



Dowllah, I. M. and Melville, C. (2023) Effectiveness of psychosocial interventions for post-traumatic stress disorder in refugees and asylum seekers resettled in low- and middle-income countries: a systematic review and meta-analysis. *Journal of Health Psychology*, (doi: [10.1177/13591053231199254](https://doi.org/10.1177/13591053231199254))

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Title of the Article: Effectiveness of Psychosocial Interventions for Post-Traumatic Stress Disorder in Refugees and Asylum Seekers Resettled in Low- and Middle-Income Countries: A Systematic Review and Meta-analysis

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ABSTRACT

Refugees and asylum seekers are more prone to posttraumatic stress disorder (PTSD) than the general population. This systematic review aims to determine which psychosocial interventions effectively treat PTSD among refugees and asylum seekers in low- and middle-income countries (LMIC).

Relevant papers were retrieved from the bibliographic databases. PTSD symptoms post- intervention was the primary outcome.

Ten studies were selected with 1981 participants. In meta-analyses of Randomised control trials (RCTs), psychosocial interventions for PTSD (SMD -0.60, 95% CI -0.96 to -0.23; $I^2=91%$; 95% CI 75-100; 9 studies, 1789 participants) were shown to be clinically effective. Also, in case of depression (SMD -0.59, 95% CI -0.95 to -0.22; $I^2 = 84%$; 95% CI 50-90; 7 studies, 1248 participants).

Eye Movement Desensitization and Reprocessing (EMDR) had the greatest effect size among psychosocial therapies for this demographic. However, the number of studies is small, and their methodological rigour is limited, thus future study should concentrate on performing more rigorous trials.

Keywords: refugee, asylum seekers, psychosocial intervention, PTSD, mental health, LMIC, low- and-middle-income country, interventions.

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1. Introduction

The complicated issues of forcibly displaced persons (FDPs) are one of the significant hurdles in the context of global development. More than 89 million people have been forcefully displaced from their homes and 85 per cent of them are also resettled in a developing country (UNHCR, 2022).

Refugees and FDPs have been subjected to traumatic and violent stressful events and which have been linked to poor health (Hargreaves, 2002; Hollifield et al., 2002; Mollica et al., 2004), notably posttraumatic stress disorder (PTSD) and depression, across affected populations (Van Ommeren et al., 2005). PTSD is ten times more common in this demography than in the general population (Bogic et al., 2012; Fazel et al., 2005; Hargreaves, 2002; Nickerson et al., 2011).

Psychosocial interventions have been proven to be favourable in treating PTSD in previous studies (Bisson et al., 2013; Bisson and Andrew, 2007; Cusack et al., 2016; Kruse et al., 2009; Lewis et al., 2020; Tol et al., 2013, 2014). Relief from symptoms, improved functioning and quality of living can be achieved using psychosocial interventions (Bracken et al., 1995; Dua et al., 2011). Most research shows that therapies with a trauma focus component have the most success in reducing the symptoms of PTSD without addressing the event's distressful memory or associated thoughts (Bisson et al., 2013; Bradley et al., 2005; Cusack et al., 2016; Lewis et al., 2020). Psychosocial interventions can benefit asylum seekers, and refugees relocated to high-income countries (HICs) (Nosè et al., 2017; Rawlinson et al., 2020). However, the implementation in low- and middle-income countries (LMICs) are still restricted (Patel et al., 2011). The limited resource, scarcity of mental health experts and inadequate research on LMICs makes it challenging to carry out psychosocial interventions (Booyens and Kagee, 2020; Rahman et al., 2008).

Trauma-focused Cognitive Behavioural Therapy (CBT), Eye Movement Desensitization and Reprocessing (EMDR) and Narrative Exposure Therapy (NET) have been shown to be the most effective treatments for asylum seekers and refugees who have PTSD, according to five systematic reviews published since 2018 (Kip et al., 2020; Naseh et al., 2019; Thompson et al., 2018; Turrini et al., 2019, 2021) looked at the impact of psychosocial interventions on PTSD outcomes in asylum seekers, and refugees relocated to LMICs, where it is a much more complex and problematic issue. Turrini et al. (2021) evaluate each intervention's potential ranking using network meta-analysis methodologies to reduce the gap. However, this study included research from all nations, regardless of economic status, and did not conduct a subgroup analysis for LMICs. Moreover, since February 2020 several studies have been released. In order to successfully implement universal mental health

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care, it is crucial to first target the most vulnerable demographic and maintain an up-to-date understanding of their mental health problems.

There is less information to address the particular problems of refugees and forcibly displaced individuals resettled in LMICs. In addition, there are no reviews that focus exclusively on the topic. This review seeks to determine the effectiveness of psychosocial intervention in treating PTSD in refugee resettled in LMIC. The research question is, which psychosocial interventions are effective in lowering symptoms and enhancing the quality of life in refugees and asylum seekers with PTSD?

2. Materials and Methods

This study following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021).

2.1 Selection Criteria:

The search strategy was developed based on previous studies (Nosè et al., 2017; Turrini et al., 2021), and utilising the ScHARR LMIC filter (Sutton and Campbell, 2022) to minimise the likelihood of missing relevant studies. A college librarian was then consulted to evaluate the search keywords and give recommendations for improvement, which were incorporated into the final search.

Until September 2022, the following bibliographic databases were searched: Medline, PsycINFO, CINAHL, and Web of Science. All of them were picked to provide comprehensive coverage of a wide range of topics and disciplines. Combining keywords linked to PTSD, psychosocial interventions, and refugees and asylum seekers (both MeSH terms and text words).

2.2 Screening and selection of studies

Screening of identified studies was used to exclude papers whose titles did not appear to fulfil the inclusion requirements. After that, the author examined the abstracts and evaluated their relevancy; again, those that obviously did not fit the inclusion requirements were ruled out of consideration.

Studies that met the following criteria were considered for inclusion:

- (a) Asylum seeker or Refugee status is required for participation.
- (b) Being of any age and having relocated to LMIC, according to the criteria established by the World Bank (World Bank, 2019).
- (c) A minimum of one psychosocial therapy aimed at reducing PTSD symptoms.
- (d) Psychosocial interventions are evaluated in comparison to the waiting list, standard treatment, or alternative treatments.
- (e) Published in English.
- (f) Randomised control trials (RCTs).

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The following criteria were used to exclude papers from this review:

- (a) Study do not include refugees and forcibly displaced population.
- (b) Conference papers/abstracts
- (c) Case reports and social commentary
- (d) Any reviews (literature, systematic or meta-analysis).
- (e) Non-English language papers.
- (f) Unpublished data, grey literature.

2.3 Outcome Measures

Post-intervention mean scores on reliable rating instruments were analysed as a primary outcome. The Harvard Trauma Questionnaire (HTQ)(Mollica et al., 1992), the Clinician-Administered PTSD Scale (CAPS) (Blake et al., 1995), PTSD Checklist- Civilian six-item version (PCL-6) or data from another appropriate PTSD rating scale were employed in this investigation. The relative rating measures are used for secondary outcomes to assess post-intervention functioning, well-being, and quality of life. Data on depressive symptoms were collected using validated and reliable instruments, including the Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960) and the Beck Depression Inventory-II (BDI-II) (Beck et al., 1996).

2.4 Data extraction and quality assessment

The data used in this study were extracted using the methods outlined in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al., 2022) and a previous study from Turrini et al. (2021). In case of missing data author will be contacted.

All included studies were assessed for their quality using the Cochrane Collaboration's "Risk of Bias" assessment tool (RoB2) (Higgins et al., 2022). After analysing for the existence of sufficient information and the possibility of possible bias author will provide judgment as 'low risk', 'some concern' or 'high risk' (Higgins et al., 2022).

2.5 Data Synthesis

Initial data entry and analysis were performed with Review Manager (RevMan; version 5.4), as suggested by the Cochrane Handbook (Higgins et al., 2022). A pairwise meta-analysis was used to assess the effects of psychosocial interventions in comparison to the control condition.

The standardised mean differences (SMDs) were estimated for continuous outcomes because several measurement scales were utilised. In accordance with intention-to-treat analysis, all individuals having at minimum of one post-baseline assessment were expressed by the most recent observations carried forward (Higgins et al., 2022). Where only p-values or standard errors are available, Altman

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and Bland's procedures are used to calculate standard deviations (Altman and Bland, 1996). When standard deviations could not be computed, they were approximated using a tried-and-true method (Furukawa et al., 2006). As suggested in the Cochrane Handbook for Systematic Reviews, studies comparing two or more forms of similar psychosocial therapies were combined into a single group for meta-analysis (Higgins et al., 2022). When studies compared two or more distinct intervention groups, each intervention group was included individually. For pairwise meta-analyses, we examined heterogeneity using the I^2 statistic according to the Cochrane handbook's interpretation: 0 to 40 per cent: may not be significant; 30 to 60 per cent: may indicate moderate heterogeneity; 50 to 90 per cent: may indicate substantial heterogeneity; 75 to 100 per cent: substantial heterogeneity (Higgins et al., 2022).

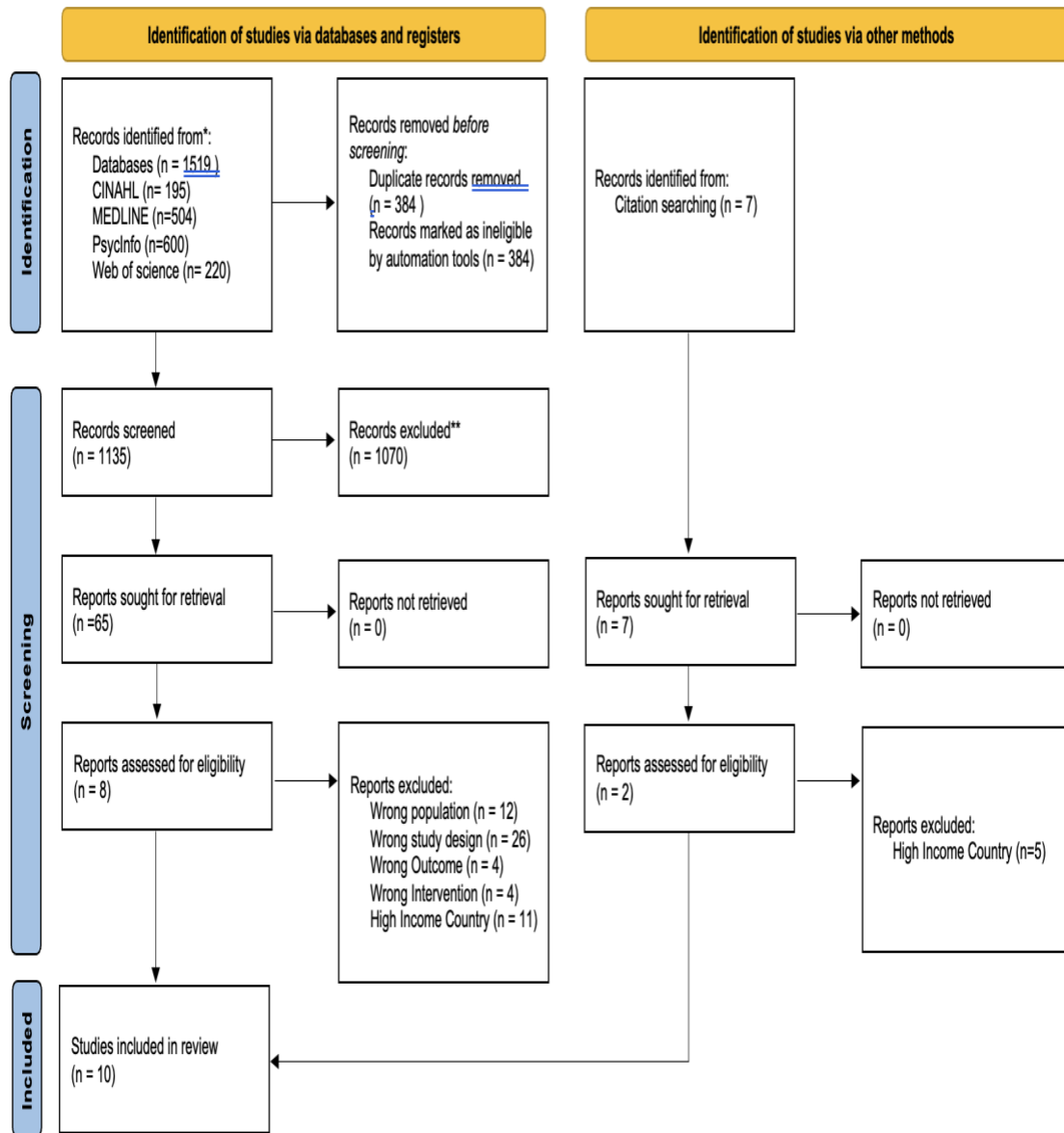
3.Results

3.1 Study Selection

The database search yielded 1519 entries, while 7 more records were found by searching through the references in relevant publications. Following importation into EndNote Web and deduplication, 1,142 entries remained for title and abstract screening. At this stage, the titles and abstracts of the papers were analysed to see whether or not they were relevant, and 1070 of them were excluded. The remaining 72 papers were scrutinized, and 62 were found to be ineligible after a thorough assessment of their whole texts by the researchers. Different factors led to their exclusion, such as the wrong study population (n=12), wrong study design (n=26), wrong outcomes (n= 4), wrong intervention (n= 4) or the study took place in a high-income country (n=16). Finally, ten studies were included in the final synthesis. Figure 1 depicts a comprehensive PRISMA flowchart of the research selection process.

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Figure 1: PRISMA flowchart of the study selection process



3.2 Characteristics of Included Studies

Ten RCTs which reported on the effectiveness of various psychosocial interventions among PTSD patients met the inclusion criteria and were selected for final review. There were four studies undertaken in Turkey, three in Uganda, two in Malaysia, and one in Jordan.

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There were a total of 1981 refugees and asylum seekers that participated in the study. The majority of participants are from Syria (n=5), with the remainder from Afghanistan (n=1), Myanmar (n=1), Sudan (n=1), South Sudan (n=1), Somalia, and Rwanda (n=1). Six studies had sample sizes between 23 and 98 (Acarturk et al., 2015, 2016; Eskici et al., 2021; Neuner et al., 2004; Shaw et al., 2019; Yurtsever et al., 2018), while four studies had sample sizes between 277 and 694 (Bryant et al., 2022; Neuner et al., 2008; Tay et al., 2020; Tol et al., 2019). The study with the smallest sample size included 23 individuals (Eskici et al., 2021), while the study with the biggest sample size included 694 participants (Tol et al., 2019). These two studies and one additional study (Shaw et al., 2019) focus solely on female participants. 1436 female participants, or around 72.48 percent of the total, participate in the studies. The participants' average age ranged between 30.8 and 40.03 years.

Interventions. The following interventions were included: CBT with or without trauma component (n=2), EMDR and related protocols (n=3), NET (n=2), self-help plus (SH+) (n=1), Group Problem Management Plus (gPM+) (n=1), Integrative Adapt Therapy (IAT) (n=1). Five studies looked at the effectiveness of individual psychological interventions (n=5), four studies observed group-based interventions and one RCT by Tol et al. (2019) studied group-based self-help psychological intervention. Psychologists and therapists performed the majority of the interventions (n=6), whereas lay providers provided three interventions and one intervention is self-administered. The duration of intervention delivery varied among the interventions used in these studies. Three of the interventions (Bryant et al., 2022; Neuner et al., 2004; Tol et al., 2019) are shorter in duration (5-7 weeks), while the remaining interventions are longer in duration (8-10 weeks). The length of the follow-up ranges from one week to twelve months. In none of the experiments was concomitant medication utilised. Detailed study and intervention characteristics are reported in the supplementary materials.

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3.3 Risk of Bias within Studies

As suggested by the Cochrane Handbook, the revised version of the Cochrane tool, known as RoB 2, is used to assess the risk of bias within each trial (Higgins et al., 2022). Overall, four studies had 'some concern', three had 'high risk', and three were reported as 'low risk' studies according to the author's judgement. For a summary of the risk of bias, see table 1 showing the Risk of bias summary and supplementary document demonstrating risk of bias graph.

Table 1- Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

Study ID	Experimental	Comparator	D1	D2	D3	D4	D5	Overall	
(Acarturk et al., 2015)	EMDR	Waiting list	!	+	+	+	+	!	+ Low risk
(Acarturk et al., 2016)	EMDR- R TEP	Waiting List	+	+	!	+	-	-	! Some concerns
(Bryant et al., 2022)	gPM+	enhanced usual care (EUC)	+	+	+	+	+	+	- High risk
(Eskici et al., 2021)	CA-CBT	TAU	!	+	+	!	!	!	
(Neuner et al., 2004)	NET	TAU vs. Supportive Counseling	!	+	+	!	+	!	D1 Randomisation process
(Neuner et al., 2008)	NET	No treatment vs. Trauma counseling	+	!	!	+	!	!	D2 Deviations from the intended interventions
(Shaw et al., 2019)	CA-CBT	Waiting list	!	+	+	-	!	-	D3 Missing outcome data
(Tay et al., 2020)	IAT	CBT	+	+	+	+	+	+	D4 Measurement of the outcome
(Tol et al., 2019)	SH+	ETAU	+	+	+	+	+	+	D5 Selection of the reported result
(Yurtsever et al., 2018)	EMDR-G-TEP	Waiting list	!	+	-	!	-	-	

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3.4 Main Results

3.4.1 Effectiveness of psychosocial interventions in comparison to control group: Primary outcome

The meta-analysis of the primary outcome (9 studies, 1789 participants) showed that psychosocial interventions were effective in decreasing PTSD symptoms relative to controls (SMD -0.60, 95% CI -0.96 to -0.23) (Fig 2).

The forest plot indicated that the experimental group was more effective in treating PTSD among refugees who had been relocated in LMICs. Heterogeneity was high ($I^2=91\%$; 95% CI 75–100). The observed high heterogeneity among these studies was attributed to various factors, such as variations in the research methodology, the demographic characteristics of the subjects, the nature of the intervention, the duration of the intervention, and the metrics used to assess the outcomes. Test for overall effect Z is 3.18 ($P=0.001$).

Figure 2. Effectiveness of psychosocial interventions in treating PTSD in refugees and asylum seekers relocated in low-and middle-income countries: PTSD symptoms.

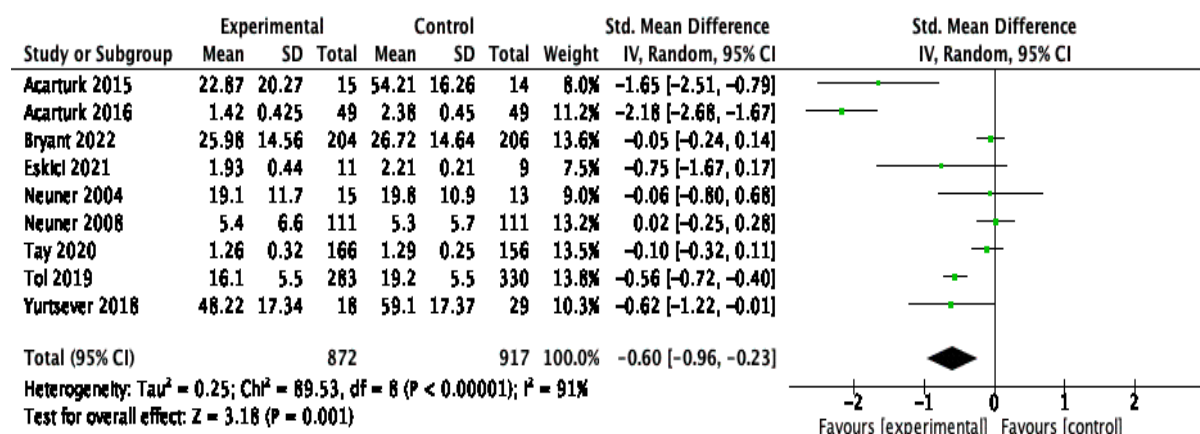
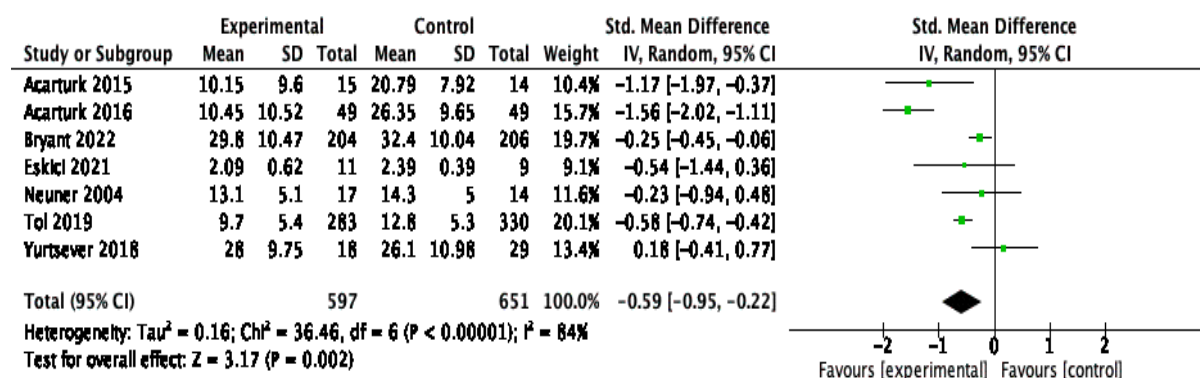


Figure 3. Effectiveness of psychosocial interventions in treating depression in refugees and asylum seekers relocated in low-and middle-income countries: depressive symptoms.



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3.4.2 Effectiveness of psychosocial interventions in comparison to control group: Secondary outcomes

The data collected from the selected studies (7 studies) demonstrated that 597 participants out of 1248 had reduced depressive symptoms. The results (SMD -0.59, 95% CI -0.95 to -0.22) are supported further by the forest plot. Heterogeneity ($I^2 = 84\%$; 95% CI 50–90) may be substantial. Test for overall effect Z is 3.17 ($P = 0.002$).

3.4.3 Subgroup Analysis

There was a strong correlation between the type of psychosocial intervention used and overall effectiveness. 3 RCTs (Acarturk et al., 2015, 2016; Yurtsever et al., 2018) examined the effectiveness of EMDR (3 RCTs, 82 participants, SMD -1.56; 95% CI -1.91 to -1.21; $I^2 = 87\%$; 95% CI 50-90) proven to have a positive outcome. The three studies by Acarturk et al. (2015, 2016) and Yurtsever et al. (2018) utilised the standard EMDR protocol. The interventions were delivered by local psychologists and carried out in the native language of the participants. In addition to their focus on the use of rigorous research methods, these studies also demonstrate a concern for cultural appropriateness; this includes scheduling the session late afternoon that ensures maximum participation and also participants were able to maintain secrecy in receiving treatment.

Three studies (Bryant et al., 2022; Tay et al., 2020; Tol et al., 2019) investigated the impacts of gPM+, IAT and SH+ and also proven effective in reducing symptoms of PTSD. Nevertheless, NET (Neuner et al., 2004, 2008) and CBT (Eskici et al., 2021) did not demonstrate a meaningful effect. However, the CI around the point estimate did not rule out the potential of a clinically meaningful benefit.

In terms of delivery modality, both individual (6 RCTs, 982 participants, SMD -0.84; 95% CI -1.45 to -0.23; $I^2 = 92\%$; 95% CI 75-100) and group interventions (3 RCTs, 779 participants, SMD -0.13; 95% CI -0.32 to -0.07; $I^2 = 35\%$; 95% CI 0-40) were effective in decreasing PTSD symptoms. However, the magnitude of the effect was higher in individual intervention settings.

Four trials with 193 participants contributed to an analysis of psychosocial intervention compared with an inactive control and five studies with 679 participants compared with an active control group in case of PTSD symptoms. Psychosocial interventions have shown a much larger effect size in the inactive control group than in functional ones. Similar evidence found in case of depression, where psychosocial intervention is proven more potent against inactive control rather than the active group. But the effect size was not as large as in case of PTSD symptoms.

As this review focuses on treating refugees in a low resource setting, it is crucial to investigate treatment options that trained lay counsellors can deliver. Five trials (Acarturk et al., 2015, 2016;

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Eskici et al., 2021; Neuner et al., 2004; Yurtsever et al., 2018) conducted psychosocial intervention by expert psychologists and therapists, as contrasted to sessions done by lay facilitators (Bryant et al., 2022; Neuner et al., 2008; Tay et al., 2020; Tol et al., 2019), and found larger effect size.

4. DISCUSSION

This study aimed to examine the efficacy of psychosocial interventions in this demographic resettled in LMICs and provide an updated knowledge. It was accomplished by conducting a systematic review and meta-analysis of relevant literature that met the author-specified inclusion criteria.

This review's findings contribute to the growing body of research on the efficacy of psychosocial interventions for individuals suffering from PTSD who have been forcefully displaced due to violence or persecution. A total of 10 studies and 1981 participants were included in this review. There was a moderate level of evidence indicating psychosocial interventions have a positive impact on PTSD and depressive symptoms, and subgroup analyses did not alter these findings. Previous reviews also found similar evidence in general and refugee populations (Kip et al., 2020; Naseh et al., 2019; Thompson et al., 2018; Turrini et al., 2019, 2021).

EMDR has proven more effective in comparison to other interventions in low-resource settings. That is uniform with the previous reviews (Thompson et al., 2018; Tol et al., 2013, 2014; Turrini et al., 2019, 2021). Emphasis on using rigorous research methodologies and ensuring cultural appropriateness is attributed to the reason behind studies by Acarturk et al. (2015, 2016) and Yurtsever et al. (2018) that have proven advantageous.

Nonetheless, these trials lacked long-term follow-up, and we found no statistically significant difference between EMDR and stabilisation as an active control. Consequently, most available information was derived from indirect treatment comparisons, which are more subject to bias. Moreover, considering the study numbers and sample size, further research should prioritise the long-term outcomes of EMDR with this particular demographic. Furthermore, it is recommended that forthcoming studies investigate the practicability and level of approval of EMDR in low-resource settings.

In contrast to the previous recommendation, this review failed to show noteworthy results in the case of CBT and NET. The evidence of efficacy for these therapies was possibly lacking due to the small sample size and the number of included studies. These findings have also not been shown to be consistent in earlier reviews. Three of the RCTs (Bryant et al., 2022; Tay et al., 2020; Tol et al., 2019) studied the effectiveness of gPM+, IAT and SH+ and exhibited some potential output in reducing PTSD. These three therapies, which lay counsellors may administer in a context with limited

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resources, could be tremendously valuable. Neuner et al. (2008) study also delivered NET by lay counsellors but did not show any positive effect. However, further research is required in situations with limited resources before definitive findings can be drawn regarding its global implications.

Another essential factor is that this evaluation could not assess the efficacy of psychosocial interventions for refugee children and adolescents due to a dearth of relevant data. It is highlighted by Fazel (2017) since they are more vulnerable in conflict and war settings and are left with long-lasting impacts (Fazel, 2017).

This comprehensive review demonstrates several methodological advantages. First, this study maintains a systematic search strategy. The two reviewers separately screened titles/abstracts and graded full-text papers, reducing the review's subjectivity. This study offered solid evidence and avoided bias by conducting a systematic review and meta-analysis of RCTs because it used a methodology regarded as the gold standard of academic research. Additionally, out of the ten studies, only one RCT (Shaw et al., 2019) could not be used in the meta-analysis.

However, certain limitations should be considered when interpreting the current findings. Firstly, this study only included research papers published in English which may lead to missing some robust studies in other languages. As this study concentrated on refugees in LMIC, selecting only RCTs may limit the possibility of relevant research where randomisation was not feasible due to a lack of funds or appropriate resources.

Another drawback is that the included papers varied substantially regarding intervention type, study population characteristics, and other methodological and clinical aspects. For instance, the interventions employed in these studies varied in type and duration, ranging from individual to group-based therapy. Some interventions were shorter and more targeted, and others were lengthier and more comprehensive. All these variations are attributed to the high statistical heterogeneity in all trials were combined.

This review may be used to support recommendations for the provision of psychosocial interventions for refugees with PTSD, including EMDR. More extensive, higher-quality studies with long-term evaluations of intervention efficacy are necessary to consolidate findings and increase our understanding of the durability of the effects of psychosocial interventions. Incorporating psychosocial interventions, such as EMDR, into the treatment plans of clinicians working with this population can be supported by conducting more comprehensive and high-quality studies that include long-term evaluations of intervention efficacy.

Most research on this subject was conducted in Turkey, Malaysia, and Uganda, where a substantial refugee and forcibly displaced population was residing in Pakistan, Bangladesh, Kenya, Colombia, and several other LMICs. Subsequent research endeavours should prioritise developing and evaluating interventions tailored to the cultural and contextual exigencies of refugees and FDPs. The

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process may entail cooperation with local stakeholders, such as community leaders, healthcare providers, and individuals with lived experiences of displacement and trauma.

Finally, future research should look at digital psychological intervention tools' effectiveness, practicality, and long-term viability (de Graaff et al., 2020; Fu et al., 2020). Psychotherapies delivered online be just as effective as those delivered face-to-face, with the added benefits of limiting patients' exposure to negative stereotypes and lowering the financial and logistical burdens associated with potentially dangerous face-to-face interactions given the current COVID-19 pandemic (Etzelmüller et al., 2020). It could be beneficial, especially for refugees and FDPs in LMIC.

4.5. Conclusion

To sum up, this systematic review and meta-analysis provided evidence that suggests EMDR is effective in treating PTSD among refugees and FDPs in LMIC. Additional studies are required to understand more about alternative approaches and apply evidence-based guidelines.

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