SSM - Mental Health 8 (2025) 100540

Contents lists available at ScienceDirect

SSM - Mental Health

journal homepage: www.journals.elsevier.com/ssm-mental-health

Review

Mindfulness-based interventions for mental health in refugee and migrant populations: A scoping review

Alexis Harerimana [a,b,*], Julian David Pillay [a], Gugu Mchunu [a]

[a] Faculty of Health Sciences, Durban University of Technology, Durban, South Africa
[b] College of Healthcare Sciences, James Cook University, Townsville, Australia

ARTICLE INFO

Handling Editor: Prof B Kohrt

Keywords:
Mindfulness-based intervention
Mental health
Refugee and migrant

ABSTRACT

Background: The mental health of refugees and migrants is a critical concern, as they often endure high levels of trauma and stress resulting from war, displacement and the challenges associated with resettlement. Mindfulness-based interventions (MBIs) have gained significant traction for their efficacy in enhancing mental health, mitigating stress and promoting wellbeing among the refugee and migrant population.

Aim: This scoping review aimed to assess the existing evidence on MBIs for mental health in refugee and migrant populations, highlighting their effectiveness, benefits and implementation challenges.

Methods: Following the Levac et al. framework, the following databases were systematically searched: CINAHL, Cochrane Central, Emcare, Medline, PsycInfo, Scopus, Web of Science, Google and Google Scholar—covering literature published between 2014 and 2024. Twenty-one studies were included in the final data extraction and thematic analysis, consisting of 13 qualitative studies, five quantitative studies, and three mixed-methods studies.

Results: Across various settings and countries, MBIs demonstrated significant benefits. In Israel, studies indicated that MBTR-R significantly reduced symptoms of PTSD ($F = 12.44$, $\eta^2 = .17$, $p = .001$), re-experiencing ($F = 9.76$, $\eta^2 = .14$), and hyperarousal ($F = 23.93$, $\eta^2 = .29$), increased self-compassion (.77 → .83) and decreased self-criticism (.47 → .39). In the United States, MTPC enhanced emotion regulation ($\beta = -12.98$, $d = -.59$), self-compassion ($\beta = .50$, $d = .72$), and self-efficacy ($\beta = 2.03$, $d = .97$). In Türkiye, the self-esteem of pre-schoolers increased from 25.63 to 40.89 ($\eta^2 = .49$). In Uganda, adolescents experienced a reduction in depressive symptoms by 10.72 points ($p < .0001$). In Australia, a community-based MBI led to a decrease in depression scores from 9.2 to 4.2 ($z = -8.48$). Collectively, this review's findings suggest that MBIs significantly improve the mental health of migrants and refugees. However, the effectiveness of MBIs implementation was hindered by limited resources, cultural and language barriers, insufficient facilitator training, and a lack of institutional support.

Conclusion: Despite implementation challenges, MBIs remain a promising and effective approach to mental health care for refugees and migrants. Future studies should focus on creating culturally appropriate interventions and assessing the long-term effects of MBIs on the mental health of displaced populations.

1. Background

The mental health of refugees and migrants is a critical issue due to elevated trauma and stress from war, displacement, and resettlement challenges (Carroll et al., 2023; Kemmak et al., 2021; Turrini et al., 2025; Verhülsdonk et al., 2021). This population is at increased risk for mental health disorders, notably post-traumatic stress disorder (PTSD) and depression, anxiety, suicidal behaviour, and psychosis resulting from exposure to multiple traumatic events during and preceding their migration (Budde et al., 2018; Bustamante et al., 2017; Verhülsdonk et al., 2021; WHO, 2025; Wilker et al., 2020). Simultaneously, migrants and refugees encounter considerable obstacles to accessing mental health care, such as limited availability of services, cultural and linguistic differences, and interruptions in continuity of care (WHO, 2025). To address these risks and enhance resilience, psychological and mindfulness-based interventions (MBIs) are increasingly recognised for their effectiveness (Aizik-Reebs et al., 2021; Purgato et al., 2025; Zoellner et al., 2024). MBIs focus on mindfulness—non-judgmental

* Corresponding author. Health Sciences, Durban University of Technology, Durban, South Africa.
E-mail address: alexis.harerimana@my.jcu.edu.au (A. Harerimana).

https://doi.org/10.1016/j.ssmmh.2025.100540
Received 3 March 2025; Received in revised form 30 September 2025; Accepted 1 October 2025
Available online 6 October 2025

awareness of present experiences—integrating practices from various psychological and philosophical traditions (Jeebodh-Desai and Dwarika, 2022; Kalmanowitz, 2016). Mindfulness programs teach individuals a new approach to managing their thoughts and feelings (Shapero et al., 2018). Rather than becoming overwhelmed by worries or negative narratives, participants learn to observe, label, and allow these thoughts to pass (Caswell et al., 2022; Charness et al., 2024)—much like clouds drifting across the sky. Over time, this practice cultivates the skill of stepping back—often referred to as awareness or decentering—making thoughts feel less overwhelming and more objective (Baer, 2003; Hayes-Skelton and Graham, 2013; Shapero et al., 2018).

Multiple MBIs have been tailored for refugee and migrant populations, including mindfulness-based trauma recovery for refugees (MBTR-R) (Aizik-Reebs et al., 2021, 2022; Oren-Schwartz et al., 2023), mindfulness-based stress reduction (MBSR) (Alvarado-Segovia and Ruiz-Gallegos, 2025; Jiwattanasuk et al., 2024; Teixeira-Santos et al., 2023), mindfulness-based cognitive therapy (MBCT) (Alvarado-Segovia and Ruiz-Gallegos, 2025; Wang et al., 2025), and mindfulness-based creative art expressive therapy (MBCAET) (Alvarado-Segovia and Ruiz-Gallegos, 2025). Furthermore, there is also mindfulness training for primary care (MTPC) (Gawande et al., 2023), preschool refugee mindfulness program (Kuru et al., 2024), acceptance and mindfulness-based group intervention (Musanje et al., 2024), intensive MBI vs. CBT comparative trial (Mubarak, 2023), mindfulness-based cognitive therapy with spiritual adaptation (MBCT-Dual) (Fortuna et al., 2023), and CALD mindfulness program (Blignault et al., 2021a, 2021b, 2023). MBIs employ structured techniques like meditation, body scans, and mindful breathing to promote emotional regulation and acceptance, which are vital for addressing trauma and stress-related disorders (Kalmanowitz, 2016).

Effectiveness and acceptability of psychosocial interventions, including MBIs, vary among migrant subgroups (Cadorin et al., 2024). A mixed-methods review of 102 studies ($n > 8900$) revealed high acceptability, characterised by low dropout rates (16.9 %) and strong attendance (84.1 %). Participants preferred flexible, body-focused, and culturally sensitive interventions (Anderson, 2025). Engagement improved when programmes were conducted in participants' native languages by culturally competent facilitators, although barriers like transportation, relocation, and stigma hindered participation (Anderson, 2025). Group-based approaches for adolescents, emphasising peer connection and creative expression, were particularly effective (Hettich et al., 2020). Community-delivered MBIs demonstrated strong feasibility and uptake when tailored to cultural and linguistic contexts (Blignault et al., 2021a).

Evidence on the effectiveness of psychosocial interventions remains mixed and context-dependent. Community-based MBIs have shown significant reductions in stress, anxiety, and depression, along with increased referrals to broader health services, indicating their potential as scalable, low-cost solutions (Blignault et al., 2021a). Systematic reviews report improvements in psychological distress and functioning, though study quality is variable (Cowling and Anderson, 2023). Early psychosocial interventions within the first year of resettlement were associated with reductions in PTSD, depression, and anxiety, alongside improvements in life satisfaction and integration (Hettich et al., 2020).

Despite positive outcomes, several implementation challenges limit the overall effectiveness of MBIs and psychosocial interventions. Methodologically, many studies utilise small sample sizes, short follow-up periods, and heterogeneous designs, reducing generalisability (Nocon et al., 2017). Inconsistent intervention fidelity and training quality, particularly with minimally supervised lay facilitators, undermine reliability (Nocon et al., 2017). Structural and contextual barriers pose significant obstacles. Refugees face unstable housing, precarious legal statuses, and competing survival needs, disrupting continuity and long-term outcomes (Anderson, 2025). Practical barriers, including transportation and scheduling issues, further impede attendance and engagement (Anderson, 2025). While remote delivery methods such as phone or online sessions can mitigate logistical challenges, they require careful planning and resources for inclusivity (Simmons et al., 2019). Limited availability of qualified instructors and inconsistent scheduling negatively impact attendance and programme continuity (Simmons et al., 2019).

Cultural and linguistic mismatches present additional challenges for implementation. Although mindfulness is rooted in Eastern traditions, its adaptation for refugee populations necessitates cultural sensitivity. Some participants have found mindfulness practices lengthy, repetitive, or incongruent, leading to disengagement (Anderson, 2025). Language barriers complicate delivery, requiring translation and adaptation of materials to contexts like temporary housing (Rzepka et al., 2024). Poorly adapted interventions can even exacerbate distress (Nocon et al., 2017). These implementation challenges underscore the need for tailored, culturally sensitive, and logistically feasible MBIs that are well-resourced and supported. Customisation to diverse refugee experiences, ongoing facilitator supervision, and sustained support systems are critical for maximising effectiveness (Blignault et al., 2021a; Rzepka et al., 2024; Simmons et al., 2019).

Despite implementation challenges, culturally adapted MBIs have demonstrated notable promise. A randomised controlled trial involving rural-to-urban migrant children in China found that community-based MBIs led by trained volunteers were both feasible and effective (She et al., 2023). Programmes for Arabic- and Bangla-speaking migrants achieved high completion rates (80 %) and significant improvements in standardised mental health outcomes (Blignault et al., 2021a). A European scoping review found that interventions addressing structural inequities—such as discrimination and language barriers—were most effective when grounded in strong theoretical frameworks, systematic cultural adaptation, and participatory strategies (Apers et al., 2023). Additionally, arts, music, and sports-based initiatives yielded positive outcomes for migrant youth across various contexts (Heyeres et al., 2021).

Further empirical research supports the efficacy of MBIs in alleviating mental health conditions such as PTSD, depression, and anxiety among refugees (Aizik-Reebs et al., 2022; Baluku et al., 2023). Programmes like MBTR-R have been shown to reduce PTSD symptoms and functional impairments (Aizik-Reebs et al., 2021, 2022). MBIs also enhance wellbeing, mood, and happiness while alleviating stress, anxiety, and depression (Baluku et al., 2023). Furthermore, mindfulness fosters self-compassion, openness, and other traits linked to life satisfaction (Baluku et al., 2023). In high-stress humanitarian contexts, MBSR has proven particularly valuable for preventing burnout and promoting emotional stability (Halady and Cook-Cottone, 2023). This scoping review aimed to assess the existing evidence on MBIs for mental health in refugee and migrant populations, highlighting their effectiveness, benefits, and implementation challenges.

2. Methodology

This scoping review adhered to the methodological framework established by Levac et al. (2010). The process consisted of five stages: (1) identifying research questions, (2) identifying relevant studies, (3) selecting studies, (4) charting data, (5) collating, summarising and reporting results. Each stage is outlined below.

2.1. Stage 1: identifying research questions

The research questions were formulated to guide this review, focusing on MBIs for refugee populations. The questions are as follows:

- What types of MBIs have been implemented among refugee and migrant populations?
- What mental health and psychosocial outcomes have been measured in studies of MBIs for refugees and migrants, and which tools or instruments have been used to assess these outcomes?

- What is the effectiveness of MBIs in improving mental health and psychosocial outcomes among refugee and migrant populations?
- What are the reported benefits and implementation challenges of MBIs among refugee and migrant populations?

2.2. Stage 2: identifying relevant studies

A comprehensive search strategy was developed to identify relevant literature. Multiple electronic databases were systematically searched, including CINAHL, Cochrane Central, Emcare, PsycINFO, Medline, Scopus and Web of Science. Additional sources were identified through manual searches in Google Scholar and by examining the reference lists of included studies and relevant grey literature, such as reports from non-governmental organisations and policy documents. The search strategy utilised a variety of terms related to mindfulness-based interventions, such as mindfulness, mindful, mindfulness-based, mindfulness training, mindfulness program, MBI, MBCT (Mindfulness-Based Cognitive Therapy), and MBSR (Mindfulness-Based Stress Reduction). To capture literature regarding mental health outcomes, terms like mental health, psychological wellbeing, emotional wellbeing, well-being, psychological distress, mental disorders, psychiatric conditions, depression, depressive symptoms, anxiety, stress, trauma, and PTSD were included. For studies involving the target populations, the search encompassed terms such as refugees, asylum seekers, migrants, immigrants, emigrants, displaced persons, internally displaced persons (IDPs), forcibly displaced, stateless persons, undocumented migrants, humanitarian migrants, resettled populations, and diaspora. These terms were combined using Boolean operators (AND, OR), truncation (anxi*, depress*, migrant*, mindful*), and database-specific syntax to ensure a thorough and inclusive search of the relevant literature. Below

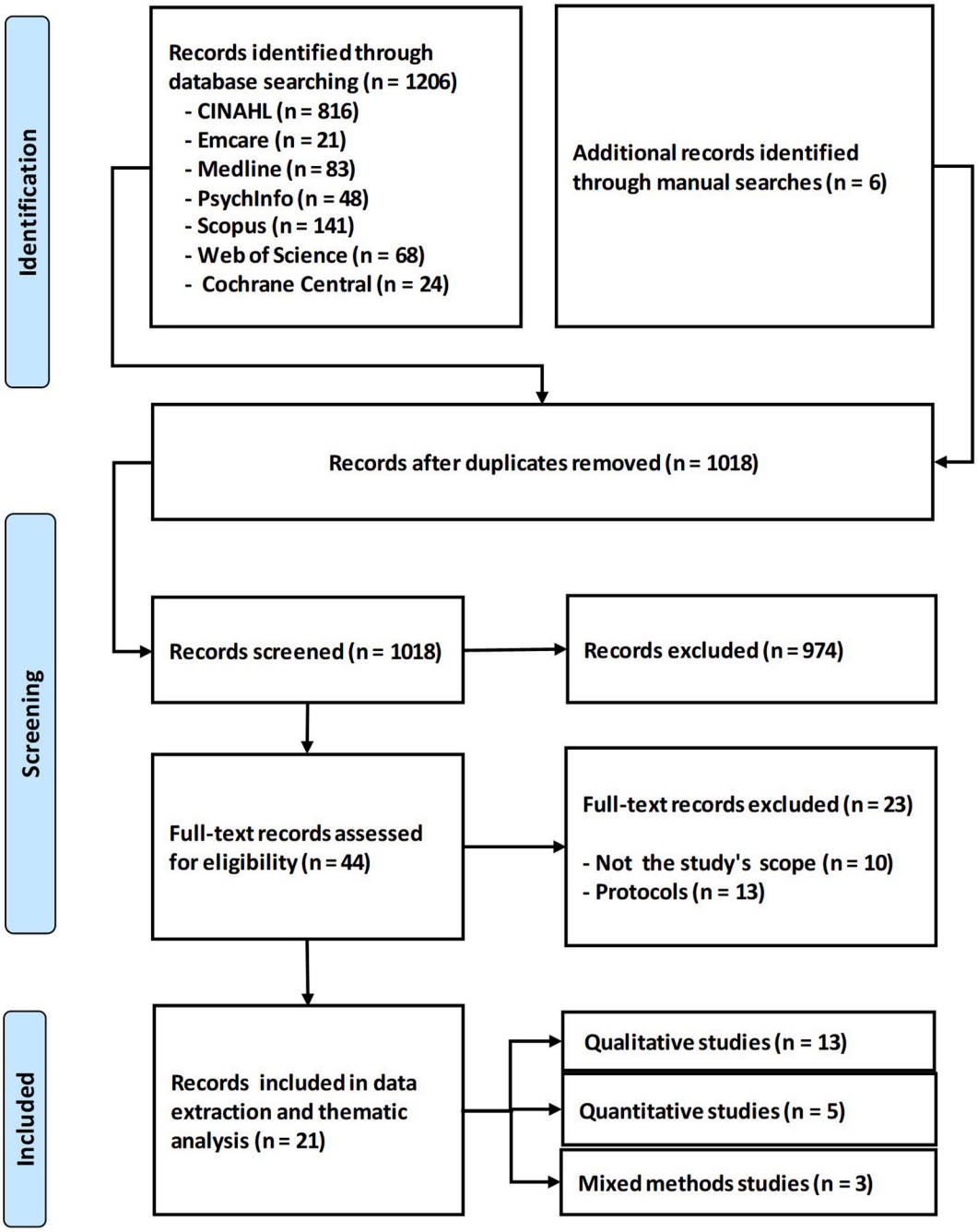

Fig. 1. PRISMA Flow diagram.

is an example of a Boolean search string used in this review:

- **S1**: MH "Mindfulness" OR Mindful* OR "mindfulness-based" OR "mindfulness-based intervention*" OR "mindfulness program*" OR "mindfulness training" OR MBI* OR MBCT OR MBSR OR intervention* OR program* OR training
- **S2**: "Mental Health"[Mesh] OR "Mental Disorders"[Mesh] OR "Stress, Psychological"[Mesh] OR "Depressive Disorder"[Mesh] OR "Anxiety Disorders"[Mesh] OR "Post-Traumatic Stress Disorders"[Mesh] OR "mental health"[tiab] OR wellbein*[tiab] OR depress*[tiab] OR anxi*[tiab] OR stress[tiab] OR PTSD[tiab]
- **S3**: "Refugees"[Mesh] OR "Emigrants and Immigrants"[Mesh] OR "Transients and Migrants"[Mesh] OR "Asylum Seekers"[Mesh] OR "Displaced Persons"[Mesh]
- **S4: S1 AND S2 AND S3**

2.3. Stage 3: selecting studies

Eligible study designs included quantitative, qualitative and mixed-methods studies. Furthermore, the research questions guided the selection of relevant studies. Only studies published in English from 2014 to 2024 were included to reflect contemporary applications of MBIs. Exclusion criteria involved studies focusing on non-refugee or non-migrant populations, interventions unrelated to mindfulness, or articles lacking empirical data.

The PRISMA flow diagram (Fig. 1) describes the identification, screening, and selection of studies for this scoping review. A total of 1212 records were identified, including 1206 through database searches (CINAHL = 816, Emcare = 21, Medline = 83, PsycInfo = 48, Scopus = 141, Web of Science = 68, Cochrane Central = 24) and 6 through manual searches. After removing 194 duplicates, 1018 unique records were screened. Of these, 974 were excluded at the title and abstract stage. Forty-four full-text articles were assessed for eligibility, with 23 excluded—10 not within the study scope and 13 protocols. Ultimately, 21 studies met the inclusion criteria and were retained for data extraction and thematic analysis, comprising 13 qualitative studies, five quantitative studies, and three mixed-methods studies.

Titles and abstracts were first screened by two reviewers, comprising the researcher and a reviewer familiar with systematic reviews. This was followed by a comprehensive full-text assessment of studies that met the eligibility criteria. Any discrepancies between the reviewers were resolved through consensus. To ensure transparency and replicability, the reasons for excluding studies at the full-text stage were systematically documented. The Mixed Methods Appraisal Tool (MMAT) was used to evaluate the methodological quality of the studies included in the scoping review, including qualitative research, randomised controlled trials, non-randomised quantitative studies, quantitative descriptive designs, and mixed-methods approaches (Hong et al., 2018). Each study was categorised into one of the MMAT's five methodological domains, ensuring the application of relevant appraisal criteria for each design. Subsequently, each study underwent independent evaluation against the five design-specific criteria provided by the MMAT. Reviewers recorded one of three responses for each criterion: "Yes" (criterion met), "No" (criterion not met), or "Can't tell" (insufficient information) (Hong et al., 2018). Although no studies were excluded on the basis of methodological quality, the MMAT assessments were utilised to systematically identify and articulate the methodological strengths and limitations of the existing evidence on MBIs for mental health in refugee and migrant populations.

2.4. Stage 4: charting data

In the fourth stage, charting the data was essential for organising and synthesising information from the included studies (Levac et al., 2010). Data extraction utilised a standardised charting form and extracted data included study details (author, year, location), study aims, population, study design, intervention and key findings. Table 1.

2.5. Stage 5: collating, summarising and reporting results

This stage involved collating and synthesising findings, summarising evidence into main themes and presenting them to highlight their significance (Levac et al., 2010). Common themes regarding interventions, their impacts and implementation challenges were identified. Findings were discussed in relation to the research questions to enhance transparency and rigour. Documenting the results was in line with the PRISMA-ScR guidelines (Tricco et al., 2018).

3. Results

3.1. Study characteristics

Of the 21 studies included in this review, quantitative methods were the most prevalent (n = 13), followed by qualitative studies (n = 5), with mixed methods—combining both quantitative and qualitative approaches—used in only a few cases (n = 3). This distribution highlights a strong reliance on quantitative methods, while qualitative and mixed-methods designs were employed less frequently. Geographically, Israel, Uganda, and the USA each hosted four studies, collectively accounting for more than half of the total. Australia contributed three studies and Hong Kong two studies, while Türkiye, Belgium, Jordan, and a combined study from Kuwait and Türkiye each contributed one.

3.2. Mindful-based interventions

This review identified several MBIs interventions across the included studies. These interventions were: mindfulness-based trauma recovery for refugees (MBTR-R) (Aizik-Reebs et al., 2021, 2022; Amir et al., 2024), mindfulness training for primary care (MTPC) (Gawande et al., 2023), preschool refugee mindfulness program (Kuru et al., 2024), acceptance and mindfulness-based group intervention (Musanje et al., 2024), intensive MBI vs. CBT comparative trial (Mubarak, 2023), mindfulness-based cognitive therapy with spiritual adaptation (MBCT-Dual) (Fortuna et al., 2023), CALD mindfulness program (Blignault et al., 2021a, 2021b, 2023), mindfulness program for unaccompanied minors (Van der Gucht et al., 2019) and Inhabited Studio (Art therapy and mindfulness integration) (Kalmanowitz, 2016; Kalmanowitz and Ho, 2016). Table 1 provides an overview of each intervention, such as characteristics and duration. Furthermore, Tables 2 and 3 provide further details on the MBIs, such as intervention name, design, outcome measured, tools or instruments used and effectiveness of the interventions. MBIs included both randomised controlled trials (RCTs) and non-randomised designs, such as pilot studies, implementation studies, and comparative trials. This methodological diversity highlights the different stages of intervention development and the necessity for both efficacy and real-world feasibility assessments across various populations and settings.

3.3. Outcomes and measurement tools

Across the reviewed studies, a comprehensive range of clinical, psychosocial, cognitive, and functional outcomes were assessed using validated instruments (Tables 2 and 3). PTSD symptoms served as a primary outcome in multiple RCTs and pilot studies. Aizik-Reebs et al. (2021) and Aizik-Reebs et al. (2022) employed the Harvard Trauma Questionnaire (HTQ) to evaluate PTSD in African asylum seekers in Israel, while Amir et al. (2024) incorporated the HTQ alongside the Modified Sternberg Task for assessing trauma-threat-related cognitive control. Van der Gucht et al. (2019) utilised the Children's Revised Impact of Events Scale (CRIES) to evaluate unaccompanied refugee minors, and Fortuna et al. (2023) measured PTSD symptoms using the Child PTSD Symptom Scale (CPSS) in Latinx immigrant youth. Mubarak

Table 1
Summary of the findings.

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
Aizik-Reebs et al. (2021), Israel	Evaluate the efficacy and safety of a novel mindfulness-based intervention, Mindfulness-Based Trauma Recovery for Refugees (MBTR-R), specifically designed for refugees and asylum seekers.	158 Eritrean asylum seekers residing in an urban postmigration setting in Israel	Quantitative (Randomized Control Trial)	– Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) was a nine-session group intervention tailored for refugees and asylum seekers. – Each 2.5-h session involved formal and informal mindfulness practices adapted for trauma-sensitivity. – The program included psychoeducation on trauma-related mental health and taught self-compassion practices to help with emotional challenges.	– The Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) intervention demonstrated significantly reduced rates and symptom severity of posttraumatic stress disorder (PTSD), depression, anxiety, and multimorbidity among participants compared to the waitlist-control group at post-intervention and 5-week follow-up. – Therapeutic effects of MBTR-R were not influenced by key demographics, trauma history severity, or postmigration living difficulties. – There was no evidence of adverse effects or clinically significant deterioration in monitored mental health outcomes during the intervention.
Aizik-Reebs et al. (2022), Israel	Examine the role of self-compassion and self-criticism as mechanisms of action in the Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) intervention.	158 participants, with 46.2 % being women.	Quantitative (A single-site randomized control trial design)	– Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) was a group intervention tailored to refugees and asylum-seekers. – It integrated mindfulness, compassion-based methods, trauma sensitivity, and socio-cultural adaptations. – MBTR-R included nine sessions, each lasting 2.5 h. – The sessions focused on systematic training in formal and informal mindfulness practices. – They also included loving-kindness and self-compassion exercises.	– Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) demonstrated significant therapeutic efficacy and safety for trauma recovery among refugees and asylum-seekers. – The study found that self-compassion and self-criticism were associated with trauma- and stress-related psychopathology at preintervention. – Participants in the MBTR-R group showed a significant elevation in self-compassion and a reduction in self-criticism from pre to post-intervention compared to wait-list controls. – The change in self-criticism from pre to postintervention significantly mediated the therapeutic effects of MBTR-R on depression and PTSD outcomes. – The change in self-compassion only mediated therapeutic effects on PTSD outcomes, indicating its specific role in trauma recovery.
Amir et al. (2024), Israel	Investigate the role of cognitive inhibition (CI) in trauma recovery among asylum seekers, specifically examining its association with PTSD symptom severity and the effects of a mindfulness-based trauma recovery intervention (MBTR-R) on CI and PTSD outcomes.	158 Eritrean asylum seekers who were initially randomized to intervention conditions in the study.	Quantitative (A randomized waitlist-control trial)	– Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) was a mindfulness and compassion-based programme designed specifically for forcibly displaced persons (FDP). – It trained participants in mindfulness techniques to manage trauma-related mental health issues like hyperarousal and avoidance. – The program included loving-kindness and self-compassion practices to address chronic stress and negative self-referential thoughts.	– The study found that cognitive inhibition (CI) for trauma- and threat-related information is associated with PTSD symptom severity among traumatized asylum seekers. – The mindfulness-based trauma recovery intervention (MBTR-R) significantly reduced PTSD symptom severity compared to the waitlist control group. – Changes in CI due to the MBTR-R intervention did not mediate the therapeutic effects on trauma recovery, indicating that while CI was affected, it did not account for

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
					the reduction in PTSD symptoms. – The observed effect of MBTR-R on CI was specific to improved inhibition of trauma- and threat-related information, suggesting a targeted impact of mindfulness training on executive functions related to PTSD.
Baluku (2024a), Uganda	Explore the effects of trait mindfulness on the theory of planned behaviour (TPB) antecedent variables and, consequently, on refugees' entrepreneurial and implementation intentions in a low-income context.	398 refugees from three settlements in Uganda.	Quantitative design (Survey)	n/a	– Trait mindfulness was found to be positively associated with the constructs of the Theory of Planned Behavior (TPB), including attitudes, subjective norm (SN), and perceived behavioral control (PBC), as well as with implementation intentions. – The study demonstrated that the TPB antecedent variables and entrepreneurial intentions mediated the relationship between trait mindfulness and implementation intentions. – The findings indicated that mindfulness interventions could enhance entrepreneurial attitudes, SN, and PBC, thereby increasing entrepreneurial intentions and the likelihood of acting on those intentions. – The research highlighted that SN was not significantly related to entrepreneurial intentions among refugees, suggesting that the lack of strong ties in the host community may diminish its relevance in this context. – Prior business experience was positively related to attitudes, PBC, and implementation intentions, indicating its importance in forming and executing entrepreneurial intentions.
Baluku (2024b), Uganda	Assess the role of positive psychological attributes, specifically mindfulness and psychological capital, in enhancing the entrepreneurial abilities and intentions of refugees.	404 refugees living in two rural settlements (Bidibidi and Kiryandongo) and urban refugees from the Kampala metropolitan area, which hosts a significant number of urban refugees.	Quantitative (Survey method)	n/a	– The study found that mindfulness is positively associated with psychological capital among refugees, enhancing their entrepreneurial abilities and intentions. – Psychological capital mediates the relationship between mindfulness and various entrepreneurial process variables, including entrepreneurial self-efficacy, personal initiative, entrepreneurial intentions, and implementation intentions. – Occupational Future Time Perspective (OFTP) moderates the effects of psychological capital and the indirect effects of mindfulness on entrepreneurial outcomes, indicating its importance in the entrepreneurial process for refugees.

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
					– The integration of mindfulness, psychological capital, and OFTP in interventions can significantly boost refugees' entrepreneurial intentions and actions.
Baluku et al. (2023), Uganda	Investigate the mediating role of psychological capital (PC) and social capital (SC) in the relationship between mindfulness and wellbeing outcomes, specifically life satisfaction and happiness, among refugees in resource-constrained settlements in Uganda.	576 refugees from both rural and urban locations in Uganda.	Quantitative (A correlational design)	n/a	– Mindfulness was found to be positively associated with psychological and social capital among refugees in Uganda. – Psychological capital was identified as a significant mediator in the relationship between mindfulness and wellbeing outcomes, specifically life satisfaction and happiness. – The study did not support the hypothesis that social capital mediates the link between mindfulness and wellbeing variables. – The effects of mindfulness on life satisfaction and happiness were mediated by psychological capital only in the model that excluded social capital.
Barajas (2024), United States	Comprehensively assess dispositional mindfulness (DM) among newcomer Afghan refugees resettled in the United States.	16 newcomer Afghan refugees resettled in the United States.	Quantitative hard-copy questionnaires.	n/a	– The study assessed dispositional mindfulness (DM) among newcomer Afghan refugees in the United States, revealing moderate to high levels of DM within the sample. – It found that the refugees exhibited higher levels of negative affect and wellbeing compared to the normative population mean. – The research highlighted the moderating role of DM on the relationship between acculturative stress, wellbeing, and affect, suggesting that DM may serve as a protective factor against acculturative stress. – The findings indicate a need for larger sample sizes, qualitative and longitudinal studies, and the incorporation of specific cultural considerations to enhance the validity and applicability of the results.
Blignault et al. (2021a), Australia	Establish whether a group mindfulness program produced expected outcomes under normal operational conditions, and to test its scalability and its transferability to Bangla speakers.	271 Arabic speakers and Bangla speakers (168 Arabic speakers, 103 Bangla speakers)	Mixed-methods evaluation, incorporating a pre-post design	– A 5-week mindfulness program for Arabic-speaking and Bangla-speaking community members aged 16–65 years. – Included mindfulness practices such as grounding exercises, mindfulness breathing, body scans, and loving kindness exercises. – Conducted by bilingual co-facilitators in community venues with translated materials.	– The community-based mindfulness program demonstrated strong cultural acceptability and relevance among Arabic and Bangla-speaking migrants in Sydney. – The program led to both clinically and statistically significant improvements in mental health outcomes, as assessed by the DASS21 and K10 measures. – Almost all participants (92 % of Arabic and 99 % of Bangla speakers) reported sharing mindfulness skills with others

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
					– Additionally, the program enhanced access to mental health care and increased mental health literacy, with many participants sharing mindfulness skills with others.
Blignault et al. (2021b), Australia	Evaluate a community-based mindfulness program specifically designed for Arabic-speaking women in Australia, addressing the underutilization of mental health services within this demographic.	20 Arabic-speaking Muslim women from Iraq, Lebanon, Syria, and Libya, with varying lengths of residency in Australia.	Mixed-methods evaluation, incorporating a pre-post design with a wait-list control group.	– The Mindfulness Program for Arabic-speaking women was conducted at Illawarra Multicultural Services from August to November 2016. – Participants attended group sessions once a week for five weeks and were required to listen to specified tracks of the Arabic Mindfulness CD at least twice weekly. – The sessions were facilitated in Arabic by a bilingual psychologist, supported by a bilingual multicultural health worker, and free child minding was provided. – Each participant received a 43-page handbook with information and worksheets, while most program materials were in English, and Quranic quotes were frequently incorporated.	– The intervention group showed statistically significant improvement on all DASS21 subscales after five weeks, with $p < .001$ for depression and stress, and $p < .01$ for anxiety. – The wait-list control group only showed significant improvement in anxiety, with $p < .05$. – Qualitative analysis indicated that participants grew in their understanding of mindfulness concepts, mastered various techniques, and found mindfulness practice helpful in their daily lives. – The Arabic Mindfulness CD was found to be culturally acceptable and effective in reducing psychological distress, as measured by the Kessler Scale (K10) and DASS21. – High participant engagement and program adherence were reported throughout the study. – The study revealed a high level of war-related trauma among participants, with many having experienced or witnessed violence in their countries of origin. – The program was culturally and spiritually relevant, demonstrating potential for scaling up in similar communities.
Blignault et al. (2023), Australia	Explore community partner perspectives on the impact, contributing factors, and sustainability of a culturally and linguistically diverse (CALD) mindfulness program tailored for Arabic and Bangla speakers in Sydney, Australia.	16 informants who were selected from 13 community partner organisations. The informants included two clinician facilitators and 14 community workers, with a diverse linguistic background, including Arabic, Bangla, Nepali, and English speakers.	Qualitative (semi-structured telephone interviews)	– Culturally and Linguistically Diverse (CALD) Mindfulness Program, designed to support mental health and wellbeing among Arabic and Bangla-speaking communities in Sydney, Australia. – It is a community-based, in-language mindfulness-based intervention (MBI) that included a 5-week face-to-face mindfulness skills development program, along with online stress management sessions introduced during the COVID-19 pandemic. – It incorporated culturally tailored resources and training for bilingual mental health clinicians and community workers.	– The CALD Mindfulness Program has had a positive and lasting impact on group participants, with many informants describing the changes as 'life changing' and empowering for participants. – Participants reported improved mental health, increased resilience, and the acquisition of knowledge and skills relevant to their everyday needs and cultural beliefs. – Trust and safety were identified as crucial factors for the program's success, enabling participants to share personal issues in a supportive environment. – The program effectively overcame barriers to accessing mental health care for Arabic and Bangla communities, facilitating community engagement and demand for more programs. – The clinical lead's cultural competency and ability to

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
					integrate mindfulness concepts with participants' cultural and religious beliefs were significant contributors to the program's success. – The adaptation of the program to an online format during the COVID-19 pandemic allowed continued participation and support for mental health. – Community partner organisations played a vital role in promoting the program and ensuring it met local community needs, enhancing intersectoral collaboration.
Callender et al. (2022), United States	Explore how first-generation immigrant and refugee Muslim women experience prayer and mindfulness in relation to their mental health.	9 women who identified as first-generation Muslim immigrants or refugees.	Qualitative (Focus groups)	n/a	– The study identified four overarching themes regarding the experiences of first-generation immigrant/ refugee Muslim women with prayer and mindfulness in relation to their mental health: - Prayer helps to build community. - Prayer promotes wellbeing. - Prayer increases faith. - Prayer encourages intentional awareness. – The findings indicate that prayer involves awareness and significantly influences the mental health of the participants. – The study suggests that individual and collective prayers serve as essential coping strategies for navigating stressful life situations. – Three dimensions of women's prayer experiences were identified: - Horizontal connections with the community, - Vertical connections strengthening their relationship with Allah, - Self-innerness promoting mindfulness and inner strength.
Fayad et al. (2024), Jordan	Investigate the perceptions of refugee caregivers regarding the use of mindfulness-based interventions (MBIs) as a treatment for developing coping skills among their children with disabilities.	26 refugee caregivers from a community-based rehabilitation (CBR) center in the Al-Baqa'a refugee camp in Jordan.	Qualitative	n/a	– The study identified five main themes from the perceptions of refugee caregivers regarding mindfulness-based interventions (MBIs) for their children with disabilities: 'Daily Challenges', 'Support and Strategies', 'Barriers to Accessing Support', 'MBIs: Caregiver Perceptions', and 'MBIs: Barriers'. – Caregivers reported various behavioural, emotional, and cognitive challenges that affect their children's participation in daily life. – Financial and environmental constraints, stigma, and timing were significant barriers to accessing healthcare services.

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
					– Caregivers expressed positive perceptions about the potential of MBIs to support their children, although some had concerns about the effectiveness of these interventions. – The study highlighted a general lack of awareness about the need for mental health care and the benefits of mindfulness among the caregiver community. – The findings suggest that MBIs could serve as a low-cost, accessible alternative to traditional mental health services for refugee children with disabilities.
Fortuna et al. (2023), United States	Explore the integration of spirituality and religious beliefs into Mindfulness-Based Cognitive Behavioural Therapy (MBCT) specifically for unaccompanied immigrant children (UIC) suffering from post-traumatic stress disorder (PTSD).	37 adolescents, with a specific focus on six Spanish language dominant unaccompanied immigrant children (UIC) from community-based and school-based clinics	Mixed Methods (Pilot clinical trial)	– Mindfulness-Based Cognitive Therapy-Dual (MBCT-Dual), a 12-week program designed for children with co-occurring PTSD and substance use disorders. – The therapy integrated cognitive behavioural therapy, mindfulness practices, and recovery skills, focusing on psychoeducation about trauma, relaxation techniques, and mindfulness exercises. – Participants engaged in cognitive restructuring, which includes identifying stressors, evaluating thoughts, and creating action plans that may incorporate spirituality as a coping strategy.	– The MBCT-Dual therapy was found to be acceptable and feasible for unaccompanied immigrant children (UIC) with PTSD, showing significant reductions in PTSD symptoms and negative post-traumatic cognitions after treatment. – UIC participants reported a larger effect size in symptom reduction and total cognitions compared to U.S.-born participants, indicating a more pronounced benefit from the therapy. – Spirituality and religiosity emerged as common themes in coping strategies among UIC participants.
Gawande et al. (2023), United States	Determine the effects of Mindfulness Training for Primary Care (MTPC), an integrated warm mindfulness training program, on emotion regulation and its relationship with health behaviour change.	73 primary care patients from 11 primary care patient-centered medical homes (PCMH) in the Greater Boston area	Quantitative (A randomized control trial)	– Mindfulness Training for Primary Care (MTPC), an 8-week program designed to enhance self-regulation and facilitate health behaviour change among individuals with chronic illnesses. – MTPC incorporated evidence-based elements from various mindfulness-based interventions (MBIs) and emphasizes cultivating inner compassion. – The program included weekly sessions, guided home practices, and a retreat format, all aimed at fostering mindfulness and self-compassion. – Participants engaged in practices that respect their individual experiences, particularly in a trauma-informed manner, to support their emotional and behavioural health.	– The Mindfulness Training for Primary Care (MTPC) group demonstrated statistically significant larger improvements in the Difficulties in Emotion Regulation Scale (DERS) total score compared to the low-dose mindfulness comparator (LDC) at both 8 weeks and 24 weeks. – MTPC participants showed significant improvements in Interoceptive Awareness, Self-Compassion, and Self-Efficacy at 8 weeks compared to LDC participants. – The action plan initiation (API) was more successful in the MTPC group, with 63.3 % achieving successful API compared to 37.5 % in the LDC group. – There were no significant differences in mental health outcomes (anxiety, depression, stress) between the two groups.
Kalmanowitz (2016), Hong Kong	Explore the combination of art therapy and mindfulness meditation within the context of refugees in Hong Kong, specifically focusing on their psychosocial needs.	12 participants who were refugees seeking support from a local Hong Kong Non-Government Organisation (NGO) from seven different countries, primarily in Africa,	Qualitative	– Inhabited Studio, which combined art therapy and mindfulness practices to support refugees dealing with trauma and adversity. – This approach focused on creating a safe, non-	– The Inhabited Studio combined art therapy and mindfulness to support refugees, highlighting the importance of a flexible approach that adapts to

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
		representing various religions and cultures.		judgmental environment that encouraged exploration and expression through artistic processes and mindfulness meditation. – Participants engaged in various art-making activities and mindfulness exercises, which facilitated emotional regulation and self-agency.	individual needs and cultural backgrounds. – Participants experienced a sense of safety and the opportunity to express their trauma through art and mindfulness, which facilitated emotional regulation and self-agency. – The workshops emphasised the present moment and created a non-judgmental environment, fostering curiosity and openness among participants.
Kalmanowitz and Ho (2016), Hong Kong	Explore the integration of art therapy and mindfulness as a novel approach to address the needs of refugees and asylum seekers who have experienced trauma.	Refugees and asylum seekers from seven different countries, predominantly from Africa, with two participants from Iran.	Qualitative (A combination of art therapy and mindfulness meditation)	– A combination of art therapy and mindfulness, specifically tailored for refugees and asylum seekers experiencing trauma. – This approach was implemented through the Inhabited Studio, where participants engage in art making and mindfulness meditation over a series of workshops. – The intervention created a sense of safety, facilitate emotional regulation, and help individuals process their traumatic experiences. – Participants were encouraged to externalize their thoughts and feelings through art, which fosters self-awareness and coping strategies, ultimately supporting their resilience and personal growth.	– The integration of art therapy and mindfulness effectively addresses different aspects of individual experiences and social contexts, particularly for refugees and asylum seekers. – The combination of these approaches helps individuals build strategies for safety, support resilience, and process multiple levels of loss after traumatic experiences. – Participants in the Inhabited Studio workshops reported an increase in emotional and cognitive flexibility through the focus on present sensations and feelings. – The experiential nature of both art therapy and mindfulness allows for the processing of traumatic material using various senses, beyond just cognitive engagement. – The Inhabited Studio approach emphasizes coping and resilience, normalizing participants' experiences within a troubled social context. – Participants were able to regulate their emotional responses and gain a sense of safety, which is crucial for dealing with trauma.
Kuru et al. (2024), Türkiye	Examine the efficacy of a pilot school-based mindfulness intervention (SMI) on the social, emotional, and behavioral outcomes of war-affected refugee preschool children living in a refugee camp in Türkiye.	76 preschool children living in the refugee camp, who were born in 2013 and had been living in the camp for three years	Quantitative (a single-blind randomized controlled trial)	– A school-based mindfulness intervention (SMI) designed for refugee children living in a camp in Türkiye. – The SMI program lasted for 6 weeks, consisting of 12 sessions that included mindfulness exercises, play-based activities, relaxation, and assessments. – The intervention was to enhance social connectedness, emotional regulation, self-confidence, and resilience among the children.	– The pilot school-based mindfulness intervention (SMI) significantly improved self-esteem, social skills, and resilience in preschool children living in a refugee camp. – The intervention group showed statistically significant higher values for self-esteem, social skills, and resilience scores compared to the control group, with medium to large effect sizes. – Significant reductions in social and emotional problems were observed in children with high levels of introversion in the pre-test. – The SMI program utilised various active treatment ingredients, including mindfulness exercises, play-

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
					based activities, and relaxation techniques.
Mubarak (2023), Kuwait and Türkiye	Evaluate neuropsychological assessments for patients with attention deficits, particularly focusing on those with mild traumatic brain injury (mTBI) and refugees with post-traumatic stress disorder (PTSD).	19 participants.	Quantitative (Interventional design)	– A mindfulness-based interventions (MBIs) and cognitive behavioural therapy (CBT) in individuals with mild traumatic brain injury (mTBI) and refugees with post-traumatic stress disorder (PTSD). – Participants underwent neuropsychological assessments before and after the interventions, which included the Generalized Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire-9 (PHQ-9).	– The research demonstrated that mindfulness-based interventions (MBIs) and cognitive behavioural therapy (CBT) significantly improved attention, concentration, executive functioning, and emotional regulation in patients with mild traumatic brain injury (mTBI) and refugees with post-traumatic stress disorder (PTSD). – Both interventions resulted in faster processing times and fewer errors in neuropsychological assessments. – The study found that attentional impairments were present in both mTBI and PTSD populations, indicating a need for targeted interventions. – The Arabic version of the Stroop task was validated as an effective tool for assessing attention in Arabic-speaking populations. – There were no significant differences in overall mean responses to the Five Facet Mindfulness Questionnaire (FFMQ) among participants across different groups before and after the interventions.
Musanje et al. (2024), Uganda	Assess the effectiveness of a mindfulness and acceptance-based intervention, specifically the Discoverer-Noticer-Advisor-values (DNA-V) model, in improving the mental health of adolescents with HIV (AWH) in Uganda.	122 adolescents with HIV (AWH), recruited from Kisenyi Health Center iv (KHC) in Kampala, Uganda, which serves a diverse population, including traders and urban refugees.	Quantitative (An open-label randomized trial design)	– A mindfulness and acceptance-based intervention known as the Discoverer-Noticer-Advisor-values model (DNA-V). – It was designed to improve the mental health of adolescents with HIV (AWH) in Uganda through weekly 90-min group sessions over four weeks. – The sessions focused on clarifying values, skillfully relating to thoughts, and exploring experiences non-judgmentally.	– The mindfulness and acceptance-based intervention significantly reduced symptoms of depression among adolescents with HIV, with a reduction of $\beta = -10.72$ (95 % CI: 6.25, −15.20; $p < .0001$) over time. – Anxiety symptoms also showed a significant decrease, with a reduction of $\beta = -7.55$ (95 % CI: 2.66, −12.43; $p = .0003$). – The intervention was effective in reducing internalised stigma, with a reduction of $\beta = -1.40$ (95 % CI: .66 to −2.15; $p = .0004$). – The study demonstrated that the DNA-V intervention improved the mental health of adolescents with HIV in a low-income context.
Oren-Schwartz et al. (2023), Israel	Better understand the role of emotional responding, specifically shame and guilt, in trauma recovery among asylum-seekers following forced displacement.	158 Eritrean asylum-seekers, with 55.7 % being female	Quantitative (A randomized waitlist-controlled trial)	– A Mindfulness-Based Trauma Recovery for Refugees (MBTR-R), a nine-session program designed for forcibly displaced people (FDPs) such as asylum-seekers. – It consists of nine 2.5-h weekly sessions that include mindfulness practices like body scans, sitting meditation, and mindful movement, along with trauma-sensitive adaptations.	– The study found that shame, but not guilt, mediated the associations between traumatic stress exposure history and current posttraumatic stress and depression symptom severity among Eritrean asylum-seekers. – Reduced shame from pre- to postintervention mediated the effect of the Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) program on improved posttraumatic

(*continued on next page*)

Table 1 (*continued*)

Authors, year, country	Aim of the study	Sample size	Methods	Intervention overview	Main findings
Van der Gucht et al. (2019), Belgium	Explore the feasibility of a mindfulness-based intervention (MBI) for unaccompanied refugee minors (UMs) residing in shelters in Belgium.	13 unaccompanied refugee minors (UMs) aged between 13 and 18 years old, residing in the shelters of Minor Ndako in Belgium.	Quantitative (pre-, post-intervention design)	– Mindfulness-based intervention (MBI) designed for unaccompanied refugee minors residing in shelters in Belgium. – The MBI consisted of eight 90-min sessions held weekly, incorporating guided mindfulness exercises, psychoeducation, and sharing experiences. – Participants reported using mindfulness techniques alongside familiar coping strategies, such as religious practices and sports.	stress and depression symptom severity outcomes. – The mindfulness-based intervention (MBI) may reduce negative affect and improve positive affect, both with a medium effect size, and reduce symptoms of depression with a large effect size. However, these changes did not reach statistical significance due to the small sample size. – There was a significant decrease in negative affect and symptoms of depression, and an increase in positive affect after the intervention, as indicated by multilevel model analysis. – Participants expressed unique and varied experiences with the MBI, with some finding it helpful while others dropped out due to lack of interest or perceived boredom. – Language barriers impacted participation, but interaction with the trainer helped mitigate some of these issues.

(2023) also focused on PTSD among Syrian refugees and patients with mild traumatic brain injury, employing the PHQ-9 in a comparative trial.

Depression was another prevalent outcome, assessed with various tools. Aizik-Reebs et al. (2021), Aizik-Reebs et al. (2022), and Mubarak (2023) used the Patient Health Questionnaire-9 (PHQ-9), whereas Musanje et al. (2024) employed the Beck Depression Inventory-II (BDI-II) for adolescents living with HIV. Blignault et al. (2021b) applied the DASS-21 Depression subscale in community samples, whereas Van der Gucht et al. (2019) used DASS-21 in a youth pilot. In each study, MBIs resulted in statistically significant reductions in depression scores. Anxiety was consistently measured. Aizik-Reebs et al. (2021) used a general symptom scale that included anxiety, whereas Mubarak (2023) specifically utilised the Generalized Anxiety Disorder-7 (GAD-7). Gawande et al. (2023) included anxiety as part of their primary care trial using several tools (Table 2), while Blignault et al. (2021a, 2021b) employed the DASS-21 Anxiety subscale, and Musanje et al. (2024) observed significant reductions in anxiety scores using Beck's Depression Inventory (BDI II).

Stress was measured directly using tools such as the DASS-21 and PSS in studies (Blignault et al., 2021a, 2021b; Gawande et al., 2023; Van der Gucht et al., 2019). Stress scores significantly declined following intervention, particularly in community-based group formats tailored to cultural and linguistic needs. A unique psychosocial construct—internalised stigma—was measured with the Internalised AIDS-Related Stigma Scale (IARSS) in Musanje et al. (2024). Stigma significantly decreased in adolescents living with HIV following a mindfulness-based program, demonstrating the broader utility of MBIs beyond typical psychiatric symptoms (Musanje et al., 2024).

Several studies investigated mechanisms of change. Aizik-Reebs et al. (2022) analysed self-compassion and self-criticism, measured using the Self-Compassion Scale (SCS-SF) and drift-diffusion modelling techniques. Reductions in PTSD and depression were mediated by decreases in self-criticism and increases in self-compassion. Oren-Schwartz et al. (2023) focused on shame and guilt, identifying shame as a key mediator through parallel mediation models linking trauma and stress exposure to PTSD and depressive symptoms. Emotion regulation, another crucial mechanism, was measured with the Difficulties in Emotion Regulation Scale (DERS) in Gawande et al. (2023), who also assessed interoceptive awareness using the Multidimensional Assessment of Interoceptive Awareness (MAIA). These process outcomes significantly improved post-intervention. Self-efficacy was also evaluated in the same study, with significant increases maintained over time. Cognitive outcomes were assessed in two trials. Amir et al. (2024) utilised the Modified Sternberg Task for evaluating cognitive inhibition in trauma-related contexts, while Mubarak (2023) employed the Stroop Task to assess attentional control in refugees and mTBI patients. Both studies reported enhancements in executive function, corroborating the cognitive benefits of MBIs.

In studies involving children and adolescents, various developmental and social-emotional outcomes were assessed. Kuru et al. (2024) measured state self-esteem using the State Self-Esteem Scale, emotional competence/social skills via the ECSSM, and resilience using the Child and Youth Resilience Measure–Revised (CYRM-R) in a cluster RCT among refugee preschoolers. Van der Gucht et al. (2019) evaluated positive and negative affect using the International PANAS-SF (I-PANAS-SF), also employing the DASS-21-D and CRIES to capture depression and trauma. Functional and practical outcomes were recorded by Blignault et al. (2021a), who tracked days of work inability and cut-down days—measures reflecting daily functioning and quality of life. These declined significantly in intervention groups, indicating that MBIs offer real-world benefits alongside mental health symptom relief. Qualitative and symbolic outcomes were captured through case studies by Kalmanowitz (2016) and Kalmanowitz and Ho (2016), reporting improvements in emotional safety, trauma processing, and grief expression through art therapy and mindfulness. Participants utilised imagery and metaphors to externalize trauma, facilitating insight, transformation, and a shift from victimhood to agency.

Collectively, several studies measured outcomes including: PTSD, depression, anxiety, stress, stigma, self-compassion, shame, emotion regulation, cognitive inhibition, interoception, self-efficacy, resilience, affect, self-esteem, social skills, functional impairment, and qualitative

Table 2
Randomised controlled trials (RCTs).

Study	Intervention	Design	Outcomes measured	Tools/Instruments	Effectiveness of the intervention
Aizik-Reebs et al. (2021), Israel	MBTR-R	RCT	– PTSD, – Depression – Functioning/role impairment.	– HTQ (Harvard Trauma Questionnaire) – PHQ-9 (Brief Patient Health Questionnaire)	The MBTR-R intervention significantly reduced PTSD symptoms ($F = 12.44$, $\eta^2 = .17$, $p = .001$), re-experiencing ($F = 9.76$, $\eta^2 = .14$, $p = .003$), hyperarousal ($F = 23.93$, $\eta^2 = .29$, $p < .001$), depression ($F = 6.52$, $\eta^2 = .14$, $p = .015$), anxiety ($F = 12.65$, $\eta^2 = .20$, $p = .001$), and comorbidity ($F = 8.43$, $\eta^2 = .12$, $p = .005$). Cultural idioms improved ($F = 10.85$, $\eta^2 = .16$, $p = .002$). Avoidance ($F = 3.26$, $p = .076$) and wellbeing ($F = 3.62$, $p = .062$) showed no significant change. Most effects remained significant at follow-up, confirming sustained intervention impact.
Aizik-Reebs et al. (2022), Israel	MBTR-R	RCT	– PTSD – Depression	– HTQ – PHQ-9	Participants in the MBTR-R group showed increased self-compassion (.77 → .83) and reduced self-criticism (.47 → .39), with faster reaction times and improved drift rates toward self-compassion (.76 → .90) and away from self-criticism (−.11 → −.35). PTSD was positively linked to self-criticism ($\beta = 1.50$) and negatively to self-compassion ($\beta = -1.00$). PTSD reduction was mediated by self-criticism (ACME = −.19, 60 %) and self-compassion (ACME = −.20, 63 %); depression was mediated by self-criticism only (ACME = −1.89, 62 %).
Amir et al. (2024), Israel	MBTR-R	RCT	– PTSD – Cognitive inhibition (CI) of trauma- and threat-related information	– Modified Sternberg task – HTQ	From pre- to postintervention, the MBTR-R group showed significant improvement in the intrusion and trauma-threat condition, with mean CI increasing from $M = .665$, $SE = .032$, 95 % CI [.600, .724] at Session 1 to $M = .799$, $SE = .028$, 95 % CI [.739, .848] at Session 2 (OR = .499, $SE = .093$, $p = .002$). The intervention had significant total and direct effects on PTSD, with MBTR-R leading to a reduction in PTSD symptom severity compared to the waitlist control.
Gawande et al. (2023), USA	MTPC	RCT	– Emotion regulation – Interoceptive awareness – Trait mindfulness – Self-efficacy for managing chronic disease – Perceived stress – Anxiety – Depression – Self-compassion – Action-planning quality/engagement (process outcome)	– DERS (Difficulties in Emotion Regulation Scale Emotion regulation) – MAIA (Multidimensional Assessment of Interoceptive Awareness) – FFMQ (Facet Mindfulness Questionnai) – SECD-6 (Self-Efficacy for Chronic Disease-6 items) – PSS (Perceived Stress Scale) – PROMIS—Global (Patient-Reported Outcomes Measurement Information System) – PROMIS Anxiety 8a – PROMIS Depression Short-Form 8a – SCS-SF (Self-Compassion Short-Form) – Action Plan Assessment (administered in REDCap)	At 8 weeks, the MTPC group showed greater improvement than LDC in emotion regulation (DERS total: $\beta = -12.98$, 95 % CI [−23.3, −2.6], $d = -.59$, $p = .01$). No between-group differences were found for anxiety, depression, or stress. MTPC participants improved significantly in interoceptive awareness ($\beta = .58$, 95 % CI [.2, 1.0], $d = .71$, $p = .004$), self-compassion ($\beta = .50$, 95 % CI [.2, .8], $d = .72$, $p = .003$), and self-efficacy ($\beta = 2.03$, 95 % CI [.9, 3.1], $d = .97$, $p < .001$). These improvements were maintained at 24 weeks. API success was higher in MTPC (63.3 %) than LDC (37.5 %), OR = 2.87, 95 % CI [1.1, 7.9], $p = .04$. MDD diagnosis did not affect API.
Kuru et al. (2024), Türkiye	School-based mindfulness program	RCT	– Social skills – Self-esteem – Resilience – Behavior/ psychosocial difficulties – Attention	– SSBS (Social Skills Behavioral System) – RSES-TR (Rosenberg Self-Esteem Scale-Turkish version) – CYRM-12 (Child and Youth Resilience Measure—12-item) – SDQ-TR (Strengths and Difficulties Questionnaire—Turkish version) – SNAP-IV (Swanson, Nolan, and Pelham Rating Scale) – SSES (State Self-Esteem Scale) – ECSSM (Early Childhood Social Skill Measure) – CYRM-R (Child and Youth Resilience Measure-Revised)	For state self-esteem, participants in the intervention group showed a substantial increase from a mean of 25.63–40.89, while the control group showed only a slight increase from 25.44 to 29.76. This was supported by a significant group effect ($F = 48.03$, $p < .001$), time effect ($F = 230.56$, $p < .001$), and a strong time × group interaction ($F = 72.08$, $p < .001$), with a large effect size ($\eta^2 = .49$). Similarly, emotional competence and social skills (ECSSM) improved significantly in the intervention group (29.94–46.63), compared to a smaller gain in the control group (29.28–32.86), with highly significant effects for group ($F = 88.54$, $p < .001$), time ($F = 301.38$, $p < .001$), and interaction ($F = 126.06$, $p < .001$), and a very large effect size ($\eta^2 = .63$).

(*continued on next page*)

Table 2 (*continued*)

Study	Intervention	Design	Outcomes measured	Tools/Instruments	Effectiveness of the intervention
					For resilience (CYRM-R), the intervention group showed a modest increase from 23.18 to 25.76, compared to 22.28 to 23.97 in the control group, with a statistically significant group effect ($F = 4.64$, $p = .030$), time effect ($F = 98.48$, $p < .001$), and interaction ($F = 4.33$, $p = .040$), though with a smaller effect size ($\eta^2 = .05$).
Mubarak (2023), Kuwait, Türkiye	MBI vs CBT	RCT	– Attention/executive control (inhibitory control) – Anxiety, – Depression – Trait mindfulness	– Stroop Task (color–word interference) – GAD-7 (Generalized Anxiety Disorder Assessment) – PHQ-9 – FFMQ (Five Facet Mindfulness Questionnaire)	Across cohorts—healthy students (n = 17), refugees with PTSD (n = 20), and mTBI outpatients (n = 19)—participants completed a two-week, 8-session MBI or CBT and showed statistically supported gains. In healthy participants, the Stroop showed a significant within-subjects effect ($F[2,36] = 6.15$, $p = .006$, partial $\eta^2 = .291$) and a robust congruent–incongruent effect ($F[2,36] = 17.07$, $p = .001$, partial $\eta^2 = .532$), with no therapy × Stroop interaction, indicating comparable benefits from both interventions. In the mTBI trial (MBI n = 9; CBT n = 10; age ≈31.8 ± 6.8 vs 29.4 ± 4.8 years), manual responses outperformed vocal responses on the Stroop, both arms improved pre–post, and between-group For wellbeing, mTBI patients' anxiety decreased significantly within CBT (GAD-7: 12.8 ± 4.5 → 10.0 ± 2.7; $p = .007$) but not within MBI (8.0 ± 7.3 → 5.1 ± 4.7; $p = .585$); depression also fell within CBT (PHQ-9: 10.7 ± 4.2 → 7.7 ± 2.0; $p = .019$) but not MBI (9.8 ± 7.6 → 7.7 ± 6.1; $p = .285$), while the only between-group difference was higher post-treatment GAD-7 in CBT vs MBI (mean difference 4.9, $p = .014$).
Musanje et al. (2024), Uganda	Acceptance & mindfulness-based group (4 × 90 min) vs health-education control	RCT	– Depressive symptom severity – Internalised HIV/AIDS-related stigma	– BDI-II (Beck's Depression Inventory) – IARSS (Internalised AIDS-Related Stigma Scale)	The intervention was associated with significant reductions in depression, anxiety, and stigma. For depression, the interaction between time (pre = 0, post = 1) and group (intervention vs. control) showed a large reduction in scores, with a decline of 10.72 points (95 % CI: 6.25–15.20, $p < .0001$). Similarly, anxiety scores decreased by 7.55 points (95 % CI: 2.66–12.43, $p = .003$), indicating a substantial improvement. In terms of stigma, the intervention led to a significant reduction of 1.40 points (95 % CI: .66–2.15, $p = .0004$). Intervention superior to control: Depression $\beta = -.71$ (95 % CI −1.25, −.17), Anxiety $\beta = -.90$ (95 % CI −1.57, −.23), Stigma $\beta = -.06$ (95 % CI −.10, −.02); gains sustained at ~3 months.
Oren-Schwartz et al. (2023), Israel	MBTR-R	RCT	– PTSD – Depression – Shame/Guilt	– HTQ – PHQ-9 – SSGS (State Shame and Guilt Scale)	The SSGS descriptives show small pre-to-post drops in both shame and guilt, with MBTR-R starting lower than wait-list. For shame, wait-list fell from 13.4 ± 5.95 (N = 60) to 11.97 ± 5.62 (N = 48), a ≈1.43-point decrease; MBTR-R fell from 10.81 ± 6.23 (N = 52) to 9.62 ± 5.42 (N = 52), ≈1.19 points. For guilt, wait-list was essentially stable (15.55 ± 5.12 to 15.35 ± 5.89; ≈.20-point decrease), whereas MBTR-R showed a modest decline (13.67 ± 5.45 to 13.04 ± 5.08; ≈.63 points). These are descriptive means/SDs only (no significance reported), with slight attrition in the wait-list arm at post (48 vs 60). In a cross-product test of parallel mediation, shame—but not guilt—significantly mediated the pre-intervention associations between (i) traumatic stress exposure history and both posttraumatic stress (ab_shame = .035, 95 % CI [.024, .048]) and depression (ab_shame = .384, 95 % CI [.234, .55]) symptom severity, and (ii) current post-migration living difficulties and posttraumatic stress (ab_shame = .183, 95 % CI [.122, .249]) and depression (ab_shame = .405, 95 % CI [1.117, 2.693]) symptom severity. In complementary linear mixed-effects mediation models, reductions in shame from pre- to post-intervention mediated the effect of MBTR-R,

(*continued on next page*)

Table 2 (*continued*)

Study	Intervention	Design	Outcomes measured	Tools/Instruments	Effectiveness of the intervention
					relative to wait-list control, on improved outcomes for posttraumatic stress (ACME_shame = −.18, BCa 95 % CI [−.34, −.04]) and depression (ACME_shame = −1.78, BCa 95 % CI [−3.29, −.29]). Collectively, these findings highlight the central role of shame in trauma- and stress-related recovery among forcibly displaced individuals.

changes in coping and identity—all evaluated with rigorous tools such as HTQ, PHQ-9, BDI-II, GAD-7, DASS-21, IARSS, CRIES, SCS-SF, DERS, MAIA, Stroop, ECSSM, CYRM-R, and I-PANAS-SF (Aizik-Reebs et al., 2021, 2022; Amir et al., 2024; Blignault et al., 2021a, 2021b; Fortuna et al., 2023; Gawande et al., 2023; Kalmanowitz, 2016; Kalmanowitz and Ho, 2016; Kuru et al., 2024; Mubarak, 2023; Musanje et al., 2024; Oren-Schwartz et al., 2023; Van der Gucht et al., 2019). This extensive array of tools reflects the multidimensional impact of MBIs across diverse populations and settings.

3.4. Effectiveness of the interventions

MBIs proved highly effective in refugee, migrant, community, and clinical contexts, with interventions notably reducing PTSD, depression, and anxiety. Furthermore, MBIs, when culturally adapted and implemented, have shown substantial evidence for alleviating psychological distress and enhancing emotional regulation (Table 2, Table 3). A significant randomised controlled trial (RCT) in Aizik-Reebs et al. (2021) assessed Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) among African asylum seekers. The results indicated notable decreases in post-traumatic stress disorder (PTSD) total scores ($F = 12.44$, $\eta^2 = .17$, $p = .001$), re-experiencing symptoms ($F = 9.76$, $\eta^2 = .14$, $p = .003$), and hyperarousal ($F = 23.93$, $\eta^2 = .29$, $p < .001$). Additionally, reductions in depression ($F = 6.52$, $\eta^2 = .14$, $p = .015$) and anxiety ($F = 12.65$, $\eta^2 = .20$, $p = .001$) were observed, with effects maintained at follow-up. Building on this, Amir et al. (2024) conducted a cognitive sub-study revealing that MBTR-R enhanced participants' cognitive inhibition under trauma-related threat, with accuracy rising from .665 to .799, and a significant model estimate (OR = .499, SE = .093, p = .002) indicating improved attentional control.

Further exploring the mechanisms of change, Aizik-Reebs et al. (2022) identified that reductions in PTSD symptoms were mediated by increases in self-compassion (.77 → .83) and decreases in self-criticism (.47 → .39). Indirect effects showed ACME = −.19 (≈60 % mediated) for self-criticism and ACME = −.20 (≈63 %) for self-compassion. For depression, self-criticism alone mediated the change (ACME = −1.89, ≈62 %). Meanwhile, Oren-Schwartz et al. (2023) found that shame (but not guilt) was a significant mediator, with pre-treatment shame explaining the relationship between trauma exposure and PTSD (ab_shame = .035, 95 % CI [.024, .048]) and between post-migration stress and depression (ab_shame = .405, 95 % CI [1.117, 2.693]). Additionally, reductions in shame significantly mediated the efficacy of MBTR-R, with ACME = −.18 (95 % CI [−.34, −.04]) for PTSD and ACME = −1.78 (95 % CI [−3.29, −.29]) for depression.

In a U.S. primary care RCT, Gawande et al. (2023) evaluated Mindfulness Training for Primary Care (MTPC), finding that after 8 weeks, the intervention group exhibited significantly greater improvements in emotion regulation (β = −12.98, 95 % CI [−23.3, −2.6], d = −.59, p = .01), interoceptive awareness (β = .58, 95 % CI [.2, 1.0], d = .71, p = .004), self-compassion (β = .50, 95 % CI [.2, .8], d = .72, p = .003), and self-efficacy (β = 2.03, 95 % CI [.9, 3.1], d = .97, p < .001). These effects persisted at 24 weeks, with a higher success rate for action plans (63.3 % vs. 37.5 %, OR = 2.87, 95 % CI [1.1, 7.9], p = .04).

MBIs have also proven effective for younger populations. In a cluster RCT in Türkiye, Kuru et al. (2024) assessed a school-based mindfulness program for refugee preschoolers (n = 76). The intervention group showed a rise in state self-esteem from 25.63 to 40.89, compared to an increase from 25.44 to 29.76 in the control group ($\eta^2 = .49$). Improvements in emotional competence/social skills were noted, with scores rising from 29.94 to 46.63 versus 29.28 to 32.86 ($\eta^2 = .63$), and resilience gains, while significant, were smaller ($\eta^2 = .05$). Similarly, an open-label RCT in Uganda among adolescents living with HIV, reported by Musanje et al. (2024), revealed large reductions in depression (−10.72 points, 95 % CI [6.25–15.20], p < .0001), anxiety (−7.55 points, 95 % CI [2.66–12.43], p = .003), and internalised stigma (−1.40 points, 95 % CI [.66–2.15], p = .0004), with sustained benefits at a 3-month follow-up. The intervention effect for depression was statistically significant (β = −.71, 95 % CI [−1.25, −.17]).

At the community level, Blignault et al. (2023) provided compelling evidence from a 5-week CALD mindfulness program in Sydney. Among Arabic speakers (n = 131), significant pre–post changes were observed: DASS-21 depression scores fell from 9.2 to 4.2 (z = −8.48, p < .001), anxiety from 8.2 to 3.7 (z = −7.64, p < .001), stress from 11.3 to 5.3 (z = −9.28, p < .001), and psychological distress (K10) from 27.0 to 18.5 (z = −8.94, p < .001). Functional improvements included fewer work-inability days (3.9–1.8, z = −6.52, p < .001) and fewer cut-down days (9.2–4.1, z = −6.19, p < .001). Similar results were noted in the Bangla cohort, with depression decreasing from 8.0 to 4.6 (z = −5.70, p < .001), and K10 scores improving from 23.8 to 17.2 (z = −7.11, p < .001). Participants reported better wellbeing, sleep, and access to care.

In youth pilots, Van der Gucht et al. (2019) conducted a mixed-methods study with unaccompanied refugee minors (n = 13), observing a decrease in depression from 10.89 to 6.89 (Hedges' g_av = .81), a drop in negative affect from 16.00 to 11.56 (g_av = .79), and an increase in positive affect from 15.00 to 18.00 (g_av = .71). However, trauma symptom change (CRIES) was minimal (22.38–21.88, g_av = .05), suggesting that longer interventions or adjunct therapies may be necessary. Similarly, Fortuna et al. (2023) found in a quasi-experimental study that unaccompanied Latinx immigrant youth significantly improved on PTSD symptoms (CPSS: 21.67 to 8.33, d = 1.15, p < .05) and reduced negative trauma-related cognitions (PTCI-World: 42.17 to 30.83, d = .82, p < .05).From a qualitative perspective, Kalmanowitz (2016) and Kalmanowitz and Ho (2016) demonstrated that combining art therapy with mindfulness created safe emotional spaces for refugees. Through symbolic media, participants externalised trauma (such as recreating a father's funeral) and gradually transitioned from disempowerment to agency. Collective findings from randomised trials, pilot studies, and qualitative evaluations indicate that MBIs effectively reduce PTSD, depression, anxiety, and stress while improving emotional regulation, self-awareness, and self-compassion. Research by Aizik-Reebs et al., Amir et al., and Oren-Schwartz et al. particularly emphasizes mechanisms such as shame, self-criticism, and cognitive control. Community and youth studies further illustrate that MBIs are scalable and developmentally sensitive. These programs provide not only symptomatic relief but also enhanced functionality and empowerment, strongly supporting their integration into health and social systems.

In the reviewed studies, various intersecting factors—including host-country environment, home-country trauma, legal status, age, gender, language, and religion—shaped the design and effectiveness of MBIs for

Table 3
Non-Randomised Controlled Trials (Non-RCTs)/Pilot/Pre–Post/Implementation Studies.

Study	Intervention	Design	Outcomes measured	Tools/Instruments	Effectiveness of the intervention
Blignault et al. (2021b), Australia	Cultivating Mindfulness	Pre–post + waitlist (mixed-methods)	– Depression – Anxiety – Stress	DASS-21 (Depression, Anxiety, and Stress Scale-21 items)	Depression: intervention extremely severe reduced 42 %→0 %, normal rose 8 %→50 %; wait-list extremely severe reduced 50 %→0 % but moderate increased to 38 % (Week 13). Anxiety: intervention extremely severe declined 75 %→17 %, normal 17 %→58 %; wait-list extremely severe declined 50 %→13 %, normal 25 %→50 %. Stress: intervention extremely severe reduced 50 %→0 %, severe reduced 25 %→0 %, normal 0 %→67 %; wait-list extremely severe declined 38 %→0 %, severe 13 %→38 %→13 %, normal stayed ~50 %.
Blignault et al. (2021a), Australia	Community-based group mindfulness	Multi-site pre–post (implementation and evaluation)	– Depression – Anxiety – Stress – Psychological Distress	– DASS-21 – K10 (Kessler Psychological Distress Scale—10 items)	There was significant pre–post improvements for both language groups (all $p < .001$). Among Arabic speakers ($n = 131$), DASS-21 scores declined for depression 9.2 → 4.2 ($z = -8.48$), anxiety 8.2 → 3.7 ($z = -7.64$), and stress 11.3 → 5.3 ($z = -9.28$). Psychological distress (K10) reduced 27.0 → 18.5 ($z = -8.94$), while days of work inability decreased 3.9 → 1.8 ($z = -6.52$) and cut-down days fell 9.2 → 4.1 ($z = -6.19$). Bangla speakers ($n = 87$) showed similar patterns: depression reduced 8.0 → 4.6 ($z = -5.70$), anxiety 7.2 → 4.0 ($z = -6.32$), and stress 9.4 → 5.6 ($z = -6.96$). K10 declined 23.8 → 17.2 ($z = -7.11$), with work-inability days dropping 2.4 → .7 ($z = -5.05$) and cut-down days falling 4.8 → 2.0 ($z = -5.48$).
Blignault et al. (2023), Australia	CALD Mindfulness Program	Implementation (qualitative evaluation)	– Effectiveness of a group mindfulness-based intervention tailored for Arabic and Bangla speakers living in Sydney, Australia	– Qualitative interviews – RADaR (Rigorous and Accelerated Data Reduction)	Improved wellbeing, coping, sleep; reduced access barriers; increased demand. The CALD Mindfulness Program enhanced mental health and wellbeing among Arabic- and Bangla-speaking communities in Sydney by tackling barriers such as stigma and language. It cultivated trust, psychological safety, and cultural relevance, empowering participants and strengthening community cohesion. Community partners reported both professional and personal gains, and participating organisations acquired practical tools to advance mental health promotion. The evaluation underscored the need for sustained funding, broader program reach, and deliberate inclusion of underserved groups—including men, adolescents, and older adults.
Fortuna et al. (2023), USA	MBCT-Dual (mindfulness-based CBT with spirituality integration)	Pilot (quasi-experimental)	– Child/adolescent post-traumatic stress symptoms – Post-traumatic cognitions	– CPSS (Child PTSD Symptom Scale) – PTCI (Post-traumatic Cognitions Inventory)	Both groups improved from baseline to Time 2, with larger effects for unaccompanied youth. For unaccompanied participants ($n = 6$), CPSS declined from 21.67 to 8.33 ($p < .05$; $d = 1.15$), PTCI-Combined from 115.67 to 87.67 ($p < .05$; $d = .60$), PTCI-Self from 54.67 to 40.83 (trend, $p < .10$; $d = .49$), PTCI-World from 42.17 to 30.83 ($p < .05$; $d = .82$), and PTCI-Blame from 18.83 to 16.00 (ns; $d = .26$). For U.S.-born youth ($n = 14$), CPSS fell 26.36 → 22.50 ($p < .05$; $d = .34$), PTCI-Combined 139.07 → 120.64 ($p < .05$; $d = .47$), PTCI-Self 77.21 → 64.43 (*$p < .01$; $d = .47$), PTCI-World 41.86 →

(*continued on next page*)

Table 3 (*continued*)

Study	Intervention	Design	Outcomes measured	Tools/Instruments	Effectiveness of the intervention
					39.50 (ns; d = .21), and PTCI-Blame 20.00 → 16.57 (trend, p < .10; d = .54).
Kalmanowitz (2016), Hong Kong	Inhabited Studio: Art therapy + mindfulness	Qualitative + case vignettes	– Art therapy and mindfulness, – resilience, adversity	– Qualitative + case vignettes	Enhanced safety, resilience, and trauma processing; improved coping via creative mindful practice.
Kalmanowitz and Ho (2016), Hong Kong	Inhabited Studio: Art therapy + mindfulness	Qualitative + case vignettes	– Art therapy and mindfulness, political violence and trauma	– Qualitative + case vignettes	Together, art therapy and mindfulness enhanced safety and adaptive coping. Art-making expressed trauma-linked feelings and surfaced unconscious material through images, symbols, and metaphors, while mindfulness cultivated nonjudgmental, present-moment awareness of sensations and thoughts. Materials and process deepened insight; Sima's clay work evoked her father's funeral, illustrating transformation. Combined, they created a safe space to grieve and begin rebuilding identity, fostering a shift from victimhood to agency—though not everyone achieved this.
Van der Gucht et al. (2019), Belgium	MBI groups for unaccompanied minors	Pilot mixed methods	– Depression – Anxiety – Stress – Positive and negative affect – Child post-traumatic stress/ impact of events	– I-PANAS-SF (International Positive and Negative Affect Schedule—Short Form) – DASS-21 – CRIES (Children's Impact of Event Scale)	Large decrease in depression; medium improvements in affect; mindfulness used as coping. From T1 to T2, outcomes improved notably. Depressive symptoms declined from 10.89 (SD = 4.78) to 6.89 (4.17), Hedges' g_av = .81. Negative affect fell from 16.00 (6.50) to 11.56 (3.00), g_av = .79. Positive affect increased from 15.00 (4.24) to 18.00 (3.84), g_av = .71. In contrast, the impact of events showed minimal change—22.38 (12.54) to 21.88 (5.62), g_av = .05. Overall: moderate-to-large mood benefits, negligible change in event impact.

migrant and refugee populations. In unstable urban host environments, randomised trials of Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) with Eritrean and East African asylum seekers revealed that sociocultural adaptations, such as gender-segregated groups, effectively reduced shame and self-criticism—key factors linked to PTSD and depression—even in the context of legal precarity (Aizik-Reebs et al., 2021, 2022; Oren-Schwartz et al., 2023).

Age also played a crucial role: adolescents and unaccompanied minors benefited from brief school- or camp-based formats focused on emotion regulation and coping (Van der Gucht et al., 2019). For instance, a program for Ugandan youth living with HIV and preschool interventions aimed at enhancing resilience demonstrated positive outcomes (Musanje et al., 2024). Among first-generation Muslim women in the U.S., prayer served as a form of mindful attention; however, discrimination and stigma related to hijab use hindered help-seeking, highlighting the need for spiritually congruent MBIs (Callender et al., 2022).

Language access and community delivery were essential, with Arabic and Bangla group programs developed in partnership with community organisations showing high completion rates and clinical benefits (Blignault et al., 2021a, 2021b, 2023). In Jordan, caregivers found MBIs feasible when tailored to the constraints of home and community settings (Fayad et al., 2024). Legal status impacted mechanisms like shame and cognitive patterns, with MBTR-R trials resulting in reduced shame but mixed outcomes regarding cognitive inhibition (Amir et al., 2024; Oren-Schwartz et al., 2023). Innovative formats, such as art therapy for survivors of political violence and compassion-based primary care delivery, underscore the importance of emotionally attuned and culturally safe practices (Gawande et al., 2023; Kalmanowitz, 2016; Kalmanowitz and Ho, 2016).

3.5. Benefits of mindfulness-based interventions

3.5.1. Improving mental health

In 15 studies, MBIs were implemented to enhance mental health and emotional wellbeing while mitigating psychological distress, improving emotional regulation and facilitating trauma recovery across diverse populations (Aizik-Reebs et al., 2021, 2022; Amir et al., 2024; Barajas, 2024; Blignault et al., 2021a, 2021b; Callender et al., 2022; Fayad et al., 2024; Fortuna et al., 2023; Gawande et al., 2023; Mubarak, 2023; Musanje et al., 2024; Oren-Schwartz et al., 2023).

Four Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) interventions conducted in Israel significantly reduced PTSD, depression, anxiety and shame while improving self-compassion and emotional regulation among asylum seekers (Aizik-Reebs et al., 2021, 2022; Amir et al., 2024; Oren-Schwartz et al., 2023). Similarly, Mindfulness-Based Cognitive Therapy-Dual (MBCT-Dual) in the U.S. with adolescents, including unaccompanied immigrant children, resulted in reduced PTSD symptoms and enhanced coping strategies through spirituality (Fortuna et al., 2023). The DNA-V model in Uganda reduced depression, anxiety and internalised stigma among adolescents living with HIV, showcasing its effectiveness in resource-limited contexts (Musanje et al., 2024). Other notable interventions include MTPC, which improved emotional regulation and self-compassion in U.S. primary care patients (Gawande et al., 2023) and a comparative study of MBIs and CBT, which demonstrated enhanced cognitive and emotional wellbeing among refugees in Kuwait and Türkiye (Mubarak (2023). Additionally, culturally tailored mindfulness interventions, such as an Arabic Mindfulness CD in Australia, effectively reduced psychological distress among Arabic and Bangla-speaking migrants (Blignault et al., 2021a, 2021b). Dispositional mindfulness also alleviated acculturative stress among Afghan refugees in the U.S., as reported by Barajas (2024), while prayer and mindfulness

practices supported mental health among first-generation immigrant and refugee Muslim women (Callender et al., 2022). Mindfulness further benefited caregivers of refugee children with disabilities in Jordan by addressing their mental health and coping strategies (Fayad et al., 2024).

3.5.2. Trauma processing and resilience building

Six MBIs have proven effective in trauma processing and resilience enhancement across various populations, integrating coping strategies to improve psychological wellbeing (Blignault et al., 2021a, 2021b, 2023; Kalmanowitz, 2016; Kalmanowitz and Ho, 2016; Van der Gucht et al., 2019). The Inhabited Studio (Kalmanowitz, 2016) in Hong Kong employed art therapy and mindfulness with 12 African and Iranian refugees, providing a secure environment for trauma expression and emotional regulation. Kalmanowitz and Ho (2016) investigated the combined effects of these modalities for refugees and asylum seekers, highlighting their effectiveness in trauma processing and resilience enhancement. In Australia, the CALD Mindfulness Program (Blignault et al., 2021a, 2021b, 2023) improved resilience and trust while reducing distress among Arabic and Bangla-speaking communities. Van der Gucht et al. (2019) showed that a mindfulness-based intervention in Belgium for unaccompanied refugee minors significantly enhanced emotional resilience and decreased depressive symptoms, demonstrating the intervention's effectiveness.

3.5.3. Social connectedness and empowerment

Seven studies revealed that MBIs positively impact social connectedness, emotional growth and economic empowerment (Baluku, 2024a, 2024b; Baluku et al., 2023; Blignault et al., 2021a, 2021b, 2023; Kuru et al., 2024). The School-Based Mindfulness Intervention (SMI) (Kuru et al., 2024), conducted in Türkiye with 76 preschool refugee children living in camps, enhanced self-esteem, social skills and resilience through mindfulness and play-based activities. The CALD Mindfulness Program (Blignault et al., 2021b, 2023) also strengthened social connections and addressed barriers to mental health care within Arabic and Bangla-speaking populations in Australia. Three studies on Trait Mindfulness and Entrepreneurial Intentions, conducted in Uganda with refugees (Baluku, 2024a, 2024b; Baluku et al., 2023), linked mindfulness to improved entrepreneurial attitudes, psychological capital and implementation intentions.

3.6. Implementation challenges of MBIs

3.6.1. Limited access to critical resources

Implementing MBIs encountered logistical challenges related to accessibility and feasibility. Limited access to critical resources, including trained facilitators, materials and funding, undermined the sustainability of these programmes, particularly in underserved or remote regions such as refugee camps (Aizik-Reebs et al., 2021; Amir et al., 2024; Baluku, 2024a; Baluku et al., 2023; Barajas, 2024; Blignault et al., 2021b, 2023; Fayad et al., 2024; Fortuna et al., 2023; Kalmanowitz and Ho, 2016; Kuru et al., 2024; Mubarak, 2023; Van der Gucht et al., 2019). Inadequate local infrastructure hindered the delivery of regular sessions, while logistical issues, such as scheduling for participants with demanding obligations—such as students or caregivers—further complicated implementation (Gawande et al., 2023; Musanje et al., 2024).

3.6.2. Cultural and linguistic adaptation

Cultural and linguistic factors represented significant barriers to the effective implementation of MBIs. These interventions often required extensive adaptation to align with participants' cultural and religious values (Baluku, 2024b; Barajas, 2024; Blignault et al., 2021b, 2023; Fortuna et al., 2023; Van der Gucht et al., 2019). Additionally, mindfulness practices often conflict with participants' spiritual or religious beliefs, resulting in resistance or misunderstanding (Blignault et al., 2021b, 2023; Callender et al., 2022; Fortuna et al., 2023). Language barriers exacerbated these challenges, as many programmes lacked translations or facilitators capable of communicating in participants' native languages (Baluku, 2024b; Barajas, 2024; Fayad et al., 2024; Oren-Schwartz et al., 2023; Van der Gucht et al., 2019).

3.6.3. Psychological and emotional readiness

Participants' psychological and emotional readiness proved critical to the success of MBIs. For individuals who have experienced trauma, such as refugees or those with PTSD, mindfulness practices could inadvertently provoke re-traumatisation (Fortuna et al., 2023; Kalmanowitz, 2016; Kalmanowitz and Ho, 2016; Van der Gucht et al., 2019). Moreover, the stigma surrounding mental health inhibits participants from engaging openly (Fayad et al., 2024; Musanje et al., 2024). Many individuals also lack familiarity with mindfulness concepts, complicating their ability to integrate these practices into their daily lives (Fortuna et al., 2023; Musanje et al., 2024). Some participants struggle with motivation or fail to recognise the relevance of mindfulness to their specific needs (Kuru et al., 2024). Additionally, fear of vulnerability in group settings can impede participation (Oren-Schwartz et al., 2023). For refugees and displaced individuals, high levels of ongoing stress, uncertainty and basic survival needs took precedence, complicating consistent participation (Oren-Schwartz et al., 2023; Van der Gucht et al., 2019). Practical barriers, such as childcare responsibilities and transportation, further impeded engagement (Fayad et al., 2024; Kuru et al., 2024). In children and adolescents, developmental factors like shorter attention spans and the necessity for age-appropriate practices diminished the effectiveness of traditional mindfulness techniques (Kuru et al., 2024; Van der Gucht et al., 2019).

3.6.4. Structural and institutional challenges

Structural and institutional barriers significantly affected the effectiveness and sustainability of MBIs. Logistical issues, such as timetable conflicts and inadequate facilities, were reported as key obstacles to program delivery (Kuru et al., 2024; Van der Gucht et al., 2019). Many interventions were short-term, often lasting only a few weeks, which did not allow adequate time for participants to develop and integrate mindfulness skills (Gawande et al., 2023; Van der Gucht et al., 2019). Additionally, there was frequently a lack of follow-up support to help participants maintain their practices post-intervention (Mubarak, 2023; Oren-Schwartz et al., 2023). Lack of policy support and the integration difficulties of MBIs into existing health and education systems, particularly in low-resource settings where competing priorities and limited infrastructure persisted (Fayad et al., 2024; Mubarak, 2023; Musanje et al., 2024; Oren-Schwartz et al., 2023). Musanje et al. (2024) found that the issues affecting the implementation of MBIs included a limited follow-up period, constrained control conditions, a high attrition rate, smaller randomized groups and organisational constraints. Similarly, Oren-Schwartz et al. (2023) identified limitations to MBIs, comprising gaps in mechanism testing, weakness in control condition design, measurement limits, ethical constraints on study design and restricted temporal inference, as mediation analyisis were conducted at only two timepoints (pre- to post-intervention).

3.6.5. Facilitator-related challenges

Facilitator-related challenges in implementing MBIs present various barriers that hinder effective delivery. A primary issue is the insufficient training and expertise among facilitators, which restricts their ability to tailor sessions to meet the diverse needs of participants, as highlighted by Van der Gucht et al. (2019). Furthermore, facilitators often grapple with cultural and contextual insensitivity, failing to align interventions with participants' cultural or social norms (Fortuna et al., 2023; Mubarak, 2023). Emotional and mental strain is another significant challenge, especially for those working with populations experiencing high levels of stress or trauma, such as refugees, as emphasised by Kuru et al. (2024). A shortage of culturally competent facilitators trained in

trauma-informed practices impeded work with vulnerable populations. Furthermore, facilitators in high-stress environments frequently experience burnout and turnover, disrupting programme continuity (Kalmanowitz, 2016; Oren-Schwartz et al., 2023).

3.6.6. Evaluation of the intervention challenges

Evaluating MBIs posed significant challenges, particularly in assessing their effectiveness among diverse and vulnerable populations. Research on the impact of MBIs on groups such as refugees and children was limited, leading to gaps in understanding their full potential (Mubarak, 2023; Van der Gucht et al., 2019). Additionally, variations in participant engagement and differing assessment metrics further complicated outcome measurement (Musanje et al., 2024; Oren-Schwartz et al., 2023). To establish robust evidence and improve the design and delivery of MBIs, standardising evaluation methods and conducting more inclusive research were deemed essential.

4. Discussion

The studies included in this scoping review highlight the impact of MBIs in addressing a range of mental health challenges, particularly among trauma-affected refugee and migrant populations, despite numerous challenges. In these vulnerable populations, MBIs—such as MBTR-R, MTPC, MBCT-Dual, preschool refugee mindfulness program, acceptance and mindfulness-based group intervention, intensive MBI vs. CBT comparative trial and mindfulness-based cognitive therapy with spiritual adaptation—have been shown to reduce symptoms of PTSD, anxiety, depression, and emotional dysregulation, while concurrently strengthening resilience and coping skills (Aizik-Reebs et al., 2021, 2022; Amir et al., 2024; Blignault et al., 2021a, 2023; Fortuna et al., 2023; Mubarak, 2023; Oren-Schwartz et al., 2023). Across the included studies, validated instruments including the HTQ, PHQ-9, DASS-21, CRIES, and SCS-SF were extensively utilised. Improvements in self-esteem and resilience were noted in children (Aizik-Reebs et al., 2021, 2022; Amir et al., 2024; Blignault et al., 2021a, 2021b; Fortuna et al., 2023; Gawande et al., 2023; Kuru et al., 2024; Mubarak, 2023; Musanje et al., 2024; Oren-Schwartz et al., 2023; Van der Gucht et al., 2019). Qualitative data emphasised trauma processing and emotional safety via symbolic expression (Kalmanowitz, 2016; Kalmanowitz and Ho, 2016).

Tailored mindfulness interventions notably enhanced emotional regulation and decreased trauma-related shame and guilt among Eritrean asylum seekers (Oren-Schwartz et al., 2023). This study identified the adaptability of MBIs to various cultural, religious, linguistic and demographic settings (Blignault et al., 2021a; Callender et al., 2022; Fortuna et al., 2023). The interventions improved mental health by addressing stigma, depression and anxiety (Blignault et al., 2021a; Musanje et al., 2024) and provided safe, expressive outlets for trauma survivors, demonstrating unique advantages in engaging vulnerable populations (Kalmanowitz, 2016; Kalmanowitz and Ho, 2016). Programmes designed for unaccompanied minors (Van der Gucht et al., 2019) and interventions for displaced children in refugee shelters (Kuru et al., 2024) addressed critical gaps in mental health support.

Culturally tailored MBIs demonstrated high acceptability among refugees and migrants, with retention rates of 78 %–84 % and strong participant endorsement of linguistic relevance and practical benefits (Blignault et al., 2021a). Among Arabic-speaking women, qualitative data described integrating practices into daily life and viewing the program as culturally and spiritually congruent (Blignault et al., 2021b). Factors influencing the acceptability of MBIs include perceived credibility, alignment with personal values, and group participation benefits, such as experience sharing and support (Zhang et al., 2024). Customising interventions for specific health conditions can further enhance participant engagement and satisfaction. Culturally adapted online mindfulness-based interventions have shown high acceptability and feasibility for addressing post-migration trauma and chronic stress among Latino/a immigrants in the United States (Muñoz Bohorquez et al., 2023).

This research highlights the scalability and cultural adaptability of MBIs, advocating for their broader integration into trauma recovery frameworks, mental health services and community-based support systems. Overall, MBIs not only mitigated the effects of trauma but also fostered resilience, emotional growth and community wellbeing across diverse contexts (Blignault et al., 2021a, 2023; Fayad et al., 2024; Van der Gucht et al., 2019). Similar to the results from this study, the literature from different contexts and demographics highlights the importance of MBIs in reducing symptoms of depression, anxiety and stress in perinatal women with pre-existing mental health conditions (Yan et al., 2022) and in patients with chronic physical health issues (Liu et al., 2022). During the COVID-19 pandemic, online MBIs effectively improved mental wellbeing (Witarto et al., 2022). Furthermore, MBIs have demonstrated potential benefits for undergraduate students (Chiodelli et al., 2022) and serve as a preventative strategy for perinatal women without prior mental health issues (Corbally and Wilkinson, 2021). Research also suggests that MBIs may influence biomarkers and decrease low-grade inflammation linked to psychiatric disorders (Sanada et al., 2020). Additionally, mindfulness-based art therapy (MBAT) has emerged as a practical approach for alleviating anxiety symptoms (Beerse et al., 2020). However, further rigorous research with larger sample sizes and extended follow-up periods is necessary to validate the long-term efficacy of MBIs (Zhang et al., 2021).

Implementation of MBIs faces several challenges from a humanitarian context, such as limited resources, cultural and linguistic barriers, lack of psychological and emotional readiness and inadequate implementation and evaluation of the interventions (Baluku, 2024a; Baluku et al., 2023; Barajas, 2024; Blignault et al., 2021b, 2023; Fortuna et al., 2023; Kalmanowitz and Ho, 2016; Kuru et al., 2024; Mubarak, 2023; Oren-Schwartz et al., 2023; Van der Gucht et al., 2019). Similarly, the literature shows that MBI implementation has obstacles, including misalignment with MBI standards, insufficient training and organisational barriers that impact feasibility (Emerson et al., 2020; Wigelsworth and Quinn, 2020). Hospitals face difficulties related to cultural values, time constraints and space allocation (Knudsen et al., 2024). Ethical concerns, particularly cultural sensitivity and promoting pro-social behaviour, complicate MBI implementation in educational contexts (Berger et al., 2024). In addiction treatment, adapting traditional formats and integrating technology-based platforms pose significant challenges (Wilson et al., 2017). Efforts to use MBIs for cardiovascular risk interventions often struggle with effectively engaging racial and ethnic minority populations (Sanchez et al., 2022). In surgical training, successful implementation depends on addressing cultural considerations, infrastructure limitations and adaptability (Lebares et al., 2020). Researchers highlight the need for standardised assessment tools, such as the MBI, to overcome these barriers and ensure intervention integrity and best practices (Crane and Kuyken, 2018).

4.1. Implications for healthcare, research and policy development

This review identified that MBIs present an evidence-based method for mitigating psychological distress and enhancing mental health in refugee and migrant populations. Included studies indicated MBIs effectively reduce PTSD, depression, and anxiety symptoms in these groups. Additionally, MBIs improve mindfulness, emotional regulation, and overall quality of life, fostering adaptive self-compassion and reducing self-criticism—key factors in trauma recovery and mental wellbeing. MBIs are flexible and can be applied in low-resource settings, allowing healthcare providers to offer care that respects cultural differences and meets the specific needs of various communities. Training healthcare workers in mindfulness techniques can also improve patient interactions, leading to better overall care. However, cultural and contextual adaptation of these interventions is crucial for their relevance and effectiveness. Despite promising results, further rigorous, large-

scale studies are necessary to fortify the evidence base and inform the development of scalable, sustainable mental health strategies for refugee and migrant communities. Additionally, more research is needed to understand how MBIs work and how they are compared to traditional therapies over the long term. Future studies should focus on creating culturally appropriate interventions and evaluating how well MBIs can be implemented in different settings. Policymakers can use this information to include MBIs in national mental health plans, especially for vulnerable groups like refugees. It is crucial to ensure that these interventions are sustainable by emphasising collaboration, funding and training in culturally sensitive practices. Strong partnerships among governments, healthcare providers and research organisations can help turn evidence into practice, leading to a more inclusive and adequate mental healthcare system.

4.2. Strengths and limitations

This scoping review employed a rigorous methodology to explore the literature on the types of MBIs, outcomes and measurement tools, effectiveness of the interventions, benefits and challenges of MBIs implementation in refugee and migrant populations. However, the interpretation of the findings must consider certain limitations. Small sample sizes in some studies restrict generalisability and statistical power. There is a lack of consistent longitudinal follow-up to assess the sustainability of intervention effects. Cultural and contextual differences among diverse refugee and migrant populations have not been fully addressed, limiting cross-context applicability. Furthermore, methodological variations hinder direct comparisons, such as the absence of standardised measures or control groups in certain studies. Language barriers, potential bias in self-reported data and reliance on quantitative methods without sufficient qualitative exploration further reduce the depth of understanding. These limitations highlight the need for more robust, culturally nuanced and methodologically diverse research to improve the relevance and scalability of MBIs for refugees and migrants.

5. Conclusion

The reviewed studies highlight the substantial efficacy of MBIs in improving the mental health and wellbeing of refugee and migrant populations across various contexts. Key findings indicate that MBIs significantly alleviate PTSD, depression and anxiety while fostering resilience, self-compassion and emotional regulation. Specific interventions are positively correlated with psychological capital, entrepreneurial intentions and social connectedness. Culturally-tailored approaches—such as integrating spiritual beliefs and adapting to community specifics—have enhanced engagement and effectiveness.

The consistent use of validated and standardised outcome measures in MBI is essential for accurately assessing the efficacy of interventions. These tools enhance the reliability and sensitivity of results, ensuring that observed outcomes accurately reflect real changes rather than measurement errors. Additionally, they facilitate comparability across studies and populations, informing evidence-based clinical practice, community programming, and policy development. Nonetheless, limitations such as small sample sizes, methodological inconsistencies and cultural variations necessitate further investigation. There is a need to prioritise larger, diverse samples and longitudinal designs to evaluate the long-term sustainability of intervention effects. Emphasising qualitative methods will help capture nuanced cultural and contextual insights, while standardising outcome measures will improve comparability. Enhancing MBI accessibility through technology, addressing barriers such as language and stigma and involving refugee communities in co-design will improve cultural relevance and scalability. These strategies can advance the broader application of MBIs as an effective and impactful solution to the complex mental health needs of displaced populations.

CRediT authorship contribution statement

Alexis Harerimana: Writing – review & editing, Writing – original draft, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Julian David Pillay:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Conceptualization. **Gugu Mchunu:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Conceptualization.

Funding

This research is funded by the Harnessing Talent (HANT) Post Doctoral Fellowship (PDF) from the Durban University of Technology (DUT), in Durban, South Africa.

Declaration of competing interest

The authors have declared no conflict of interest.

References

Aizik-Reebs, A., Amir, I., Yuval, K., Hadash, Y., Bernstein, A., 2022. Candidate mechanisms of action of mindfulness-based trauma recovery for refugees (MBTR-R): Self-compassion and self-criticism. J. Consult. Clin. Psychol. 90 (2), 107–122. https://doi.org/10.1037/ccp0000716.

Aizik-Reebs, A., Yuval, K., Hadash, Y., Gebreyohans Gebremariam, S., Bernstein, A., 2021. Mindfulness-based trauma recovery for refugees (MBTR-R): randomized waitlist-control evidence of efficacy and safety. Clin. Psychol. Sci. 9 (6), 1164–1184. https://doi.org/10.1177/2167702621998641.

Alvarado-Segovia, C.J., Ruiz-Gallegos, M.N., 2025. Mindfulness-Based Creative Art Expressive Therapy: an Integrative Psychotherapy Approach to Posttraumatic Stress Disorder in Migrants. World Congress for Psychotherapy 2025.

Amir, I., Aizik-Reebs, A., Yuval, K., Hadash, Y., Bernstein, A., 2024. Cognitive inhibition in trauma recovery among asylum seekers: test in a randomized trial of mindfulness-based trauma recovery for refugees. Clin. Psychol. Sci. 12 (3), 347–361. https://doi.org/10.1177/21677026231164958.

Anderson, J.R., 2025. Acceptability of psychosocial interventions for refugees and asylum seekers: a systematic literature review. Ment. Health Sci. 3 (3), e70024. https://doi.org/10.1002/mhs2.70024.

Apers, H., Van Praag, L., Nöstlinger, C., Agyemang, C., 2023. Interventions to Improve the Mental Health or Mental well-being of Migrants and Ethnic Minority Groups in Europe: a Scoping Review. Global Mental Health, Cambridge Prisms, p. e23. https://doi.org/10.1017/gmh.2023.15, 10.

Baer, R.A., 2003. Mindfulness training as a clinical intervention: a conceptual and empirical review. Baer, Ruth A 10 (2), 125–143. https://bemindful.org/articles/baer2003.pdf.

Baluku, M.M., 2024a. Mindfulness and the theory of planned behavior: explaining entrepreneurial intentions of refugees in Uganda. J. Enterprising Communities 18 (5), 1170–1192. https://doi.org/10.1108/JEC-01-2024-0008.

Baluku, M.M., 2024b. Mindfulness, psychological capital, and refugee entrepreneurial abilities and intentions - the moderating effects of occupational future time perspective. Small Enterp. Res. 1–33. https://doi.org/10.1080/13215906.2024.2433267.

Baluku, M.M., Nansubuga, F., Musanje, K., Nantamu, S., Otto, K., 2023. The role of mindfulness, psychological capital, and social capital in the well-being of refugees in Uganda. Current Research in Ecological and Social Psychology 5, 1–11. https://doi.org/10.1016/j.cresp.2023.100148.

Barajas, K.R., 2024. Mindful Resilience: Exploring the Role of Dispositional Mindfulness in Acculturative Stress, Affect and well-being Among Newcomer Afghan Refugees [Thesis, Palo Alto University].

Beerse, M.E., Van Lith, T., Pickett, S.M., Stanwood, G.D., 2020. Biobehavioral utility of mindfulness-based art therapy: neurobiological underpinnings and mental health impacts. Exp. Biol. Med. 245 (2), 122–130. https://doi.org/10.1177/1535370219883634.

Berger, R., Tarrasch, R., Lieblich, M., 2024. Addressing ethical concerns in implementing mindfulness-based interventions in educational setting. Mindfulness 15, 2073–2081. https://doi.org/10.1007/s12671-024-02332-7.

Blignault, I., Saab, H., Woodland, L., Mannan, H., Kaur, A., 2021a. Effectiveness of a community-based group mindfulness program tailored for Arabic and Bangla-speaking migrants. Int. J. Ment. Health Syst. 15 (32), 1–13. https://doi.org/10.1186/s13033-021-00456-0.

Blignault, I., Saab, H., Woodland, L., O'Callaghan, C., 2021b. Cultivating mindfulness: evaluation of a community-based mindfulness program for arabic-speaking women in Australia. Current Psychology: a Journal for Diverse Perspectives on Diverse Psychological Issues. https://doi.org/10.1007/s12144-021-02146-z.

Blignault, I., Saab, H., Woodland, L., Youssef, H., Baddah, H., Giourgas, K., 2023. "It is Definitely a Good Program for everyone from every community": a qualitative study of community partner perspectives on the culturally and linguistically diverse (CALD) mindfulness program. Int. J. Environ. Res. Publ. Health 20, 1–16. https://doi.org/10.3390/ijerph20166608.

Budde, H., Akko, D.P., Ainamani, H.E., Murillo-Rodríguez, E., Weierstall, R., 2018. The impact of an exercise training intervention on cortisol levels and post-traumatic stress disorder in juveniles from an Ugandan refugee settlement: study protocol for a randomized control trial. Trials 19 (1). https://doi.org/10.1186/s13063-018-2753-x.

Bustamante, L.H., Cerqueira, R.O., Leclerc, E., Brietzke, E., 2017. Stress, trauma, and posttraumatic stress disorder in migrants: a comprehensive review. Rev. Bras. Psiquiatr. 40 (2), 220–225. https://doi.org/10.1590/1516-4446-2017-2290.

Cadorin, C., Purgato, M., Turrini, G., Prina, E., Ferreira, M.C., Cristofalo, D., Bartucz, M. B., Witteveen, A.B., Sijbrandij, M., Papola, D., 2024. Mapping the Evidence on Psychosocial Interventions for Migrant Populations: Descriptive Analysis of a Living Database of Randomized Studies. Global Mental Health, Cambridge Prisms, p. e35. https://doi.org/10.1017/gmh.2024.33, 11.

Callender, K.A., Ong, L.Z., Othman, E.H., 2022. Prayers and mindfulness in relation to mental health among first-generation immigrant and refugee Muslim women in the USA: an exploratory Study. J. Relig. Health 61 (5), 3637–3654. https://doi.org/10.1007/s10943-022-01600-x.

Carroll, H.A., Kvietok, A., Pauschardt, J., Freier, L.F., Bird, M., 2023. Prevalence of common mental health disorders in forcibly displaced populations versus labor migrants by migration phase: a meta-analysis. J. Affect. Disord. 321, 279–289. https://doi.org/10.1016/j.jad.2022.10.010.

Caswell, J.R., Duggirala, A.N., Verhaeghen, P., 2022. Letting go as an aspect of rumination and its relationship to mindfulness, dysphoria, anxiety, and eudemonic well-being. Caswell, Jesse R 12 (369), 1–15. https://doi.org/10.3390/bs12100369.

Charness, G., Le Bihan, Y., Villeval, M.C., 2024. Mindfulness training, cognitive performance and stress reduction. Charness, Gary 217, 207–226. https://doi.org/10.1016/j.jebo.2023.10.027.

Chiodelli, R., Mello, L.T. N.d., Jesus, S.N.d., Beneton, E.R., Russel, T., Andretta, I., 2022. Mindfulness-based interventions in undergraduate students: a systematic review. J. Am. Coll. Health 70 (3), 791–800. https://doi.org/10.1080/07448481.2020.1767109.

Corbally, L., Wilkinson, M., 2021. The effect of mindfulness-based interventions on stress, depression and anxiety during the perinatal period in women without pre-existing stress, depressive or anxiety disorders: a systematic review and meta-analysis of controlled trials. Mindfulness 12 (10), 2357–2370. https://doi.org/10.1007/s12671-021-01697-3.

Cowling, M.M., Anderson, J.R., 2023. The effectiveness of therapeutic interventions on psychological distress in refugee children: a systematic review. J. Clin. Psychol. 79 (8), 1857–1874. https://doi.org/10.1002/jclp.23479.

Crane, R.S., Kuyken, W., 2018. The mindfulness-based interventions: teaching assessment criteria (MBI:TAC): reflections on implementation and development. Curr. Opin. Psychol. 28, 6–10. https://doi.org/10.1016/j.copsyc.2018.10.004.

Emerson, L.-M., Diaz, N.N.d., Sherwood, A., Waters, A.M., Farrell, L.J., 2020. Mindfulness interventions in schools: integrity and feasibility of implementation. IJBD (Int. J. Behav. Dev.) 44, 62–75. https://doi.org/10.1177/0165025419866906.

Fayad, Z., Bakhsh, H.R., Alheresh, R., 2024. Refugee caregivers' perceptions of using mindfulness-based interventions to support coping skills in children with disability in Jordan. Children 11 (1381), 1–13. https://doi.org/10.3390/children11111381.

Fortuna, L.R., Martinez, W., Porche, M.V., 2023. Integrating spirituality and religious beliefs in a mindfulness based cognitive behavioral therapy for PTSD with latinx unaccompanied immigrant children. J. Child Adolesc. Trauma 16 (3), 481–494. https://doi.org/10.1007/s40653-023-00541-1.

Gawande, R., Smith, L., Comeau, A., Creedon, T.B., Wilson, C.L., Griswold, T., Cook, B.L., Loucks, E.B., Schuman-Olivier, Z., 2023. Impact of warm mindfulness on emotion regulation: a randomized controlled effectiveness trial. Health Psychol. 42 (10), 699–711. https://doi.org/10.1037/hea0001303.

Halady, E., Cook-Cottone, C., 2023. Mindful self-care, coping, and meaning in life: an examination of the professional quality of life and well-being among individuals who support and provide services to refugees. Psychol. Trauma: Theory, Research, Practice & Policy 15, S465–S473. https://doi.org/10.1037/tra0001502.

Hayes-Skelton, S., Graham, J., 2013. Decentering as a common link among mindfulness, cognitive reappraisal, and social anxiety. Hayes-Skelton, Sarah 41 (3), 317–328. https://doi.org/10.1017/S1352465812000902.

Hettich, N., Seidel, F.A., Stuhrmann, L.Y., 2020. Psychosocial interventions for newly arrived adolescent refugees: a systematic review. Adolesc. Res.Rev. 5 (2), 99–114. https://doi.org/10.1007/s40894-020-00134-1.

Heyeres, M., Perera, N., Udah, H., Attakey, A., Whiteside, M., Tsey, K., 2021. Interventions targeting the wellbeing of migrant youths: a systematic review of the literature. Sage Open 11 (3), 1–14. https://doi.org/10.1177/21582440211046942.

Hong, Q.N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A., 2018. The Mixed Methods Appraisal Tool (MMAT) version 2018. Canadian Intellectual Property Office.

Jeebodh-Desai, L., Dwarika, V.M., 2022. Trauma-sensitive mindfulness for war refugees: communication of preliminary findings. Trauma Care 2 (4), 556–568. https://doi.org/10.3390/traumacare2040046.

Jiwattanasuk, N., Vasuratna, V., Deegalle, M., 2024. Mindfulness-based practice for multicultural meditation practitioners to develop mental well-being. A Research Work. Buddhist Research Institute: Mahachulalongkornrajavidyalaya University.

Kalmanowitz, D., 2016. Inhabited studio: art therapy and mindfulness, resilience, adversity and refugees. Int. J. Art Ther.: Inscape 21 (2), 75–84. https://doi.org/10.1080/17454832.2016.1170053.

Kalmanowitz, D., Ho, R.T.H., 2016. Out of our mind. Art therapy and mindfulness with refugees, political violence and trauma. Arts Psychother. 49, 57–65. https://doi.org/10.1016/j.aip.2016.05.012.

Kemmak, R.A., Nargesi, S., Saniee, N., 2021. Social determinant of mental health in immigrants and refugees: a systematic review. Med. J. Islam. Repub. Iran 35, 1–9. https://doi.org/10.47176/mjiri.35.196.

Knudsen, R.K., Skovbjerg, S., Pedersen, E.L., Nielsen, C.L., Storkholm, M.H., Timmermann, C., 2024. Factors affecting implementation of mindfulness in hospital settings: a qualitative meta-synthesis of healthcare professionals' experiences. International Journal of Nursing Studies Advances 6, 100192. https://doi.org/10.1016/j.ijnsa.2024.100192.

Kuru, N., Ungar, M., Akman, B., 2024. Social-emotional outcomes in refugee children: a pilot randomized controlled trial of a school-based mindfulness intervention implemented in a refugee camp. J. Child Fam. Stud. 33 (11), 3516–3528. https://doi.org/10.1007/s10826-024-02924-w.

Lebares, C.C., Guvva, E., Desai, A.B., Herschberger, A., Ascher, N., Harris, H.W., O'Sullivan, P.S., 2020. Key factors for implementing mindfulness-based burnout interventions in surgery. Am. J. Surg. 219, 328–334. https://doi.org/10.1016/j.amjsurg.2019.10.025.

Levac, D., Colquhoun, H., O'Brien, K.K., 2010. Scoping studies: advancing the methodology. Implement. Sci. 5 (1), 69. https://doi.org/10.1186/1748-5908-5-69.

Liu, Z., Jia, Y., Li, M., Meng, X., Shang, B., Wang, C., Chen, L., 2022. Effectiveness of online mindfulness-based interventions for improving mental health in patients with physical health conditions: systematic review and meta-analysis. Arch. Psychiatr. Nurs. 37, 52–60. https://doi.org/10.1016/j.apnu.2021.10.001.

Mubarak, O.H., 2023. *The Effect of Mindfulness-based Intervention on Cognitive Function and Wellbeing of People with Mild Traumatic Brain Injury and Refugees with PTSD* Bangor University].

Muñoz Bohorquez, J., Parra, D.C., Saperstein, S.L., Aparicio, E.M., Lewin, A.B., Green, K. M., 2023. Feasibility of implementing a mindfulness-based online program for Latina immigrants and the staff that work with them. Mindfulness 14 (5), 1148–1161. https://doi.org/10.1007/s12671-023-02123-6.

Musanje, K., Kasujja, R., Camlin, C.S., Hooper, N., Hope-Bell, J., Sinclair, D.L., Kibanja, G.M., Mpirirwe, R., Kalyango, J.N., Kamya, M.R., 2024. Effectiveness of a mindfulness and acceptance-based intervention for improving the mental health of adolescents with HIV in Uganda: an open-label trial. PLoS One 19 (5). https://doi.org/10.1371/journal.pone.0301988.

Nocon, A., Eberle-Sejari, R., Unterhitzenberger, J., Rosner, R., 2017. The effectiveness of psychosocial interventions in war-traumatized refugee and internally displaced minors: systematic review and meta-analysis. Eur. J. Psychotraumatol. 8 (Suppl. 2), 1388709. https://doi.org/10.1080/20008198.2017.1388709.

Oren-Schwartz, R., Aizik-Reebs, A., Yuval, K., Hadash, Y., Bernstein, A., 2023. Effect of mindfulness-based trauma recovery for refugees on shame and guilt in trauma recovery among African asylum-seekers. Emotion 23 (3), 622–632. https://doi.org/10.1037/emo0001126.

Purgato, M., Tedeschi, F., Turrini, G., Cadorin, C., Compri, B., Muriago, G., Ostuzzi, G., Pinucci, I., Prina, E., Serra, R., 2025. Effectiveness of a stepped-care programme of WHO psychological interventions in a population of migrants: results from the RESPOND randomized controlled trial. World Psychiatry 24 (1), 120–130. https://onlinelibrary.wiley.com/doi/pdf/10.1002/wps.21281.

Rzepka, I., Zehetmair, C., Nagy, E., Friederich, H.C., Nikendei, C., 2024. Implementing a stabilizing intervention for traumatized refugees in temporary accommodations in South-West Germany - a randomized controlled pilot trial. Front. Psychiatr. 15. https://doi.org/10.3389/fpsyt.2024.1453957.

Sanada, K., Montero-Marin, J., Barceló-Soler, A., Ikuse, D., Ota, M., Hirata, A., Yoshizawa, A., Hatanaka, R., Valero, M.S., Demarzo, M., 2020. Effects of mindfulness-based interventions on biomarkers and low-grade inflammation in patients with psychiatric disorders: a meta-analytic review. Int. J. Mol. Sci. 21 (7), 2484. https://doi.org/10.3390/ijms21072484.

Sanchez, T.F., Santamaria, E.K., Brewer, J.A., Rubenstein, D., Operario, D., 2022. A systematic review to identify targets of mindfulness-based interventions for cardiovascular risk to enhance engagement with Racial/Ethnic minorities. Mindfulness 13, 2932–2951. https://doi.org/10.1007/s12671-022-01986-5.

Shapero, B.G., Greenberg, J., Pedrelli, P., de Jong, M., Desbordes, G., 2018. Mindfulness-based interventions in psychiatry. Shapero, Benjamin G 16 (1), 32–39. https://doi.org/10.1176/appi.focus.20170039.

She, X., Tong, L., Wang, H., Lan, L., Wang, M., Abbey, C., Singh, M.K., Rozelle, S., 2023. Community mindfulness and mentorship preventive intervention in migrant chinese children: a randomized controlled trial. JAACAP Open 1 (4), 295–305. https://doi.org/10.1016/j.jaacop.2023.08.004.

Simmons, L.A., Williams, H., Silva, S., Keefe, F., Tanabe, P., 2019. Acceptability and feasibility of a mindfulness-based intervention for pain catastrophizing among persons with sickle cell disease. Pain Manag. Nurs. 20 (3), 261–269. https://doi.org/10.1016/j.pmn.2018.10.002.

Teixeira-Santos, A.C., Gomes, L., Pereira, D.R., Ribeiro, F., Silva-Fernandes, A., Federspiel, C., Steinmetz, J.-P., Leist, A.K., 2023. The MEDITAGING study: protocol of a two-armed randomized controlled study to compare the effects of the mindfulness-based stress reduction program against a health promotion program in older migrants in Luxembourg. BMC Public Health 23 (1), 2470. https://doi.org/10.1186/s12889-023-17387-9.

Tricco, A.C., Lillie, E., Zarin, W., O'Brien, K.K., Colquhoun, H., Levac, D., Moher, D., Peters, M.D., Horsley, T., Weeks, L., 2018. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann. Intern. Med. 169 (7), 467–473. https://doi.org/10.7326/M18-0850.

Turrini, G., Purgato, M., Cadorin, C., Bartucz, M., Cristofalo, D., Gastaldon, C., Nosè, M., Ostuzzi, G., Papola, D., Prina, E., 2025. Comparative efficacy and acceptability of psychosocial interventions for PTSD, depression, and anxiety in asylum seekers, refugees, and other migrant populations: a systematic review and network meta-

analysis of randomised controlled studies. The Lancet Regional Health–Europe 48. https://doi.org/10.1016/j.lanepe.2024.101152.

Van der Gucht, K., Glas, J., De Haene, L., Kuppens, P., Raes, F., 2019. A mindfulness-based intervention for unaccompanied refugee minors: a pilot study with mixed methods evaluation. J. Child Fam. Stud. 28 (4), 1084–1093. https://doi.org/10.1007/s10826-019-01336-5.

Verhülsdonk, I., Shahab, M.K., Molendijk, M.L., 2021. Prevalence of psychiatric disorders among refugees and migrants in immigration detention: systematic review with meta-analysis. BJPsych Open 7, 1–8. https://doi.org/10.1192/bjo.2021.1026.

Wang, S., Wu, M., Wei, J., Xia, W., Luo, Z., Tian, L., 2025. Effectiveness of mindfulness-based cognitive therapy via e-health on anxiety and depression in adults: a meta-analysis. Gen. Hosp. Psychiatry 96, 211–222. https://doi.org/10.1016/j.genhosppsych.2025.07.017.

WHO, 2025. Refugee and Migrant Mental Health. World Health Organisation. https://www.who.int/news-room/fact-sheets/detail/refugee-and-migrant-mental-health.

Wigelsworth, M., Quinn, A., 2020. Mindfulness in schools: an exploration of teachers' perceptions of mindfulness-based interventions. Pastor. Care Educ. 38, 293–310. https://doi.org/10.1080/02643944.2020.1725908.

Wilker, S., Catani, C., Wittmann, J., Preusse, M., Schmidt, T., May, T., Ertl, V., Doering, B., Rosner, R., Zindler, A., Neuner, F., 2020. The efficacy of narrative exposure therapy for children (KIDNET) as a treatment for traumatized young refugees versus treatment as usual: study protocol for a multi-center randomized controlled trial (YOURTREAT). Trials 21 (1), 1–16. https://doi.org/10.1186/s13063-020-4127-4.

Wilson, A.D., Roos, C.R., Robinson, C.S.H., Stein, E.R., Manuel, J.A., Enkema, M.C., Bowen, S., Witkiewitz, K.A., 2017. Mindfulness-based interventions for addictive behaviors: implementation issues on the road ahead. Psychol. Addict. Behav. 31, 888–896. https://doi.org/10.1037/adb0000319.

Witarto, B.S., Visuddho, V., Witarto, A.P., Bestari, D., Sawitri, B., Melapi, T.A.S., Wungu, C.D.K., 2022. Effectiveness of online mindfulness-based interventions in improving mental health during the COVID-19 pandemic: a systematic review and meta-analysis of randomized controlled trials. PLoS One 17, 1–22. https://doi.org/10.1371/journal.pone.0274177.

Yan, H., Wu, Y., Li, H.-b., 2022. Effect of mindfulness-based interventions on mental health of perinatal women with or without current mental health issues: a systematic review and meta-analysis of randomized controlled trials. J. Affect. Disord. 305, 102–114. https://doi.org/10.1016/j.jad.2022.03.002.

Zhang, D., Lee, E.K., Mak, E.C., Ho, C.Y., Wong, S.Y., 2021. Mindfulness-based interventions: an overall review. Br. Med. Bull. 138 (1), 41–57. https://doi.org/10.1093/bmb/ldab005.

Zhang, Z., Lưu, B.C.P., Gilbert-Diamond, D., 2024. Acceptability, engagement, and preliminary efficacy of a college human physiology course with integrated mindfulness practice to support student wellbeing. Front. Psychol. 15, 1365778. https://doi.org/10.3389/fpsyg.2024.1365778.

Zoellner, L.A., Bentley, J.A., Musa, K., Mohamed, F., Ahmed, L.B., King, K.M., Feeny, N. C., 2024. Lay-led intervention for war and refugee trauma: a randomized clinical trial. JAMA Netw. Open 7 (8), e2429661. https://doi.org/10.1001/jamanetworkopen.2024.29661.