultivated and developed further, in order to give consequent conclusions and recommendations more statistical power and authority.

A significant number of the studies utilised a small research cohort (Bensimon et al., 2012; Bergen-Cico et al., 2018; Galsgaard and Eskelund, 2020; Holliday et al., 2015; Lobban and Murphy, 2018; 2020; McLaughlin and Hamilton, 2019; Weiss et al., 2018; Johnson et al., 2004; Ragsdale et al., 1996; Lawrence et al., 2019; Matthieu et al., 2017) and, therefore, only have limited statistical power and moderate effect sizes. Many of the studies are novel in approach and are, therefore, potentially both logistically complex in nature and problematic to quantify regarding efficacy (Bensimon et al., 2008; Lobban and Murphy, 2018; 2020; Obenchain and Silver, 1991; Otter and Currie, 2004), as they are moving away from established research norms of medical and psychological protocol and classification. Furthermore, many are overly-representative of white males aged 30-50; albeit that the military does recruit more males than females and there is also an age criterion for service. It would be encouraging, nonetheless, to

see more female veterans and people from BAME communities within research. There were only two studies which considered African American PTSD diagnosed veterans (Jones, 2000; Nevins, 2013). A number of studies also utilise self-reporting of PTSD symptomology, rather than the 'gold standard', clinically administered, assessment (Bolman, 2019; Pezzin et al., 2018; Beidel et al., 2016; Cushing et al., 2018). This perhaps compromises the reliability of the results because some people who identify as having PTSD may not actually meet the diagnostic criteria. Furthermore, few studies conducted a pre, post and 6 month follow up. This approach would have given a clearer understanding of whether the interventions were effective in the long term, and therefore follow ups should be considered in future research.

Future Research

More dedicated consideration needs to be given to the mitigation of veteran PTSD through holistic and bespoke measures that directly address the loneliness and social isolation elements of a PTSD diagnosed veteran's symptomology; out of the 28 identified studies only fifteen directly address these issues. Future research should investigate the order and combination that interventions are carried out; for example, whether being offered a holistic intervention prior to any other interventions, such as therapy or medication, empowers a veteran to engage more with PTSD focused interventions. The lived experience, and direct involvement, of PTSD diagnosed veterans should be given prominence in the process of designing effective interventions that better understand their loneliness and social isolation. Furthermore, future research should seek to examine the potential link between early years trauma and later diagnosis of PTSD within the military and veteran communities.

Conclusion

There has been some progress in recent years in the support offered to UK veterans, with an increasing focus on their mental health and wellbeing. Significant collaboration has been made between the Ministry of Defence, HM Government, the National Health Service and the third sector charities and support groups, capturing the synergy and clarity of focus that can be obtained when diverse organisations jointly own key decisions, share research for common aspirations and are committed to wholly altruistic ideals (Bortoli, 2021). This has resulted in a more coherent, targeted and joined up service for the veteran, PTSD-diagnosed, community and has begun to address previously identified shortcomings that existed with regards to the need to identify the unique position of the veteran community and their need for bespoke support and treatment, acknowledging the role that the community itself can take within their journey forwards (Hundt et al., 2015) and increasing receptiveness amongst the parties involved to raise awareness of the true aetiology of veteran PTSD symptomology (McGill et al., 2019; Wilson et al., 2018; 2020) and the role that transition, from the military to civilian life, plays in experiences of loneliness and social isolation (MoD, 2021; NHS, 2019; HM Government, 2018). This review highlights the instrumental position of loneliness and social isolation within the lives of the PTSD-diagnosed veteran community, and the mitigating role of holistic, non-clinical, non-trauma focussed, interventions.

Data Availability Statement

This is a systematic narrative review, no raw data has been utilised.

Ethics Statement

This is a systematic narrative review and, as such, no ethics approval was required.

Author Contributions

RG contributed to the data analysis, was the primary author of the manuscript and had overall responsibility. MK contributed to the data analysis and co-authored the manuscript. JK contributed to the data analysis and co-authored the manuscript. GWM contributed to the data analysis and co-authored the manuscript. DF and GO co-authored the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationship that could be construed as a potential conflict of interest.

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References

1. American Psychiatric Association. (1980). *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.).
2. American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.).
3. Azevedo, K. J., Weiss, B. J., Webb, K., Gimeno, J., & Cloitre, M. (2016). Piloting specialized mental health care for rural women veterans using STAIR delivered via telemental health: Implications for reducing health disparities. *Journal of Health Care for the Poor and Underserved*, 27, 1–7. https://doi.org/10.1353/hpu.2016.0189
4. Bauer, A., Amspoker, A. B., Fletcher, T. L., Jackson, C., Jacobs, A., Hogan, J. et al. (2021). A Resource Building Virtual Care Programme: improving symptoms and social functioning among female and male rural veterans. *European Journal of Psychotraumatology*, 12(1). Doi:10.1080/20008198.2020.1860357
5. Beidel, D. C., Frueh, B. C., Neera, S. M., Bowers, C. A., Trachik, B., Uhde, T. W. et al. (2016). Trauma management therapy with virtual-reality augmented

exposure therapy for combat-related PTSD: A randomized controlled trial. *Journal of Anxiety Disorders*, 61, 64 – 74. doi:10.1016/j.janxdis.2017.08.005

6. Beidel, D. C., Frueh, B. C., Neer, S. M. & Lejuez, C. W. (2017). The efficacy of Trauma Management Therapy: A controlled pilot investigation of a three-week intensive outpatient program for combat related PTSD. Journal of Anxiety Disorders, 50, 23-32. doi:10.1016/j.janxdis.2017.05.001
7. Bensimon, M., Amir, D. A. & Wolf, Y. (2008). Drumming through trauma: Music therapy with post-traumatic soldiers. *The Arts in Psychotherapy*, 35(1), 34-48. doi:10.1016/j.aip.2007.09.002
8. Bensimon, M., Amir, D. A. & Wolf, Y. (2012). A pendulum between trauma and life: Group music therapy with post-traumatized soldiers. *The Arts in Psychotherapy*, 39(4), 223-233. doi:10.1016/j.aip.2021.03.005
9. Bergen-Cico, D., Smith, Y., Wolford, K., Gooley, C., Hannon, K., Woodruff, R. et al. (2018). Dog Ownership and Training Reduces Post-Traumatic Stress Symptoms and Increases Self-Compassion Among Veterans: Results of a Longitudinal Control Study. *Journal of Alternative Complementary Medicine*, 24(12), 1166 – 1175. doi:10.1089/acm.2018.0179.
10. Bolman, B. (2019). Parroting patriots: interspecies trauma and becoming well-together. *Medical Humanities*, 45(3), 305 -312. doi:10.1136/medhum-2018-011630
11. Bortoli, S. (2021). NIHR Guidance on co-producing a research project. National Institute for Health Research; Involve.
12. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101
13. Braun, V. & Clarke, V. (2014). What can 'thematic analysis' offer health and wellbeing researchers? International Journal of Qualitative Studies in Health and Well-being, 9, 26152. Doi:10.3402/qhw.v9.26152
14. Braun, V. & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11, 4, 589-597. doi:10.1080/2159676X.2019.1628806
15. Cacioppo, J. T., Hughes, M. E., Waite, L. J., Hawkley, L. C., & Thisted, R. A. (2006). Loneliness as a specific risk factor for depressive symptoms: cross-sectional and longitudinal analyses. *Psychology & Aging*, 21, 140–151.
16. Carlson, J., Chemtob, C. M., Rusnak, K., Hedlund, N. L., & Muraoka, M. Y. (1998). Eye movement desensitization and reprocessing (EDMR) treatment for combat-related posttraumatic stress disorder. *Journal of Traumatic Stress*, 11(1), 3–32.
17. Cooper, L., Caddick, N., Godier, L., Cooper, A., & Fossey, M. (2018). Transition from the military into civilian life: An exploration of cultural competence. *Armed Forces & Society*, 44(1), 156-177. doi:10.1177/0095327X16675965
18. Crowe, T. K., Sánchez, V., Howard, A., Western, B. & Barger, S. (2018) Veterans transitioning from isolation to integration: a look at veteran/service dog partnerships. *Disability and Rehabilitation*, 40, 24, 2953-2961. doi:10.1080/09638288.2017.1363301

19. Cushing, R. E., Braun, K. L. & Alden, S. (2018). A Qualitative Study Exploring Yoga in Veterans with PTSD Symptoms. *International Journal of Yoga Therapy*, 28(1), 63 – 70. doi:10.17761/2018-00020
20. Galsgaard, A. & Eskelund, K. (2020). An Explorative Clinical Pilot Study Into the Effect of Service Dogs on Chronic Posttraumatic Stress Disorder. *Traumatology*, 26(4), 361–369. doi:10.1037/trm0000278
21. Ginzburg, K., Ein-Dor, T., & Solomon, Z. (2010). Comorbidity of posttraumatic stress disorder, anxiety and depression: a 20-year longitudinal study of war veterans. *Journal of affective disorders*, *123*(1-3), 249-257.
22. Haveman-Gould, Bradley MHS, PA-C; Newman, Chelsea Post-traumatic stress disorder in veterans, JAAPA: November 2018 - Volume 31 - Issue 11 - p 21-24 doi: 10.1097/01.JAA.0000546474.26324.05
23. Holliday, R., Williams, R., Bird, J., Mullen, K., & Surıs, A. (2015). The role of cognitive processing therapy in improving psychosocial functioning, health, and quality of life in veterans with military sexual trauma related posttraumatic stress disorder. *Psychological Services*, 12, 428– 434.
24. Holt-Lunstad, J., Smith, T. B., Layton, J. B. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS Medicine*, 7, e1000316.
25. HM Government (2018). The Strategy for Our Veterans; Valued, Contributing, [Supported. HMSO, London.
26. Hundt, N. E., Robinson, A., Arney, J., Stanley, M. A. & Cully, J. A. (2015). Veterans' Perspectives on Benefits and Drawbacks of Peer Support for Posttraumatic Stress Disorder. *Military Medicine*, 180(8), 851-6. doi:10.7205/MILMED-D-14-00536
27. Iversen, A. C., van Staden, L., Hughes, J. H., Browne, T., Hull, L., Hall, J., ... & Fear, N. T. (2009). The prevalence of common mental disorders and PTSD in the UK military: using data from a clinical interview-based study. *BMC psychiatry*, *9*(1), 1-12.
28. Johnson, D. R., Fontana, A., Lubin, H., Corn, B., & Rosenheck, R. (2004). Long-term Course of Treatment-Seeking Vietnam Veterans with Posttraumatic Stress Disorder; Mortality, Clinical Condition, and Life Satisfaction. *The Journal of Nervous and Mental Disease*, 192(1), 35 – 41.
29. Johnson, R. A., Albright, D. L., Marzolf, J. R., Bibbo, J. L., Yaglom, H. D., Crowder, S. M. et al. (2018). Effects of therapeutic horseback riding on post-traumatic stress disorder in military veterans. *Military Medical Research*, 5(3). doi:10.1186/s40779-018-0149-6
30. Jones, L., Brazel, D., Peskind, E. R., Morelli, T., & Raskind, M. A. (2000). Group Therapy Program for African-American Veterans With Posttraumatic Stress Disorder. *Psychiatric Services*. doi:10.1176/appi.ps.51.9.1177
31. Judkins, J., Moore, B., Collette, T., Hale, W., Peterson, A. & Morissette, S. (2020). Incidence Rates of Posttraumatic Stress Disorder Over a 17-Year Period in Active Duty Military Service Members: PTSD Incidence Rates in Service Members. *Journal of Traumatic Stress*. 33. 10.1002/jts.22558.
32. Karstoft K., Armour, C., Andersen, S. B., Bertelsen, M., & Madsen, T. (2015) Community integration after deployment to Afghanistan: a longitudinal

investigation of Danish soldiers. *Social Psychiatry & Psychiatric Epidemiology*, 50(4), 653–660. https://doi. org/10.1007/s00127-014-0973-2

33. Keats, P. A. (2010). Soldiers working internationally: Impacts of masculinity, military culture, and operational stress on cross-cultural adaptation. *International Journal for the Advancement of Counselling*, 32, 4, 290-303. Doi:10.1007/s10447-010-9107-z.
34. Lawrence, K. A., Matthieu, M. M., Robertson-Blackmore, E. (2017). Completion of a Veteran-Focused Civic Service Program Improves Health and Psychosocial Outcomes in Iraq and Afghanistan Veterans With a History of Traumatic Brain Injury. *Journal of Military Medicine*, 182(7), doi:10.7205/milmed-d-16-00150
35. Lawrence, K. A., Matthieu, M. M. & Robertson-Blackmore, E. (2019). Civic Service as an Intervention to Promote Psychosocial Health and Implications for Mental Health in Post-9/11/01 Era Women Veterans. *Journal of Women's Health*, 28(8), doi:10.1089/jwh.2018.7338
36. Lester, P., Liang, L-J., Milburn, N., Magil, C., Woodward, K., Nash, W., Aralis, H., Sinclair, M., Semaan, A., Klosinski, L., Beardslee, W. & Saltzman, W. (2016). Evaluation of a Family-Centred Preventive Intervention for Military Families: Parent and Longitudinal Outcomes. Journal of the American Academy of Child and Adolescent Psychiatry, 55, 1, 14-24. doi:10.1016/j.jaac.2015.10.009
37. Lobban, J., & Murphy, D. (2018). Using art therapy to overcome avoidance in veterans with chronic post-traumatic stress disorder. *International Journal of Art Therapy*, 23(3), 99–114. doi.org/10.1080/17454832.2017.1397036
38. Lobban, J., & Murphy, D. (2020). Military museum collections and art therapy as mental health resources for veterans with PTSD. *International Journal of Art Therapy*, 25,4, 172-182, doi: 10.1080/17454832.2020.1845220
39. Marmar, C.R., Schlenger, W., HennHaase, C., Qian, M., Purchia, E., Li, M. (2015). Course of posttraumatic stress disorder 40 years after the Vietnam War: findings from the National Vietnam Veterans Longitudinal Study. *JAMA Psychiatry*, 72: 875–81.
40. Matthieu, M. M., Lawrence, K. A. & Robertson-Blackmore, E. (2017). The impact of a civic service program on biopsychosocial outcomes of post 9/11 U.S. military veterans. *Journal of Psychiatry Research*, 248, 111 – 116. doi:10.1016/j.psychres.2016.12.028
41. McFarlane, A. (2014). PTSD and DSM-5: unintended consequences of change. *Lancet Psychiatry*, 1, 246–247.
42. McGill, G., Wilson, G., Hill, M. & Kiernan, M. (2019). Utilisation of the Principles of the Armed Forces Covenant in NHS Trusts and Clinical Commissioning Groups across England: A freedom of information investigation. *British Medical Journal Open*, 9(1). doi:10.1136/bmjopen-2018-022053.
43. McLaughlin, K., & Hamilton, A. L. (2019). Exploring the influence of service dogs on participation in daily occupations by veterans with PTSD: A pilot study. *Australian Occupational Therapy Journal*, 66, 648 – 655. doi.org/10.1111/1440-1630.12606
44. McClelland, H., Evans, J. J., Nowland, R., Ferguson, E. & O'Connor, R. C. (2020). Loneliness as a predictor of suicidal ideation and behaviour: a systematic review

and meta-analysis of prospective studies. Journal of Affective Disorders, 274, 880-896. https://doi.org/10.1016/j.jad.2020.05.004

45. Ministry of Defence. (2021). JSP100: Defence Holistic Transition Policy, Parts 1 & 2 Combined: Directive and Guidance.
46. Ministry of Defence. (2021). Statistics at MOD. Retrieved from URL https://www.gov.uk/government/organisations/ministry-of-defence/about/statistics
47. Moher D., Liberati A., Tetzlaff J. & Altman, D. G. (2009) PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *The Public Library of Science Medicine.* doi:10.1371/journal.pmed.1000097
48. Murphy, D., Palmer, E., & Busuttil W. (2016). Exploring indices of multiple deprivation within a sample of veterans seeking help for mental health difficulties residing in England. *Journal of Epidemiology and Public Health Reviews*. doi:10.16966/2471-8211.132
49. National Health Service, England. (2019). Armed Forces Personnel in transition, Integrated Personal Commissioning for Veterans Framework (IPC4V).
50. National Health Service, Northern England (2020). Trauma Informed Community of Action; Brief evaluation of the community and its use of the Future NHS Platform.
51. Nevins, R., Finch, S., Hickling, E. J., & Barnett, S. D. (2013). The Saratoga WarHorse project: A case study of the treatment of psychological distress in a veteran of Operation Iraqi Freedom. *Advances in Mind-Body Medicine*, 27, 22–25.
52. Obenchain, J. V., & Silver, S. M. (1991). Symbolic Recognition: Ceremony in a Treatment of Posttraumatic Stress Disorder. *Journal of Traumatic Stress*, 5(1), 37 – 43.
53. Otter, L. & Currie, J. (2004). A long time getting home: Vietnam Veterans' experiences in a community exercise rehabilitation programme. *Disability and Rehabilitation*, 26, 1, 27-34, doi:10.1080/09638280410001645067
54. Palic, S., & Elklit, A. (2011). Psychosocial treatment of posttraumatic stress disorder in adult refugees: A systematic review of prospective treatment outcome studies and a critique. *Journal of affective disorders*, *131*(1-3), 8-23.
55. Pezzin, L. E., Larson, E. R., Lorber, W., McGinley, E. L., & Dillingham, T. R. (2018). Music-instruction intervention for treatment of post-traumatic stress disorder: a randomized pilot study. *BMC Psychology*, 19(6), 1, 60. doi:10.1186/s40359-018-0274-8
56. Pietrzak, R. H., Pitts, B. L., Harpaz-Rotem, I., Southwick, S. M., & Whealin, J. M. (2017). Factors protecting against the development of suicidal ideation in military veterans. *World Psychiatry*, 2016, 326-327. doi: 10.1002/wps.20467
57. Popay, J., Roberts, H., Sowden, A., & Petticrew, M. (2012). Guidance on the conduct of narrative synthesis in systematic reviews. *ESRC Methods Programme*, 15, 047–071.
58. Powers, A., Fani, N., Carter, S., Cross, D., Cloitre, M. & Bradley, B. (2017). Differential predictors of DSM-5 PTSD and ICD-11 complex PTSD among

African American women. *European Journal of Psychotraumatology*. doi: 10.1080/20008198.2017.1338914.

59. Ragsdale, K. G., Cox, R. D., Finn, P., & Eisles, R. M. (1996). Effectiveness of Short-Term Specialized Inpatient treatment for War-Related Posttraumatic Stress Disorder: A Role for Adventure-Based Counseling and Psychodrama. *Journal of Traumatic Stress*, 9(2), 269 – 283. doi:10.1002/jts.2490090209
60. Royal British Legion. (2014). A UK Household Survey of the Ex-Service Community. London: The Royal British Legion.
61. Rozanova, J., Noulas, P., Smart, K., Roy, A., Southwick, S. M., Davidson, L. et al. (2015). 'I'm coming home, tell the world I'm coming home' The Long Homecoming and Mental Health Treatment of Iraq and Afghanistan War Veterans. *Psychiatric Quarterly*, 87, 3, 427-443. Doi:10.1007/s11126-015-9398-7.
62. Sayer, N., Orazem, R. J., Noorbaloochi, S., Gravely, A., Frazier, P., Carlson, K. F. et al (2015) Iraq and Afghanistan war veterans with reintegration problems: differences by Veterans Affairs healthcare user status. *Administration and Policy in Mental Health and Mental Health Services Research*. 42(4), 493–503. doi:10.1007/s10488-014-0564-2
63. Shepherd, S., Sherman, D. K., Maclean, A. & Kay, A. (2020). The Challenges of Military Veterans in their transition to the workplace; a call for integrating basic and applied psychological science. *Perspectives on Psychological Science*. doi:10.1177/1745691620953096
64. Snilstveit, B., Oliver, S., & Vojtkova, M. (2012). Narrative approaches to systematic review and synthesis of evidence for international development policy and practice. *Journal of Developmental Effects*, 409–429.
65. Solomon, Z., Mikulincer, M. & Hobfoll, S. E. (1986). Effects of social support and battle intensity on loneliness and breakdown during combat. J Pers Soc Psychol, 51(6):1269-76. doi: 10.1037/0022-3514.51.6.1269
66. Solomon, Z., Bensimon, M., Greene, T., Horesh, D., and Ein-Dor, T. (2013). Loneliness trajectories: the role of posttraumatic symptoms and social support. *Journal of Loss & Trauma,* 20, 1–21. doi:10.1080/15325024.2013.815055
67. Sonethavillay, H., Maury, R. V., Hurwitz, J. L., Uvegas, R. L., Akin, J. L., De Coster, J. L. et al. (2018). *Blue Star Families Military Family Lifestyle Survey Comprehensive Report*. The Department of Applied Research, The Institute of Veterans and Military Families, Syracuse University, New York, USA.
68. SSAFA. (2017). https://www.ssafa.org.uk/latest/41-veteranshave-felt-isolated-research-reveals. September 2021, date last accessed).
69. Stapleton, M. (2018). Loneliness and Social Isolation in the Armed Forces Community. Royal British Legion, London.
70. Steenkamp, M. M., Litz, B. T., Hoge, C. W., & Marmar, C. R. (2015). Psychotherapy for military-related ptsd: A review of randomized clinical trials. *JAMA*, 314(5), 489–500.
71. Stein, J. Y., & Tuval-Mashiach, R. (2014). Loneliness and Isolation in Life-Stories of Israeli Veterans of Combat and Captivity. *Psychological Trauma: Theory,*

Research, Practice, and Policy. Advance online publication. http://dx.doi.org/10.1037/a0036936

72. Stein, J. Y., & Tuval-Mashiach, R. (2015). The Social Construction of Loneliness: An Integrative Conceptualization. *Journal of Constructivist Psychology*, 28, 3, 210-227. http://doi:10.1080/10720537.2014.911129
73. Steptoe, A., Shankar, A., Demakakos, P., & Wardle, J. (2013). Social isolation, loneliness, and all-cause mortality in older men and women. *Proceedings of the National Academy of Sciences of the USA*, 110, 5797–5801.
74. Stevelink, S., Jones, M., Hull, L., Pernet, D., MacCrimmon, S., Goodwin, L. et al. (2018). Mental health outcomes at the end of the British involvement in the Iraq and Afghanistan conficts: a cohort study. *British Journal of Psychiatry*, 0, 1–8. doi:10.1192/bjp.2018.175
75. Trahan, L. H., Carges, E., Stanley, M. A. & Evans-Hudnall, G. (2016). Decreasing PTSD and Depression Symptom Barriers to Weight Loss Using an Integrated CBT Approach. *Sage Journals*. doi:10.1177/1534650116637918
76. Van Ommeren, M., Sharma, B., Sharma, G. K., Komproe, I., Cardeña, E., & de Jong, J. T. (2002). The relationship between somatic and PTSD symptoms among Bhutanese refugee torture survivors: examination of comorbidity with anxiety and depression. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, *15*(5), 415-421.
77. Veeninga, A. & Hafkenscheid, A. J. P. M. (2004). Expectations of patients starting psychotherapy: Predictors of drop-out?. *Tijdschrift voor Psychotherapie*, 30, 187–195.
78. Walton, C. G., Shultz, C. M., Beck, C. M., & Walls, R. C. (1991). Psychological correlates of loneliness in the older adult. *Archives of Psychiatric Nursing*, 5, 165–170.
79. Weiss, B. J., Azevedo, K., Webb, K., Gimeno, J. & Cloitre, M. (2018). Telemental Health Delivery of Skills Training in Affective and Interpersonal Regulation (STAIR) for Rural Women Veterans Who Have Experienced Military Sexual Trauma. *Journal of Traumatic Stress*, 31(4). doi:10.1002/jts.22305
80. Whealin, J. M., Yoneda, A. C., Nelson, D., Hilmes, T. S., Kawasaki, M. M. & Yan, O. H. (2017). A Culturally Adapted Family Intervention for Rural Pacific Island Veterans with PTSD. *Journal of Psychiatric Services*, 14(3), 295-306. Doi:10.1037/ser0000186
81. Wilson, G., Hill, M. & Kiernan, M. (2018). Loneliness and Social Isolation of Military Veterans: Systematic narrative review. *Occupational Medicine*, 68(9), 600-609.
82. Wilson, G., Leslie, C., McGill, G. & Kiernan, M. (2020). Understanding the unique factors of Social Isolation and Loneliness of Military Veterans: A Delphi Study. Northumbria University.
83. Woodward, R., Jenkings, N. K. (2011). Military identities in the situated accounts of British military personnel. *Sociology*, 2011, 45, 252–268.
84. World Health Organization (2020). International statistical classification of diseases and related health problems (11th ed.).

85. Yael, D. & Yager, J. (2019). Addressing Loneliness in Complex PTSD. *The Journal of Nervous and Mental Disease*, 207, 6, 433-439. doi:10.1097/NMD.0000000000000992.
86. Ypsilanti, A., Gettings, R., Lazuras, L., Robson, A., Powell, P. & Overton,. (2020). Self-Disgust Is Associated With Loneliness, Mental Health Difficulties, and Eye-Gaze Avoidance in War Veterans With PTSD. *Frontiers in Psychology*, 11. doi;10.3389/fpsyg.2020.559883

Figure 1.JPEG

Table 2. Systematic search strategy

Source	ASSIA ETHOS PsycARTICLES Science Direct Freedom Collection Scopus Web of Science
Search field	Title and abstract
Exclusion	Non-English language Literature reviews
Year of publication	All years
Search Terms	(Veteran OR ex-servic* OR ex-forc* OR ex-militar*) AND (social isolation OR lonel*) AND (post traumatic stress OR post traumatic stress disorder OR PTSD OR trauma*)

Figure 2.JPEG

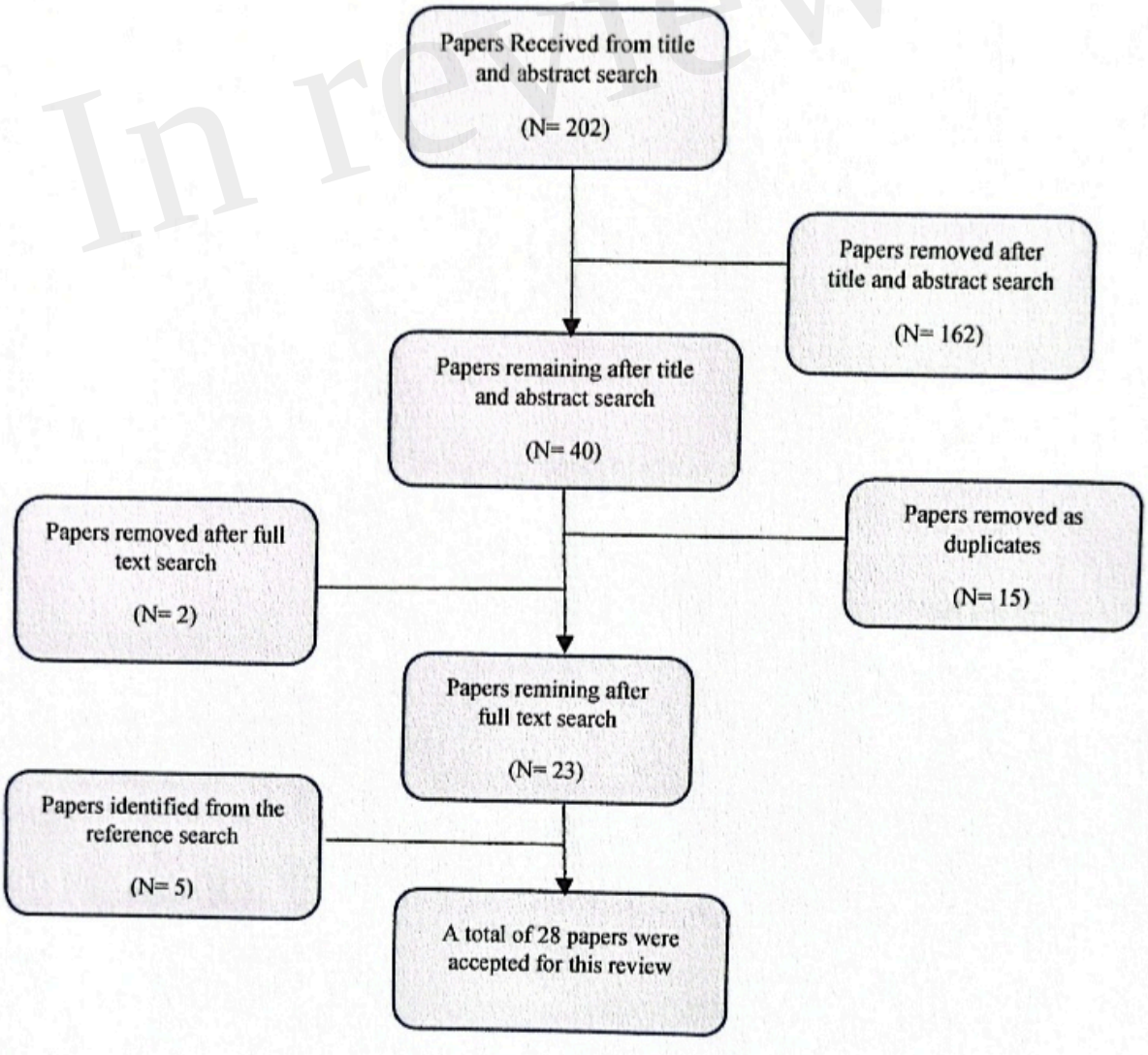

Figure 1. Search strategy used within the systematic search.

Figure 3.JPEG

Table 1. Symptom capture and limitations on existing PTSD criterion

Symptoms captured by existing PTSD criterion (ICD-11/DSM 5)	Symptoms not captured by existing PTSD criterion (ICD-11/DSM 5)
○ Fear ○ Re-experiencing ○ Avoidance behaviour ○ Hypervigilance ○ Horror ○ Helplessness ○ Challenge to physical integrity ○ Psychogenic amnesia ○ Reduced affect ○ Dissociation ○ Anger ○ Impact on functioning ○ Self-blame ○ Self-destructiveness ○ Alterations in world view	○ Depression ○ Guilt ○ Shame ○ Psychosexual difficulties ○ Betrayal ○ Stigmatisation ○ Self-medicating activity ○ Increased vulnerability to re-traumatisation