Introduction

Global research has shown the prevalence for post-traumatic stress disorder (PTSD) in adults ranges from approximately 1-12% (NICE, 2018). PTSD is a psychiatric condition that develops following exposure to a traumatic event, with signature symptoms of PTSD including re-experiencing the traumatic event, cognitive disturbance, hyperarousal, and avoidance (American Psychiatric Association, 2013). The Adult Psychiatric Morbidity Survey in the United Kingdom (UK) reported higher rates of PTSD amongst Black British groups relative to White British adults (McManus et al., 2016). Similar findings have been reported in literature in the United States, suggesting higher rates of PTSD in African American and Hispanic adult populations relative to White groups (Alegría et al., 2013; Roberts et al., 2011; Sibrava et al., 2019; Asnaani et al., 2010).

Complex PTSD (CPTSD) was included as a diagnosis in the 11th revision of the International Classification of Diseases (World Health Organization, 2018). CPTSD encompasses the core features of PTSD as well as further disturbances in emotional regulation, self-concept, and interpersonal relationships. The introduction of CPTSD as a separate diagnostic classification was built on extensive clinical observations that showed for those exposed to repetitive or prolonged traumas, such as childhood sexual abuse, often led to complex reactions that extended beyond reactions found in those who experienced trauma following a single event, such as a motor accident (Maercker et al., 2013). Experiences of adverse events such as racism, discrimination and events related to fleeing persecution or war for refugee and asylum-seeking groups may render vulnerability to ongoing traumatic stressors and greater exposures to trauma (e.g., torture, imprisonment). Whilst this prompts valid enquiry into prevalence and experiences of CPTSD among racial and ethnic minority groups, studies exploring experiences and cultural variations in CPTSD remain limited (Heim et al., 2022).

And so, critically understanding the various cross-cultural factors that may shape or influence trauma experiences among racial and ethnic minority groups becomes important. This may include examining sociocultural explanatory models of illness and coping that may influence interpretation of trauma (Terheggen et al., 2001), as well as trauma disclosure (Long et al., 2007). For example, whilst those who are exposed to interpersonal abuse may report heightened sense of anger as a result of injustice following trauma (Goldner et al., 2019; Erzar et al., 2019), religious or spiritual models around forgiveness or revenge may impact this degree of anger, or how it is expressed through cultural norms (Hinton et al., 2003). Similarly, higher rates of stigmatization of mental illness among Black and Asian groups (Alvidrez et al., 2008; Yang, 2007) may prevent help-seeking behavior or disclosing trauma, through fear of backlash from local community members (Laban et al., 2008). In addition, cultural variations in cognitive appraisals and self-concept may have influences over the development and management of trauma (Bernardi et al., 2019).

It is important to acknowledge the role of health care delivery and systems of medical care that currently operate within modern society globally too. To a greater or lesser extent, whilst most societies involve some form of pluralistic medical system (Johnson et al., 2017), access to, and engagement with healthcare systems vary across diverse cultural and social contexts. This, coupled with an individual's perception and beliefs (e.g., anticipation of being misunderstood by statutory health services) will inform how cultural groups engage with services and embark on accessing the right support through these services (Scheppers et al., 2006). Services then failing to acknowledge and meet the cultural needs of service users risks worsening of symptoms and outcomes.

Currently, the National Institute for Health and Care Excellence (NICE) guidance for treating PTSD in the UK includes trauma-focused cognitive behavioral therapy, prolonged exposure therapy, eye movement desensitization and reprocessing therapy (EMDR) and narrative

exposure therapy (NICE, 2018), and several published meta-analyses show positive outcomes of effectiveness for these interventions (Cusack et al., 2016; Powers et al., 2010; Davidson et al., 2001; Seidler & Wagner, 2006; Lely et al., 2019). However, it is unclear if the effectiveness of such interventions can be fully generalized across racialized minority groups due to low uptake of participating in clinical trials and research, remaining underrepresented at a global level (Brown et al., 2014). Further, clinical guidance on the management for CPTSD and associated difficulties remains outstanding, making it a challenge for clinicians working with individuals presenting with CPTSD or complex trauma presentations. Critics have also cited that evidence-based interventions have mostly been developed in Western contexts (Bernal et al., 2009), arguing that proposed interventions may not be as acceptable to non-Western groups and societies who uphold diverse cultural practices and beliefs around health and illness. Worse, consistent stark racial disparities in outcomes and experiences exist for racial and ethnic minority groups engaging with current healthcare services (Das-Munshi et al., 2018; Hussain et al., 2022). There is therefore a pressing need for global research and services to ensure interventions designed to assess and treat PTSD/CPTSD or trauma experiences are efficacious among diverse service user populations.

For racial and ethnic minority groups there is some evidence to suggest culturally-adapted interventions can increase intervention effectiveness in public health services (Kohn et al., 2002, Kalibatseva & Leong, 2014), and that cultural groups are more likely to engage with services when they believe their cultural identities and beliefs are accurately reflected in the delivery of treatment (Bhui & Bhugra, 2004). Cultural adaptation refers to "the modification of an intervention protocol to acknowledge language, culture, and context in such a way that it is compatible with the client's cultural patterns, meanings, and values" (Bernal et al., 2009). Results from several meta-analyses on the effectiveness of culturally-adapted interventions in healthcare vary considerably (Rathod et al., 2018; Anik et al., 2021; Hall et

al., 2016). Much of the evidence obtained from these reviews evaluated cultural adaptations across interventions designed to address a wide range of psychiatric disorders, notably depressive disorders. Many reviews also fall short of fully describing the nature of the adaptation process, making it hard to infer which components of the intervention approach was efficacious and the relative individual experiences of the adaptations. Whilst research exploring cultural adaptations to trauma treatments among racial minority groups is growing (Ennis et al., 2020; Menon et al., 2023), the scope of reviews has often been limited to exploring adaptations to Cognitive Behavioral Therapy (CBT). Cross cultural research has questioned the application of CBT when working with diverse groups, citing CBT practices as individualistic and ignoring the wider social and cultural contexts that may influence distress (Hall et al., 2016). Whilst this largely justifies the need to adapt CBT when working with varied groups, a more expansive review of adaptations across several treatment modalities that extend beyond CBT is warranted. This allows for exploration of the effectiveness and appropriateness of the varied treatment modalities that may be offered to racial minority groups accessing services, ultimately strengthening the literature to inform practice and policy.

Limited research has therefore been conducted on reviewing cultural adaptations to assessments *and* interventions for trauma experiences for these groups. Given the higher prevalence of trauma experiences among these groups, in addition to reported poor outcomes in accessing care, systematic exploration of the effectiveness and experiences of cultural adaptations to varied treatment interventions and assessments of trauma for these groups is warranted.

Aim

To address this gap, we conducted a systematic review of outcomes and experiences of culturally-adapted assessments and interventions for trauma experiences among racial and ethnic minority groups. The review aimed to (a) scope the adaptations and/or design features of assessment and interventions for trauma among racial and ethnic minority groups and (b) determine the experiences and effectiveness of adapted or specifically designed interventions for racial and ethnic minority groups with trauma.

Methods

Search strategy

The review protocol was registered prospectively on PROSPERO (Ref: CRD42022321884). Search terms in this comprehensive review included key words and identifiers related to our aims, such as "cultural adaptation", "treatment", "trauma", "racial minority", "CBT", "EMDR". A search of empirical studies was performed in seven databases: MEDLINE, PsycINFO, Embase, Scopus, CINAHL, Cochrane Central Register of Controlled Trials, Web of Science, from inception to May 2022.

Eligibility criteria

Screening of primary studies was dependent on the following inclusion criteria: empirical studies using quantitative, qualitative or mixed-method designs, included adults aged 18 years or over from racial and ethnic minority groups, focused on target participants' experiences and outcomes of culturally-adapted or specifically designed trauma assessments, and/or psychological interventions for trauma experiences (e.g., PTSD, CPTSD, or related symptoms without diagnosis threshold met or specified) and related mental health symptoms (e.g., depression). We excluded papers that did not involve racial or ethnic minority groups, or which did not separate data for racial and ethnic minority participants in their analysis. We excluded studies from the meta-analysis which were including existing or overlapping datasets from another study. We also excluded papers which did not include mental health

populations or papers that exclusively focused on pharmacological intervention for mental health conditions. Non-pharmacological treatments such as community-based interventions or adapted psychotherapies offer greater insight into the social, cultural, and psychological needs of racialized groups, which is essential to understanding and addressing trauma in these groups.

Definition of adaptation

For the purposes of this review, adaptations referred to a direct change, modification or adjustment to a standardized assessment or intervention to improve its acceptability for a targeted population (Bernal et al., 2009). Additionally, we were also interested in any assessment or intervention approaches that were specifically designed for a targeted population (e.g., an approach that has been developed at the outset to capture the needs of the target audience).

Screening and study selection

All titles and abstracts of papers identified from the searches, and full text papers of those met eligibility criteria were independently screened by two reviewers (LB and MCS). Where discrepancies occurred, these were resolved through wider research team discussion.

Quality assessment (risk of bias)

Quality assessment of included papers was independently rated by two reviewers (LB and MCS) using The Mixed Methods Appraisal Tool v2018 (MMAT; Hong et al., 2018). The tool measures quality of studies against independent sets of criteria and measures bias across randomized controlled trials (RCT), non-randomized studies, descriptive studies, qualitative studies, and mixed methods studies. We classified an overall strength of quality for each paper as follows: low quality (<40%); medium quality (≥ 40% and <80%); and high quality (≥ 80%). We included a descriptive critique of the factors (e.g., clear research question,

rationale for methodology, analysis, etc.) that contributed to high, medium, or low-quality studies alongside their percentage scores and overall strength as per guidance (MMAT, Hong et al., 2018) to help infer a wider, comprehensive picture of study quality.

Data extraction

Descriptive characteristics of eligible studies were recorded in a data extraction excel spreadsheet, including authors, year of publication, country, study design, target populations, trauma type, assessment / intervention and adaptation details, sample size, comparator (if applicable), results (including qualitative data from participants, means and standard deviations for symptom measure scores at several times points if applicable) and conclusions.

Data analysis and synthesis

Synthesis of data comprised three stages. The first stage involved a narrative synthesis of data pertaining to study designs and approaches used in the assessment and/or intervention for trauma.

The second stage of synthesis involved describing cultural adaptations used across intervention and assessment studies, using a narrative approach described by Popay and colleagues (Popay et al., 2006). Identified mechanisms of action were compared between these studies to find the commonalities and differences of certain adaptations and themes that emerged from the data. Any data that accounted for experiences of interventions or assessments was also explored.

Third, meta-analyses were conducted to examine the intervention effects of culturally-adapted interventions on PTSD symptoms and common co-morbid difficulties (i.e., depression and anxiety symptoms). Only randomized controlled trials (RCTs) which reported symptom outcomes using validated measures were included in the meta-analyses (Concato et al., 2000). We were also interested in outcome measures that may capture complex trauma

symptoms (e.g., negative self-concept), which may or may not include measurements of CPTSD. We conducted meta-analyses using the random effects model whenever there were four or more studies reporting usable data to capture any uncertainty resulting from heterogeneity among studies. When data were available from less than 4 studies, the fixed-effect model was used instead (Borenstein, 2010). No subgroup analyses to examine the extent of assessment and intervention effects across certain cultural groups were pre-specified considering the limited volume of data to date. Review Manager software was used to conduct the meta-analyses (RevMan 5.4). Standardized mean differences with 95% confidence intervals were calculated for all comparisons with continuous measures. I^2 statistic depicted the heterogeneity (Borenstein et al., 2009): high heterogeneity was assumed if the I^2 value was > 75%; moderate with I^2 *between* 25% and 75%; and low if < 25% (Higgins et al., 2003). Chi-square (x^2) values were calculated to depict differences between observed and expected frequencies of outcomes and Tau-squared (τ^2) values were used to indicate estimates of between-study variance. Results of the remaining intervention studies which were not suitable for meta-analyses were narratively described.

Results

A total of 2,949 records were found following the search across databases and following removal of duplicate articles, a total of 1841 papers remained for title and abstract screening. After screening title and abstracts, we read 123 full-text papers. Full-text screening allowed for a total of 21 eligible papers included in the current review. Figure 1 describes a PRISMA flowchart (Page et al., 2021) and overview of the screening process.

[INSERT FIGURE 1 HERE]

Overview of studies

A total of 21 studies with 3341 adult participants were included in this review. Sample sizes ranged from 7 to 1358. A detailed description of study characteristics is included in Table 1. In reference to location of studies, the majority were conducted in the United States (Hinton et al., 2011; Galano et al., 2021; Pearson et al., 2019; Hahm et al., 2019; Hinton et al., 2004; Hinton et al., 2005; James & Noel., 2013; Hinton et al., 2013). Two studies were conducted in Australia (Gibson et al., 2021; Fernandes & Aiello., 2018), one in the Caribbean (Vera et al., 2022), one in Germany (Kananian et al., 2017), one in Pakistan (Latif et al., 2021), two in South Africa (Jalal et al., 2020; Madigoe et al., 2017), two in countries across Southeast Asia (Chhim, 2012; Eichfeld et al., 2019), one in Turkey (Eskici et al., 2021), one in Uganda (Goninon et al., 2020), and two in the United Kingdom (Hammad, 2020; Bahu, 2019).

Study populations were mixed; however, a notable number of studies focused on refugee or asylum-seeking populations from racial and ethnic minority backgrounds (Eskici et al., 2021; Goninon et al., 2020; Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005; Hinton et al., 2013; Fernandes & Aiello., 2018; Bahu, 2019). In terms of study designs, nine studies used randomized controlled study designs (Vera et al., 2022; Hinton et al., 2011; Jalal et al., 2020; Eskici et al., 2021; Latif et al., 2021; Pearson et al., 2019; Hahm et al., 2019; Hinton et al., 2004; Hinton et al., 2005). One study used a qualitative design (Fernandes & Aiello., 2018), three were mixed methods studies (Hammad, 2020; Bahu, 2019; Chhim, 2012), three studies used pre-post evaluation designs (Eichfeld et al., 2019; James & Noel., 2013; Kananian et al., 2017), two studies used quasi-experimental designs (Goninon et al., 2020; Gibson et al., 2021), two studies were cross-sectional studies (Hinton et al., 2013; Madigoe et al., 2017), and one study used a controlled study design (Galano et al., 2021).

[INSERT TABLE 1 HERE]

Quality assessment of studies

Most papers in the review (Vera et al., 2022; Hinton et al., 2011; Jalal et al., 2020; Eskici et al., 2021; Latif et al., 2021; Galano et al., 2021; Pearson et al., 2019; Goninon et al., 2020; Eichfeld et al., 2019; Hahm et al., 2019; Gibson et al., 2021; Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005; Hinton et al., 2013; Madigoe et al., 2017; Hammad, 2020; Bahu., 2019; Chhim, 2012) were assessed to have high or medium-high quality (≥ 40%). Justifications for high quality rating included having complete outcome data, using appropriate sampling methods to address the research question(s), evaluating response rates, blinding of outcome assessors (and several more criteria set out in the MMAT). However, a small number of papers (Fernandes & Aiello., 2018; James & Noel., 2013) had low methodological quality (≤ 40%). Common reasons for this included a lack of complete outcome data, groups not being comparable at baseline, or outcome assessors not being blinded to interventions in RCT studies. See Table 1 for quality ratings of each study.

Characteristics of intervention studies

Whilst studies often included multi-modal modalities in treatment approach, the most often modality incorporated amongst most studies was a form of culturally adapted cognitive behavioral approaches (k=15). Two papers (James & Noel., 2013; Gibson et al., 2021) solely focused on psychoeducation. Many studies delivered interventions through group formats (k=12). Duration of the interventions ranged from 7 weeks to 15 weeks with a mean of 11 weeks. A large proportion of intervention studies focused on experiences of refugee and asylum-seeking populations (Eskici et al., 2021; Goninon et al., 2020; Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005; Fernandes & Aiello., 2018; Bahu, 2019), which included traumas associated with war, forced displacement, imprisonment, torture, and rape.

Characteristics of assessment studies

Three studies focused on evaluating culturally specific assessments for trauma experiences (Hinton et al., 2013; Madigoe et al., 2017; Chhim., 2012). Assessment studies focused on the

integration of culturally specific experiences, practices, and knowledge into the development of an assessment tool that assesses and screens for trauma. Two papers (Chhim., 2012; Hinton et al., 2013) focused on assessing trauma experiences among Cambodian populations and one paper (Madigoe et al., 2017) focused on the development of a culturally specific screening tool for trauma among South African Zulu groups. Trauma experiences that were investigated in assessments were therefore locally and culturally determined, which included integration of culturally relevant somatic complaints into the acknowledgment of trauma (Hinton et al., 2013; Chhim., 2012) and an awareness of explanatory models and beliefs around illness (Hinton et al., 2013; Madigoe et al., 2017; Chhim., 2012). Two assessment studies reported the integration of spirituality into the assessment of trauma. Specifically, this included screening for trauma experiences or coping behaviors related to witchcraft or traditional rituals (e.g., interpretation of sleep paralysis and nightmares as spiritual attacks, Hinton et al., 2013). Assessment studies involved comparisons to Western diagnostic screening tools for trauma, with two papers (Hinton et al., 2013; Chhim., 2012) focusing on the PTSD checklist (Civilian Version; PCL-C) and one paper (Madigoe et al., 2017) focusing on the PTSD section of the DSM Structured Clinical Interview (SCID-I RV) to inform further validation and comparison of adapted measures.

Cultural adaptations

Eight themes emerged on cultural adaptations used targeting racial and ethnic minority groups and these are depicted below. Further details of these themes are detailed in Table 2 as well as narratively below.

[INSERT TABLE 2 HERE].

Language

Language adaptations were reported across intervention and assessment studies. This included translation of an original intervention or assessment into the local language of participants, through either translated intervention materials (Galano et al., 2021; Pearson et al., 2019; Goninon et al., 2020; Hinton et al., 2004; Madigoe et al., 2017; Hammad., 2020; Bahu., 2019) and/or the intervention or assessment in the preferred local language delivered by the facilitator or use of an interpreter (Galano et al., 2021; Madigoe et al., 2017; Hammad., 2020; Fernandes & Aiello., 2018; Chhim., 2012). Changing jargon into more culturally specific and understood terminology to improve acceptability of interventions was also reported across several papers (Vera et al., 2022; Hinton et al., 2013; Hammad., 2020).

Cultural matching of the facilitator

Adaptations to the intervention through cultural matching of the facilitator to participants was present in over a third of all studies (k=8). Cultural matching of the facilitator included matching facilitators and participants for ethnicity as well as other characteristics such as gender or language as a way of improving acceptability of the intervention (Vera et al., 2022; Eskici et al., 2021; Goninon et al., 2020; Eichfeld et al., 2019; James & Noel., 2013; Hahm et al., 2019; Hammad., 2020; Bahu., 2019). Studies which included matching cultural backgrounds to participants discussed benefits in building therapeutic alliance (Hahm et al., 2019; Hammad., 2020), as well as rapport and trust (James & Noel., 2013; Hammad., 2020; Bahu., 2019). This was particularly notable in studies which included participants with histories of interpersonal traumas whereby participants and facilitators were matched on demographics such as ethnicity and gender. All papers which included cultural matching between facilitators and participants reported training and/or supervision of facilitators to ensure cultural competency is achieved as well as intervention fidelity.

Sociocultural integrations

Most studies included integration of sociocultural considerations into interventions or assessments (k=19). This included ensuring intervention activities were sensitive to participant cultural contexts (Vera et al., 2022; Hinton et al., 2011; Eskici et al., 2021; Pearson et al., 2019; Goninon et al., 2020; Eichfeld et al., 2019; James & Noel., 2013; Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005; Hammad., 2020; Fernandes & Aiello., 2018; Bahu., 2019) as well as the integration of cultural values, beliefs, experiences and practices into assessments or interventions (Vera et al., 2022; Hinton et al., 2011; Jalal et al., 2002; Eskici et al., 2021; Latif et al., 2021; Goninon et a., 2020; Eichfeld et al., 2019; James & Noel., 2013; Hahm et al., 2019; Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005; Hinton et al., 2013; Madigoe et al., 2017; Hammad., 2020; Fernandes & Aiello., 2018; Bahu., 2019; Chhim., 2012). The integration of faith and spirituality was highlighted in nine papers (Hinton et al., 2011; Jalal et al., 2020; James & Noel., 2013; Kananian et al., 2017; Hinton et al., 2013; Eskici et al., 2021; Madigoe et al., 2017; Hammad., 2020; Bahu., 2019), with many incorporating prayer and/or religious rituals in interventions, or exploring beliefs held around spirituality in assessment. Culturally specific intervention activities were reported in papers which involved aspects of collective prayer (Hammad., 2020; Fernandes & Aiello., 2018), drumming and singing (e.g., darbuka drumming, Nasheed singing, Hammad., 2020), and pranayama breathing (Bahu., 2019).

Most papers integrated culturally relevant metaphors, idioms, and concepts into intervention delivery (e.g., Buddha's arrow and the Chakra system, Bahu., 2019). Normalization of symptoms was also reported using culturally resonant concepts (e.g., parables and vignettes from cultural texts of cultural heroes who experienced trauma, Fernandes & Aiello., 2018). Culturally relevant visualizations aided intervention exercises in many papers too (e.g., breathing and relaxation exercises, Hinton et al., 2011; Jalal et al., 2020; Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005; Hammad., 2020; Bahu., 2019).

Several adaptations were made to organize sessions to boost acceptability to cultural groups. Examples included groups set up to resemble social gatherings similar to participants' native countries and restoring culturally familiar ways to participants through cooking traditional group meals with collective storytelling practices (Hammad., 2020).

Psychoeducation

Almost half of papers (k=8) involved psychoeducation on PTSD and trauma symptoms (Hinton et al., 2011; Eskici et al., 2021; Latif et al., 2021; Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005; Hammad., 2020; Bahu., 2020). Unsurprisingly, most of these papers involved adaptations to cognitive behavioral therapy (CBT), where psychoeducation is a key ingredient in CBT treatment. Culturally relevant games were also described in papers to provide psychoeducation around somatic symptoms (e.g., "Kursi Karasi - musical chairs", Eskici et al., 2021). Traditional folklore or oral storytelling (e.g., 'Hikaya', Hammad., 2020; story of Mahatma Gandhi, Bahu., 2019; and Elephant and Six Blind Men to explain exposure, Latif et al., 2021) was integrated into psychoeducation in papers. Culturally appropriate visualizations and imagery such as a lotus bloom to encode key Asian cultural values of flexibility (Kananian et al., 2017; Hinton et al., 2004; Hinton et al., 2005) were also utilized to promote discussion and psychoeducation amongst participant groups.

Collaboration

Another theme emerged from the findings was collaboration, where over half (k=11) of papers either involved community stakeholders in the delivery of interventions (Vera et al., 2022; Eskici et al., 2021; Galano et al., 2021; Pearson et al., 2019; Gibson et al., 2021; Kananian et al., 2017; Hammad., 2020; Bahu., 2019), and/or involved consultation with participants (Vera et al., 2022; Hahm et al., 2019; Kananian et al., 2017; Madigoe et al., 2017; Hammad., 2020; Bahu., 2019; Chhim., 2012). By understanding the social support

structures of varied cultural groups, modifications were made to allow support through existing community networks in several papers. Specific examples included liaison with local faith-based community leaders to inform approaches (Hammad., 2020; Bahu., 2019; Chhim., 2012), collaborating with community leaders to host interventions outside of mental health settings such as in a community center (Hammad., 2020) or local temple (Bahu., 2019), and providing consultation with community stakeholders to develop treatment manuals (Pearson et al., 2019). In one paper (Pearson et al., 2019) an additional pre-session dedicated to engagement and rapport building was added to the treatment manual based on community input and consultation between community stakeholders and participants. Similarly, another study (Vera et al., 2022) reported the opportunity for participants to attend a pre-session dedicated to building trust and offered opportunities for participants to bring along a trusted relative to aid support to partake in the intervention.

Practical considerations

A large proportion of intervention papers discussed making practical adaptations (k=12). Some included adapting the time or length of interventions (Vera et al., 2022; Eskici et al., 2021; Goninon et al., 2020; Kananian et al., 2017; Hammad., 2020), and/or location of treatment (Hinton et al., 2011; Latif et al., 2021; Hammad., 2020).

Modifications to treatment manuals included adapting content to acknowledge the beliefs and experiences of the relevant cultural group. This included content in manuals to refer to Afghan culture with visualization exercises in one study (Kananian et al., 2017) or removing specific jargon and replacing content with relative cultural examples in others (Hinton et al., 2011; Eskici et al., 2021; Hammad., 2020). Of those reporting practical considerations, a high proportion of studies referenced an emphasis on encompassing a sensorial or somatic element to interventions (Hinton et al., 2011; Pearson et al., 2019; James & Noel., 2013; Kananian et

al., 2017; Hammad., 2020; Fernandes & Aiello., 2018; Bahu., 2019). A notable number of these papers included participants from Asian and Hispanic populations as well as with refugee and asylum-seeking populations.

Several papers which focused on trauma experienced by refugee and asylum-seeking groups (Eskici et al., 2021; Goninon et al., 2020; Kananian et al., 2017) referenced high dropout rate of refugees in treatments due to unsettlement in prior literature, and adapted sessions accordingly which included fewer sessions with longer time devoted to each session. Other studies (Vera et al., 2022; Hammad., 2020) reported longer period of engagement sessions to address mistrust of services.

Training for providers

A small number of papers (k=6) reported training for providers of interventions (Eskici et al., 2021; Goninon et al., 2020; Eichfeld et al., 2019; James & Noel., 2013; Gibson et al., 2021; Bahu., 2019). Papers discussed how training allowed facilitators to ascertain treatment fidelity and to understand the cultural needs of participants. Of these six papers, four studies (Eskici et al., 2021; Goninon et al., 2020; Eichfeld., 2019; Bahu., 2019) involved providers who were mental health professionals, and the remaining two studies involved 'non-specialist' peer lay workers (James & Noel., 2013; Gibson et al., 2021). Only two papers reported the time spent devoted to training providers (e.g., 1 week training course, Eskici et al., 2021; 3 months of training, Goninon et al., 2020) with the remaining papers not providing this information. It is also unclear what training included, details of any models or theories underpinning this, as well as who provided the training as only one paper reported this detail (Eskici et al., 2021). This included training on basic helping skills, psychological first aid, mitigating challenges in group therapies and ensuring fidelity to the intervention protocol.

Stigma

Three papers explicitly referred to addressing stigma within interventions (Jalal et al., 2020; Hammad., 2020; Bahu., 2019). Examples of spirituality were referenced to address cultural stigma in one paper (e.g., trauma believed to be a sign of spirit possession, Jalal et al., 2020). Another paper details how labelling the intervention as a "non-mental health intervention" was important to tackle the stigma and shame often attached to trauma in Muslim communities (Hammad., 2020). Collective discussions between participants around addressing stigma were also utilized (e.g., harnessing the knowledge of the community to overcome stigma, Bahu., 2019).

Intervention effects

A total of seven RCTs (Vera et al., 2022; Hinton et al., 2011; Jalal et al., 2020; Eskici et al., 2021; Pearson et al., 2019; Hinton et al., 2004; Hinton et al., 2005) were included in the meta-analysis to evaluate the effectiveness of culturally-adapted trauma interventions on PTSD severity. Five trials looked at PTSD with co-morbid depression outcomes (Vera et al., 2022; Hinton et al., 2011; Jalal et al., 2020; Latif et al., 2021; Hahm et al., 2019). Co-morbid anxiety outcomes were also reported in five trials (Vera et al., 2022; Hinton et al., 2011; Jalal et al., 2020; Hinton et al., 2004; Hinton et al., 2005).

Of all the RCTs included in the meta-analyses, five RCTs utilized waitlist control comparisons (Latif et al., 2021; Pearson et al., 2019; Hahm et al., 2019; Hinton et al., 2004; Hinton et al., 2005), three used active treatment controls (Vera et al., 2022; Hinton et al., 2011; Jalal et al., 2020) and one study (Eskici et al., 2021) used treatment as usual as a comparator. It is worth noting that for the three trials that used active treatment controls all three utilized applied muscle relaxation.

Meta-analyses results comparing culturally-adapted intervention groups with all controls for outcomes on PTSD severity showed the former more effective in ameliorating PTSD

symptoms at post-intervention (7 RCTs, n=213, SMD -0.67, 95% CI -1.06 to -0.25, I^2 =39%). Figure 2 presents the forest plot on PTSD severity at post intervention. Less studies reported outcome results at a 3-month follow-up timepoint, and the meta-analysis results found the post-intervention effects on PTSD symptoms no longer sustained (4 RCTs, n=175, SMD -0.38, 95% CI -0.93 to 0.18, I^2 = 67%) (see Supplementary materials). [INSERT FIGURE 2 HERE]

Findings comparing culturally-adapted interventions targeting depression severity outcomes showed no significant effect at post intervention (5 RCTs, n=206, SMD -1.07, 95% CI -2.25 to 0.11, I^2=92%). No follow-up data was available on depression outcomes.

Culturally-adapted interventions were found to be superior in reducing anxiety symptoms when compared to control groups at post intervention (5 RCTs, n=168, SMD -1.92, 95% CI -3.18 to -0.67, I^2 =89%). Figure 3 presents a forest plot on anxiety severity at post intervention. A fixed effect meta-analysis was run for anxiety severity at 3 month follow up and no significant difference in effects on anxiety severity was found between culturally-adapted interventions and controls (3 RCTs, n=130, SMD -0.26, 95% CI -0.79 to 0.28, I^2=53%) (see Supplementary materials). [INSERT FIGURE 3 HERE]

It is worth noting that high levels of heterogeneity were found in the comparisons on depression and anxiety symptom severity outcomes listed above (I^2>75%). High heterogeneity may be accounted for by differences in populations (e.g., some trials targeted same-gender participants), others included varied participants exposed to different trauma experiences. Intervention modalities between trials also differed as detailed in intervention characteristics above.

Effectiveness results from non-RCTs

Six quantitative intervention papers and one mixed methods paper which measured PTSD severity did not use a RCT design (Galano et al., 2021; Goninon et al., 2020; Eichfeld et al., 2019; James & Noel., 2013; Gibson et al., 2021; Kananian et al., 2017) or included no comparable group (Bahu., 2019),

Consistent with the meta-analysis results, all these intervention papers (k=7) reported a reduction in PTSD symptoms immediately post-intervention for groups receiving culturally-adapted interventions. Four of these papers (Goninon et al., 2020; James & Noel., 2013; Gibson et al., 2021; Bahu., 2019) reported a statistically significant reduction in PTSD symptoms at post-intervention ($p<.05$). Little data was reported on co-morbid anxiety and depression severity or follow up data across non-RCT study designs.

Participant experiences

In terms of participant experiences of adapted trauma interventions, two studies explored this using mixed methods (Hammad., 2020; Bahu., 2019) and one further study using a qualitative design (Fernandes & Aiello., 2018). The qualitative study involved reflective experiences in a therapy group. No papers explored experiences of adapted trauma assessments.

Two of the intervention papers included target populations from refugee groups; one paper (Fernandes & Aiello., 2018) focused on an adapted intervention to support male refugee survivors of rape and torture, and the other paper (Bahu., 2019) focusing on trauma related to forced migration among Tamil refugee and asylum-seeking groups. Participants reported positive benefits from attending the interventions, particularly reporting reduced shame related to trauma following attendance, as well as more confidence navigating the refugee and immigration process. Qualitative data highlighted how stigma and shame had previously impacted participants help-seeking behaviors as well as knowledge around trauma and mental

health, and how adapted interventions had positively changed attitudes towards therapy and accessing support. Attendees of the interventions reported how these experiences helped retain engagement with the intervention, and one paper (Bahu., 2019) reported the potential influence on low dropout rates.

As the interventions were delivered in the local language held by participants either through translated materials or the use of language interpreters, participants reported benefits to this in helping engagement with interventions. In all three studies, group discussions encompassed spiritual and religious aspects to promote reflection amongst participants with references to prophetic stories or culturally understood parables. Qualitative data in one paper (Bahu., 2019) showed these techniques and approaches as beneficial in establishing a sense of cultural and collective identity following on from trauma, while the incorporation of faith and spirituality helped validate participants' experiences and manage shame effectively.

Discussion

This study is the first systematic review focusing on outcomes and experiences of culturally-adapted assessments and varied treatments for trauma experiences among racial and ethnic minority groups. Several adaptation methods were found in this review, which included integration of socio-cultural considerations, collaboration, psychoeducation, language, cultural matching, addressing stigma, training for providers and practical considerations. Little adaptations to assessments for trauma were found in the literature. Culturally-adapted interventions can reduce PTSD symptom severity immediately post-intervention among adults from racial and ethnic minority groups. Positive feedback was found among participants engaging in adapted interventions, and noted benefits were in help-seeking behaviors for trauma and mental health. Table 3 summarizes the critical findings of this review.

INSERT Table 3 here.

Results from the meta-analyses showed significant effects of a reduction of PTSD symptoms at post intervention for adapted interventions, however a lack of follow up data makes it difficult to know if results were sustained over longer periods of time. Meta-analysis results suggest slightly beneficial effects on reducing anxiety severity more so than depression severity for adapted interventions. Non-RCT papers which were not included in the meta-analyses mostly reported statistically significant reductions in PTSD severity among participants which looks promising. These interventions should be further tested in randomized controlled designs to offer more conclusive understandings of intervention effects for these adapted treatments. Of the small number of non-RCT papers which reported positive intervention effects on PTSD symptoms, albeit not statistically significant among small sample sizes of participants, caution is advised interpreting these findings. Indeed, further evaluation would be beneficial to test these interventions with greater sample sizes and controlled conditions. Future research should also report a more detailed exploration of participant's experiences of adapted interventions, given only a handful of papers exploring this in this review.

A number of papers in the review focused on targeted interventions to support refugee and asylum-seeking populations. In line with prior literature, targeted interventions that seek to address the psychosocial needs of populations impacted by war, conflict and persecution hold many benefits (Turrini et al., 2019). Whilst experiences of trauma among these populations is likely to vary (e.g., post displacement trauma, fear of persecution), this review shows adapting trauma interventions to focus on somatic and sensorial elements of trauma symptoms can cater to the diverse needs of refugee populations with trauma. Additionally, Western diagnostic labels, language, ideas, and beliefs are encouraged to be avoided. Health systems of care offered to refugees may also benefit from specialized treatments available and offered within existing community networks accessed by refugees (e.g., shelter homes).

Indeed, health services and humanitarian agencies provisioned to support refugees and asylum-seeking populations would ideally involve collaborative, multi-agency input to account for the complex and varied needs of these populations as discussed (e.g., housing, health, legal support, etc.). Whilst psychosocial interventions aimed to address trauma among refugee and asylum-seeking populations are necessary, simultaneously challenging oppressive systems and the socio-political contexts that often lead to trauma (e.g., systemic violence, ethnic conflict, or war) is also as important.

Integrating sociocultural considerations into the design and facilitation of interventions and assessments were the most reported adaptations found in this review. Several studies in prior literature have argued that Western centered beliefs can often dominate models of evidence-based psychotherapy and treatment (Rathod & Kingdon, 2009; Koç & Kafa, 2019). This argument in theory justifies how culturally-adapted interventions should incorporate the local cultural and social experiences of populations into interventions in a way to understand, validate and work alongside the cultural needs of those accessing mental health services. In line with reviews that have adapted interventions to target depressive and anxiety disorders (Chowdhary et al., 2014; Vally & Maggott, 2015; van Loon et al., 2013), this often includes reference to culturally understood metaphors, analogies, and imagery to support therapeutic intervention. In this review, parables, culturally understood stories or folklore, imagery and metaphors all had benefits in assisting with psychoeducation of trauma symptoms, to aid in treatment activities such as breathing or relaxation work, as well as to address mental health stigma and shame among these populations. Emotion regulation and distress tolerance skills were supported using local philosophy (e.g., drawing on Asian philosophy, Buddhism) and mindfulness practices to help ground participants with trauma. In addition, various cultures will hold specific beliefs and ideas about how and why trauma may occur in individuals which may be rooted through religious means. Framing interventions that capture the local

explanatory models of illness could therefore be a way to culturally ground interventions and have practical use in facilitating interventions with religious groups. Further, different cultural groups will have varied methods of relieving distress associated with trauma. This review shows how treatment activities that include local cultural practices to promote coping strategies may be of therapeutic use here, such as addressing coping methods such as prayer, or collectivist cultures accessing supportive methods through community systems.

Several intervention papers in this review reported advantages to culturally matching participants with facilitators with regards to demographic characteristics, often ethnicity and gender. Prior research has produced mixed findings with regards to the utility of ethnic or racial matching of facilitators of interventions and service users, with two meta-analyses suggesting cultural matching does not impact treatment engagement or outcomes (Shin et al., 2005; Cabral & Smith, 2011), and some studies reporting clinical use of cultural matching (Flicker et al., 2008; Horst et al., 2012). What is clear though amongst prior research, is that patient preferences for cultural matching are somewhat higher for some racial groups such as African Americans (Cabral & Smith, 2011). In this review, a large proportion of papers that involved cultural matching included target populations who had experienced interpersonal violences such as sexual assault and rape. Perhaps here on a contextual level, reported benefits in this review may relate to a sense of rapport through matching that captures the racialized and gendered elements of sexual trauma; whether elements of trust and safety may in fact be easier to build on through cultural matching. This becomes more apparent given the known impact experiencing interpersonal violence can have on trauma victims trusting others (Gobin & Freyd, 2014) and navigating relationships (Bell et al., 2019). This may not be as important in the prior literature which includes findings from varied service user populations who may or may not have been exposed to trauma or sexual violence.

Of note, all service providers which were culturally matched with service users in this review did report access to clinical or case management supervision for facilitators. Important factors that underpin this decision for service providers to culturally match groups therefore must include careful consideration to the nature of trauma, cultural group, patient choice, and access to effective, culturally relevant supervision for providers. On an organizational level, an argument can be made here to therefore increase racial diversity amongst staff offering care in trauma services to ensure cultural matching can be met or at least be considered should patients prefer and request this.

Several interventions in the review were facilitated through group work by peer lay workers. NICE guidance does reference peer support to compliment treatments of PTSD (NICE, 2018). The empirical literature has cited many benefits of peer support in supporting service users with mental health needs and has become a rapidly growing area of interest for clinical services to implement peer support among services (Repper & Carter, 2011). Given that experiencing trauma can disconnect individuals from others (Dorahy et al., 2009) and additionally induce a lack of belonging felt amongst victims (Ellis et al., 2015), utilizing group methods facilitated through peer support may be a strong therapeutic resource. It is possible that trained peer lay workers that were included in this review with lived experience of the needs of target populations who benefited from interventions, shows some support to the importance of group-based peer support in the therapeutic management of trauma.

Future research should detail the relative experiences of adapted interventions to infer greater knowledge of which aspects of interventions improve engagement and treatment completion. Whilst many papers included in this review reported successful findings in achieving a reduction in PTSD and trauma symptoms amongst participants, crucially also understanding the subjective experiences of users would only compliment future research and findings.

Additionally, it is difficult to explore potential mechanisms of change with such small relevant evidence and compare wider experiences of care in this review. It is therefore recommended that future research would benefit from inferring in greater detail the participant experiences of adapted interventions through further qualitative analysis methods, complemented with robust, RCT designs over longer follow up periods. The lack of follow up and downstream outcome data (e.g., social functioning, relationships) across most intervention papers in this review means it is difficult to explore whether intervention effects are sustained or extended to clinically meaningful difference (e.g., better quality of life, functioning) over time, a crucial factor to determining effectiveness of psychosocial interventions. Only three papers included in this review focused on cultural adaptations to the assessment of trauma among racial and ethnic minority groups, and few studies explored CPTSD and complex trauma experiences among racial and ethnic minority groups. Assessments for trauma that lack cultural sensitivity may inadvertently neglect or misinterpret the unique challenges racial groups face when addressing their trauma needs in services. As identified in this review, assessment methods that do not capture culturally specific explanations or expressions for trauma such as acknowledging spiritual explanations to trauma, risks overlooking the cultural needs of service users and may contribute to feeling misunderstood by services, a common experience reported by racial groups (Taylan & Weber., 2023). This not only may strengthen mistrust towards healthcare providers, but inappropriate assessments may also worsen the distress individuals are already facing, and risk further iatrogenic harm from services (Faulkner et al., 2021). This largely justifies the vital research need for empirical work in this area. See Table 4 for implications for practice, policy, and research.

INSERT Table 4 HERE.

Limitations

Whilst there are many strengths to conducting this mixed methods review, limitations of this review exist. Interventions and assessments included in the review were developed to address different target population groups. The depth and content of the cultural adaptation processes therefore may differ between groups, due to the commonalities and differences of cultural needs across varied populations groups. This additionally exposes potential challenges when comparing diverse cross-cultural studies in a meta-analysis. We also were only able to review papers published in peer-review journals, reducing the scope for finding suitable material in grey literature. It is possible that information existent within the grey literature may have included applications of adapted interventions which may have been useful for the review.

Conclusion

The evidence base showcasing the effectiveness and experiences of culturally-adapted trauma assessments and interventions remains small. This systematic review aims to add evidence to the empirical literature addressing prior gaps and methodological limitations. Results from this review highlight the importance of tailoring interventions and assessments of trauma for specific racial and ethnic minority groups. Future research should test intervention effects over longer follow up periods for further conclusive findings around the sustainability of interventions to address trauma outcomes. Research should ensure guidance on adaptation processes is detailed for greater reciprocity of findings, and further studies exploring experiences of interventions or assessments is recommended.

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