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

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Summary

Background Migrant populations are at increased risk of developing mental health problems. We aimed to compare the efficacy and acceptability of psychosocial interventions in this population.

Methods We conducted a systematic review and network meta-analysis (NMA). Cochrane Central Register of randomised trials (CENTRAL), MEDLINE, PTSDpubs, PsycINFO, PubMed, CINAHL, EMBASE, Web of Science, Scopus, and ClinicalTrials.gov were searched from database inception to October 7, 2024, to identify randomized clinical trials assessing the efficacy of psychosocial interventions for migrant populations in reducing symptoms of post-traumatic stress disorder (PTSD), depression or anxiety. Studies with second-generation migrants were excluded if they comprised over 20% of participants. Two independent researchers screened, reviewed, and extracted data. The primary outcomes were the severity of PTSD, depression, and anxiety symptoms at post-intervention. Secondary outcomes included acceptability. Standardised mean differences (SMDs) and risk ratios (RRs) were pooled using pairwise and NMA. PROSPERO: CRD42023418817.

Findings Of the 103 studies with 19,230 participants included, 96 contributed to the meta-analyses for at least one outcome, with women representing 64% of the participants. Narrative Exposure Therapy (NET), counselling, Eye Movement Desensitization and Reprocessing (EMDR), and creative expressive interventions demonstrated greater efficacy than treatment as usual (TAU) in reducing PTSD symptoms, with SMDs [95% Confidence Intervals (CIs)] ranging from −0.69 [−1.14, −0.24] to −0.60 [−1.20, −0.01], albeit with low confidence in the evidence. For depressive symptoms, Integrative therapy emerged as the top intervention compared to TAU, with moderate confidence (SMD [95% CI] = −0.70 [−1.21, −0.20]). For anxiety symptoms, NET, Integrative therapy, and Problem Management Plus (PM+)/Step-by-Step (SbS) were more effective than TAU, with SMDs [95% CIs] ranging from −1.32 [−2.05, −0.59] to −0.35 [−0.65, −0.05]. Still, the confidence in the evidence was low. Overall, head-to-head comparisons yielded inconclusive results, and the acceptability analysis revealed variations across interventions. 16% of the studies (17 studies) were classified as "high risk" of bias, 68% (70) as having "some concerns", and 18% (19) as "low risk". We identified considerable heterogeneity (I^2 of >70%).

Interpretation The analysis revealed no clear differences in the efficacy of psychosocial interventions compared to TAU for reducing symptoms of PTSD, depression, and anxiety. While certain interventions showed potential benefits, confidence in these findings was generally low, limiting the ability to draw definitive conclusions about their comparative effectiveness.

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Research in context

Evidence before this study

Several randomised controlled clinical trials and systematic reviews have been conducted to test the efficacy of various psychosocial interventions on mental health outcomes in asylum seekers, refugees, and other migrant populations. We did a PubMed/MEDLINE search, with no language restrictions, from database inception to January 1, 2023 (while planning the current study), and updated on October 7, 2024, to identify randomised controlled clinical trials on the efficacy of psychosocial interventions for migrant populations on PTSD, depression, and anxiety symptoms. We used the following search terms and syntax: ("trial" OR "random*" OR "control*") AND ("migrant*" OR "immigrant*" OR "refugee*" OR "asylum seeker*" OR "displaced") AND ("psychotherapy" OR "psychological" OR "psychosocial" OR "intervention" OR "support" OR "program*") AND ("mental" OR "disorder*" OR "distress" OR "PTSD" OR "trauma*" OR "depress*" OR "anxiety" OR "anxious" OR "post traumatic stress" OR mental health OR dropouts). We found randomised controlled clinical trials and pairwise meta-analyses that tested the efficacy of various psychosocial interventions including Cognitive Behavioural Therapy (CBT), Narrative Exposure Therapy (NET), Eye Movement Desensitisation and Reprocessing (EMDR), and a range of integrative and interpersonal therapies. However, the available evidence was controversial and fragmented, and the relative efficacy of each intervention compared with the others was never assessed. Moreover,

although a previous network meta-analysis was conducted, it was specifically focused on PTSD as a diagnostic category, and exclusively on refugees and asylum seekers.

Added value of this study

We conducted a systematic review of 103 studies with almost 20,000 participants that assessed the comparative treatment outcomes of different psychosocial interventions. Using network meta-analytic techniques, we compared and ranked all psychosocial interventions, providing a comprehensive assessment of their relative efficacy, and overcoming the limitations of standard pairwise meta-analyses.

Implications of all the available evidence

This network meta-analysis assesses the comparative efficacy of psychosocial interventions for PTSD, depression, and anxiety symptoms in asylum seekers, refugees, and other migrant populations. Although some interventions showed promising outcomes compared to treatment as usual (TAU), the lack of clear differences in efficacy indicates that further research is necessary to establish reliable evidence. This analysis contributes to a growing understanding but also emphasize the need for more high-quality studies to better assess the comparative effectiveness of these interventions, and highlights the importance of continued exploration of their effectiveness across diverse contexts.

Introduction

Epidemiological data from the United Nations High Commission for Refugees (UNHCR) showed that, in 2023, 110 million people worldwide were forcibly displaced as a result of persecution, conflict, violence, human rights violations, or other threats that seriously disrupted public order.[1] Of these, more than 40 million fled their countries and became refugees or asylum seekers in foreign nations. More than half of all refugees and other persons in need of international protection under UNHCR's mandate come from just three countries, namely the Syrian Arab Republic, Afghanistan, and Ukraine. In terms of countries of resettlement, the Islamic Republic of Iran and Türkiye each host 3.4 million refugees, the largest populations worldwide. Germany ranks third with 2.5 million, followed by Colombia and Pakistan with 2.4 and 2.1 million refugees, respectively.[1]

Asylum seekers, refugees, and other migrant populations are exposed to stressors that challenge their subjective well-being, quality of life, and mental health. This, in turn, increases the risk of developing mental disorders. As a result, the frequency of psychological distress and mental disorders is particularly high. Among international migrants, including asylum seekers and refugees, about one-third suffer from post-traumatic stress disorder (PTSD), one-third from depression, and one-quarter from anxiety.[2–6]

To improve well-being, quality of life, and mental health of asylum seekers, refugees, and other migrant populations, numerous randomised clinical trials (RCTs), systematic reviews and meta-analyses have been conducted to test the efficacy of a variety of psychosocial interventions, including Cognitive Behavioural Therapy (CBT), Narrative Exposure Therapy (NET), Eye Movement

Desensitisation and Reprocessing (EMDR) and a range of different integrative and interpersonal therapies.[7,8] However, the available evidence is controversial and fragmented, with studies focusing on different subgroups of migrant populations, interventions, outcomes, delivery modalities, and settings. In particular, a significant shortcoming of existing quantitative syntheses of evidence on this topic is the use of standard pairwise meta-analytic approaches, which do not allow each active intervention to be compared with others, making it impossible to evaluate the comparative efficacy of existing psychosocial interventions.

Against this background, the present systematic review applied the network meta-analytic technique to compare the efficacy and acceptability of psychosocial interventions in adult asylum seekers, refugees, and other migrant populations in reducing symptoms of post-traumatic stress disorder (PTSD), depression, and anxiety. We aimed to estimate the probability of each intervention being in each possible rank. Hierarchical ranking of interventions is a straightforward and user-friendly way to inform practitioners, policymakers, and stakeholders on which interventions have the highest probability of being in the top positions of the hierarchy in terms of efficacy and acceptability.

Methods

This systematic review and network meta-analysis (NMA) was conducted and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline specific to network meta-analyses (Supplementary—ANNEX A).[9,10] The study protocol was registered in advance in the International Prospective Register of Systematic Reviews (PROSPERO), registration number: CRD42023418817.

Search strategy and selection criteria

Cochrane Central Register of randomised trials (CENTRAL), MEDLINE, PTSDpubs, PsycINFO, PubMed, CINAHL, EMBASE, Web of Science, Scopus and ClinicalTrials.gov were searched from database inception to October 7, 2024, to identify RCTs assessing the efficacy of any type of intervention with a main psychosocial component compared with any other active or inactive comparison, in migrant populations. This was an enterprise that we named the meta-analytical research domain (MARD) on migrants.[11–13] From such a pool of RCTs, three investigators (CC, DC, GT) further selected studies, according to the following criteria: (a) including adult migrants (18 years or older) of any ethnicity and religion; (b) assessing the efficacy of a psychosocial intervention; (c) comparing psychosocial interventions with treatment as usual (TAU), defined as any intervention that reflects the usual care in a given treatment setting, waiting list (WL) or any other psychosocial interventions; (d) measuring as primary or

secondary outcome the effect of the interventions on at least one of the following mental health outcomes: symptoms of PTSD, depression, or anxiety. The International Organization for Migration (IOM) definition of migrants was followed, which includes a variety of population groups such as asylum seekers, refugees, internally displaced persons, economic migrants, and other populations on the move.[14–17] Studies with second-generation migrants were excluded unless they were less than 20% of the randomized participants. Psychosocial interventions were defined following IASC Guidelines as 'mental health and psychosocial support' (MHPSS),[18,19] which is a composite term used to describe "any type of local or outside support that aims to protect or promote psychosocial well-being and/or prevent or treat mental disorders".[18] We included psychosocial interventions delivered in any delivery format.

Two authors (GT, CC) independently assessed titles, abstracts, and full texts of potentially relevant articles, and extracted relevant data on study characteristics and outcome measures. For continuous outcomes, we extracted the mean scores and standard deviations at post-intervention or, if it was neither available nor inferable from the information available according to validated methodology,[20] the mean change from baseline, the standard deviation of these values, the confidence intervals, and the number of participants included in these analyses. For the dichotomous outcome, we extracted the number of participants undergoing the randomisation procedure, and the number of participants leaving the study early for any reason. For both screening and data extraction, disagreements were resolved by discussion and arbitration by a senior author (CB). For the full search strategy, see the Supplementary—ANNEX B. Two researchers (GT, CC) independently classified the interventions, and conflicts were resolved through discussion with a senior author (MP). Definitions of interventions and controls are given in the Supplementary—ANNEX C.

Risk of bias and certainty of evidence

We assessed the risk of bias of the included studies for primary outcomes, using version 2 of the Cochrane risk of bias tool for randomised trials (RoB 2).[21] Three investigators (CC, EP, MB) independently used the RoB 2 signalling questions to form judgments on the five RoB 2 domains. Disagreements were resolved by discussion and arbitration by senior review authors (MP, CB). Details on the quality assessment are provided in the Supplementary—ANNEXES G–I. For the primary outcomes, we assessed the risk of bias due to missing evidence for each of the possible pairwise comparisons that can be made between the interventions in the network, using the Risk Of Bias due to Missing Evidence in Network meta-analysis tool (ROB-MEN).[22] All eligible studies identified in the search, including those not reporting the outcome, were included in the

systematic review and in the analyses. Subsequently, the certainty of the evidence was evaluated using the CINeMA application (http://cinema.ispm.ch/), an adaptation of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach for NMAs.[23,24] We defined the equivalence range for effect sizes as –0.5 to 0.5, where effect sizes within this range are considered to reflect clinically unimportant differences between interventions. The ROB-MEN tool was incorporated in the reporting bias domain of the CINeMA framework.

Outcome measures

The three primary outcomes were the severity of PTSD, depression, and anxiety symptoms, measured on continuous rating scales at post-intervention. For each outcome, we selected rating scales based on a pre-planned hierarchy (Supplementary—ANNEX D). To complement clinical outcomes, we included intervention acceptability as a secondary outcome, measured as all-case study drop-out from measurement.

Data analysis

We performed a standard pair-wise, random-effects meta-analysis for every comparison, and, for each outcome, a NMA with a random-effects model in a frequentist framework, using: R (v 4.1.4),[25] RStudio,[26] and in particular its *meta*[27] package, v 8.0-1, to obtain pairwise meta-analyses estimates of observed comparisons, and its *netmeta*[28] package, v 2.9-0, to produce the network meta-regression estimates, the network plots, the forest plots, to calculate the p-score and to perform the side-split test and the netleague; Stata 18.0[29] and its *mvmeta*,[30] *netfunnel*[31] and *ifplot*[31] packages to perform, respectively, network meta-regressions, funnel plots, and the test on loop inconsistency. This allowed us to include multi-arm trials in the analysis by considering the correlation between the effect sizes of each of their pairwise comparisons.[32] The between-study variance was assumed to be constant across comparisons, while within-study correlation was accounted for through reweighting.[33]

For the dichotomous outcome, we pooled risk ratios (RRs) with 95% confidence intervals (CIs). For continuous outcomes, we pooled the standardised mean differences (SMDs) between treatment arms at post-intervention as the included studies measured the outcomes using different rating scales. Intervention groups that met the criteria for the same intervention classification were combined into a single node following standard approaches.[34,35] Moreover, studies that compared two or more formats of similar psychosocial interventions with an inactive treatment were included in the meta-analysis by combining the respective group arms into a single group.[20]

For each outcome, we estimated the ranking probabilities of each intervention being in each possible rank for each intervention. We obtained a treatment hierarchy using the p-scores, which is considered equivalent to the surface under the cumulative ranking curve (SUCRA). P-scores range from 0 to 1, with 0 or 1 being the theoretically worst or best treatment, respectively.[36] When there was missing or unclear information, we asked trial authors to supply data, by sending an initial email, followed by three additional reminders in case of no response. When standard deviations (SDs) were not reported and not supplied by authors upon request, we estimated them through single imputation, by using the post-treatment means and SDs of each arm of the RCTs in our dataset of observations. In particular, a log-linear regression on the logarithm of the mean was performed,[37] using weights proportional to the number of observations used to measure the outcome. The number of drop-outs at post-intervention was derived through a single imputation of the logarithm of drop-out rate, by using the logarithm of drop-out rate at follow-up of the other two arms of the same study as observations.

For pairwise meta-analyses, we assessed heterogeneity using both the tau-squared and the I-squared statistics; for the former, we referred to findings from Rhodes and colleagues[38] for mental health outcomes (reporting a median value of 0.049, and a 95% range of 0.0007–4.70); for the latter, we followed the interpretation suggested by the Cochrane Handbook: 0%–40%: might not be important; 30%–60%: may represent moderate heterogeneity; 50%–90%: may represent substantial heterogeneity; 75%–100%: considerable heterogeneity.[20] For the NMA, common heterogeneity across all comparisons was assumed and estimated in each network.[39]

To assess the transitivity assumption, we compared the distribution of mean age, percentage of women, baseline symptom severity (standardized with respect to its range, with "0" corresponding to the minimum and "100" to the maximum; Supplementary—ANNEX J), individual interventions, participants with a formal diagnosis, legal status (refugees, asylum seekers, displaced people) and country income (low- and middle-income countries) across study designs. Furthermore, we performed network meta-regression analyses on the same variables, through the Stata *mvmeta* command[29] (Supplementary—ANNEX J) to identify possible effect modifiers. We considered differences in the distribution of specific study characteristics between the different comparisons to be relevant only if there were significant imbalances according to the Kruskal–Wallis test and meta-regression analyses showing an association with treatment effect.[40–42]

Coherence (also known as consistency in NMAs) in a network of treatments refers to the agreement between direct and indirect evidence on the same comparisons. We evaluated the presence of incoherence by comparing direct and indirect evidence within each closed loop of nodes,[43,44] and comparing the goodness of fit for a NMA model that assumes consistency with a model that

allows for incoherence in a "design by treatment inter-action model" framework,[45–47] using the Stata com-mands *mvmeta*[48] and *ifplot*[49] in the Stata network suite. We further investigated incoherence by first checking for any erroneous data abstraction and second by using a side-splitting approach between comparisons (i.e., splitting the total evidence into its direct and indirect components and comparing them).[50]

If more than ten studies were included in one of the primary outcomes,[51] we assessed publication bias with the ROB-MEN tool,[22] which involved a statistical test for funnel plot asymmetry[22,51] and an investigation of possible reasons for funnel plot asymmetry. We pro-duced contour-enhanced funnel plots for pairwise comparisons with more than ten studies to help distinguish publication bias from other types of asym-metry.[52] In addition, in case of evidence of small study bias, we used Duval's "Trim and Fill" procedure on both sides for the primary outcomes to estimate the extent of the possible small study effect.[53]

A-priori subgroup analyses were conducted by pop-ulation group (refugees and asylum seekers versus others), level of the intervention (individual versus group), clinical condition (diagnosis versus psychologi-cal symptoms), and country income (high-income countries [HICs] versus low- and middle-income coun-tries [LMICs]). Sensitivity analyses excluding trials with a high risk of bias and excluding studies evaluating derivatives of CBT were carried out. In addition, we conducted a post-hoc sensitivity analysis on studies involving participants diagnosed with PTSD, focusing exclusively on PTSD outcomes.

Role of the funding source
There was no funding source for this study.

Results
Characteristics of included studies
The electronic search yielded a total number of 9307 re-cords (after removal of duplicates). After screening titles and abstracts, 493 full-text papers were considered for in-clusion, of which 103 studies with 19,230 participants met the eligibility criteria and were included.[54–80,81–110,111–130,131–156] A total of 96 studies contributed to meta-analyses for at least one outcome (Fig. 1). References to the studies awaiting assessment as well as the excluded studies and the reasons for exclusion are reported in the Supplementary S2.

Forty-two studies employed a waitlist as control; 38 compared a psychosocial intervention with treatment as usual; 11 compared a psychosocial intervention with a psychological or attentional placebo condition; and 18 compared psychosocial interventions head-to-head. Seventy-six studies were conducted in HICs and 27 in LMICs (Table 1). Most studies included refugees and asylum seekers (68 studies, 66%); of these, 46 (45%)

included only refugees. In contrast, 28 studies (27%) involved economic and other types of migrants, and 7 studies included internally displaced persons. Partici-pants primarily came from Asia (27 studies, with 26% including Chinese participants), the Middle East and North Africa (25 studies, with 76% including Syrian participants). Additionally, 24 studies included migrants from multiple countries, while the remaining studies involved participants from Sub-Saharan Africa, Latin America, and Europe (Table 1). In 62 studies (60%) most participants were women, and 23 studies with only women. Two studies included only men. The average age of participants was 37.6 years, ranging from 22.1 to 72.7 years (Supplementary—ANNEX E).

Thirty-four studies recruited participants with a formal psychiatric diagnosis according to the Diag-nostic and Statistical Manual of Mental Disorders (DSM, or the International Classification of Diseases (ICD), (PTSD: 23 studies, 68%; unipolar depression: 7 studies, 20%; common mental disorders (CMDs): 4 studies, 12%), and twenty-five studies recruited participants with a probable psychiatric diagnosis, according to clinician-led structured interviews or self-report measures (probable PTSD: 15 studies; probable unipolar depression: 4 studies; probable CMDs: 6 studies) (Supplementary—ANNEX E). The remain-ing studies recruited participants with psychological symptoms as ascertained after a clinical assessment, without employing formal diagnostic criteria or vali-dated rating scales (Supplementary—ANNEX E) (Table 1). In terms of formal diagnoses, among the 23 studies involving participants diagnosed with PTSD, 19 contributed to the PTSD outcome, 16 to the depression outcome and 10 to the anxiety outcome. In the 7 studies with participants diagnosed with depression, all contributed to the depression outcome, 5 to the anxiety outcome, while 2 contributed to the PTSD outcome. Notably, no studies included participants diagnosed solely with an anxiety disorder. Furthermore, 4 studies involved participants diagnosed with CMDs (either depression, or anxiety disorder, or both).

The included interventions were pooled together into the following nodes: Cognitive Behavioural-based Therapy (CBT) (24 studies); Supportive therapy (15 studies); Narrative Exposure Therapy (NET) (11 studies); Counselling (11 studies); Problem Management Plus (PM+) and Step-by-Step (SbS) (9 studies); Psycho-education (7 studies); Family-Parenting Interventions (FPI) (6 studies); Eye Movement Desensitisation and Reprocessing (EMDR) and related protocols (5 studies); Creative-Expressive Interventions (5 studies); Self-Help Plus (SH+) and Doing What Matters in Times of Stress (DWM) (4 studies); Problem-Solving therapy (3 studies); Mindfulness (3 studies); Integrative therapy (2 studies); Interpersonal therapy (1 study); Psychodynamic therapy (1 study). Psychosocial interventions belonging to the same
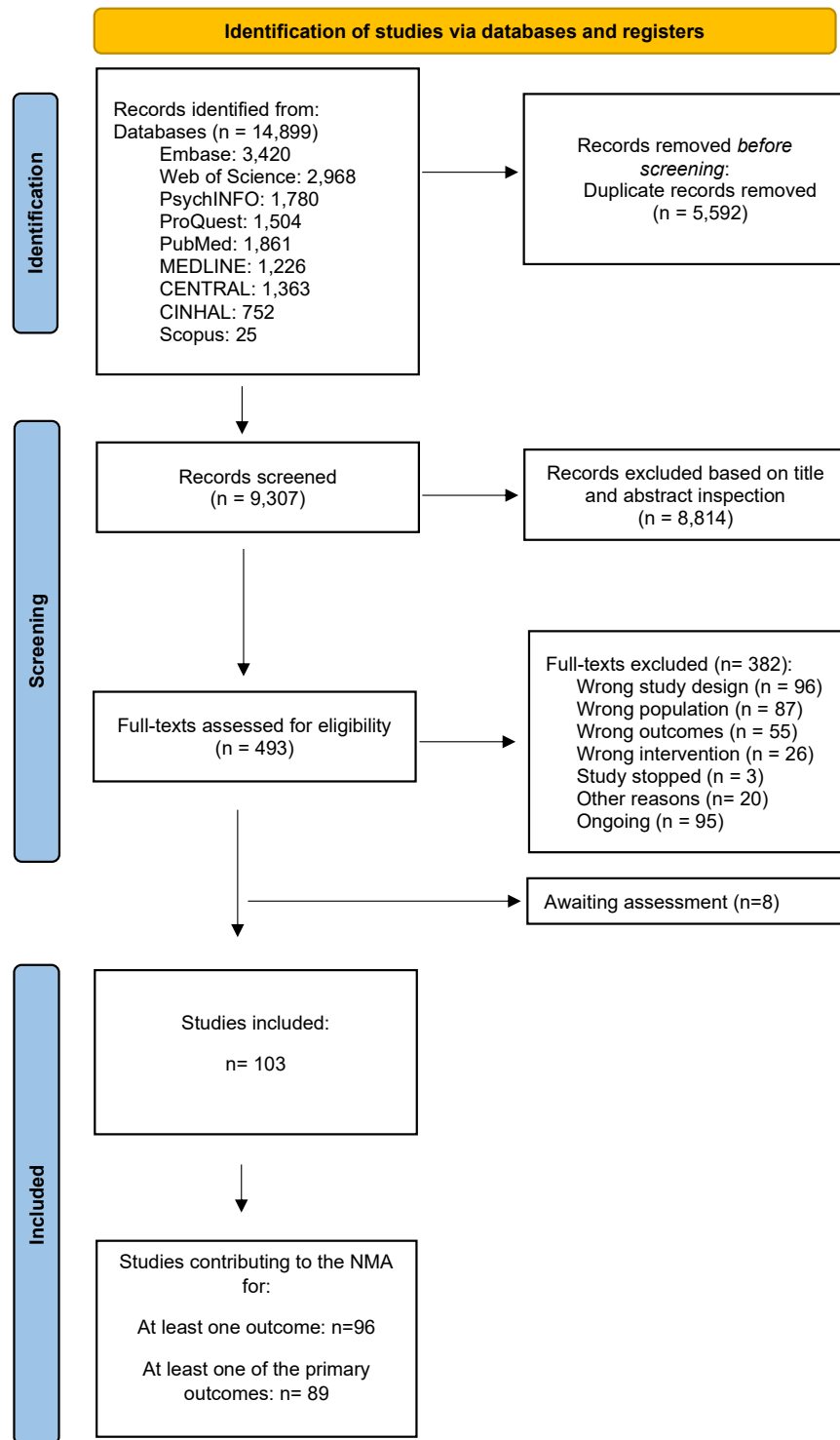
Identification of studies via databases and registers

Identification

Records identified from:
Databases (n = 14,899)
    Embase: 3,420
    Web of Science: 2,968
    PsychINFO: 1,780
    ProQuest: 1,504
    PubMed: 1,861
    MEDLINE: 1,226
    CENTRAL: 1,363
    CINHAL: 752
    Scopus: 25

Records removed *before screening*:
Duplicate records removed
(n = 5,592)

Screening

Records screened
(n = 9,307)

Records excluded based on title and abstract inspection
(n = 8,814)

Full-texts assessed for eligibility
(n = 493)

Full-texts excluded (n= 382):
    Wrong study design (n = 96)
    Wrong population (n = 87)
    Wrong outcomes (n = 55)
    Wrong intervention (n = 26)
    Study stopped (n = 3)
    Other reasons (n= 20)
    Ongoing (n = 95)

Awaiting assessment (n=8)

Included

Studies included:

n= 103

Studies contributing to the NMA for:

At least one outcome: n=96

At least one of the primary outcomes: n= 89

Fig. 1: PRISMA flowchart.

Study characteristic		
Number of studies contributing to at least one outcome	96	
Number of participants included	16.867	
Women %	64.16 (0–100)	
Mean age, years (range)	37.28 (22.1–72.7)	
Population	N	%
Refugees/asylum seekers/internally displaced	69	71.9
Other migrant populations	27	28.1
Recruiting country		
High-income country	71	74.0
Middle/Upper middle-income country	18	18.7
Low/Lower middle-income country	7	7.3
Country of origin		
Mixed	25	26.0
East/Central/South Asia	25	26.0
Middle East/North Africa	23	24.0
Sub-Saharian Africa	8	8.3
Latin America	6	6.3
Europe	4	4.2
Not specified	5	5.2
Psychosocial interventions		
Counselling	12	12.5
Creative expressive interventions	5	5.2
Cognitive- Behavioural Therapy	25	26.0
Eye Movement Desensitization and Reprocessing	5	5.2
Family parenting interventions	6	6.2
Interpersonal therapy	1	1.0
Integrative therapy	2	2.1
Mindfulness	3	3.1
Narrative Exposure Therapy	11	11.4
Problem Management Plus/Step-by-Step	9	9.4
Problem-solving therapy	3	3.1
Psychodynamic therapy	1	1.0
Psychoeducation	7	7.3
Self-Help Plus/Doing What Matters in Times of Stress	4	4.2
Supportive therapy	15	15.6
Number of sessions		
1–4	11	11.5
5–8	40	41.6
9–12	26	27.1
13–30	13	13.5
31–45	2	2.1
NA	4	4.2
Mental health condition		
Diagnosis of mental disorder	56	58.3
Psychological symptoms/exposure to social adversity	40	41.7
Number of studies contributing to each outcome		
PTSD symptoms	62	64.6
Depressive symptoms	79	82.3
Anxiety symptoms	58	60.4
Drop-out by any cause	91	94.8

NA: not assessed; PTSD: post-traumatic stress disorder.

Table 1: Characteristics of randomized controlled trials included in the network meta-analysis.

theoretical model were brought together into a single node (Supplementary—ANNEX E). Sixty studies included individual-level interventions, while thirty-eight studies employed a group format. The remaining studies included a mixed format. Most interventions were brief, generally fewer than 12 sessions, with a small proportion of studies involving longer interventions (Table 1). In forty-four studies, the interventions were delivered by professionals; another forty-four studies were conducted using the task-sharing modality. Six studies used a mixed approach, and nine studies did not specify this information.

Overall, 17 studies (16%) were classified as having a "high risk" of bias, mostly due to deviations from the intended interventions (Domain 2). A total of 70 studies (68%) were rated as having "some concerns", mainly due to the use of self-reported questionnaires and, in some cases, lack of masking of outcome assessors (Domain 4). Meanwhile, 19 studies (18%) were considered at low risk of bias. Most studies adequately reported the randomisation process (Domain 1), and showed a low risk of bias in the domains of missing outcome data (Domain 3) and selection of the reported result (Domain 5). Across all studies, three resulted in different judgments with different outcomes (Supplementary—ANNEXES G–I and Supplementary S3).

Primary outcomes

Results for primary outcomes are shown in Figs. 2–4 as forest plots and network plots. For the three primary outcomes, all standard pairwise meta-analyses, assessments of heterogeneity and incoherence, net league tables, and quality of evidence are reported in the Supplementary—ANNEXES L–N. A total of 62 studies contributed to the analysis of PTSD outcomes, 79 studies to the analysis of depression outcomes, and 58 to the analysis of anxiety outcomes. We found no evidence of violations of the transitivity assumption; as for meta-regressions, statistical significance was met just in one case, for baseline symptomatology, identified as a possible source of heterogeneity for the anxiety outcome (Supplementary—ANNEX J).

A few interventions demonstrated better efficacy in reducing PTSD symptoms when compared to TAU, specifically creative expressive interventions, counselling, EMDR and NET, all of which had overlapping confidence intervals (Fig. 2). Creative expressive interventions and counselling targeted participants with mixed diagnoses and symptoms, while NET and EMDR were studied mainly in participants with a PTSD diagnosis. Confidence in the evidence was moderate for creative expressive interventions, with a relatively precise effect estimate that was, however, close to the threshold of non-significance. In contrast, confidence in the evidence was rated as very low for
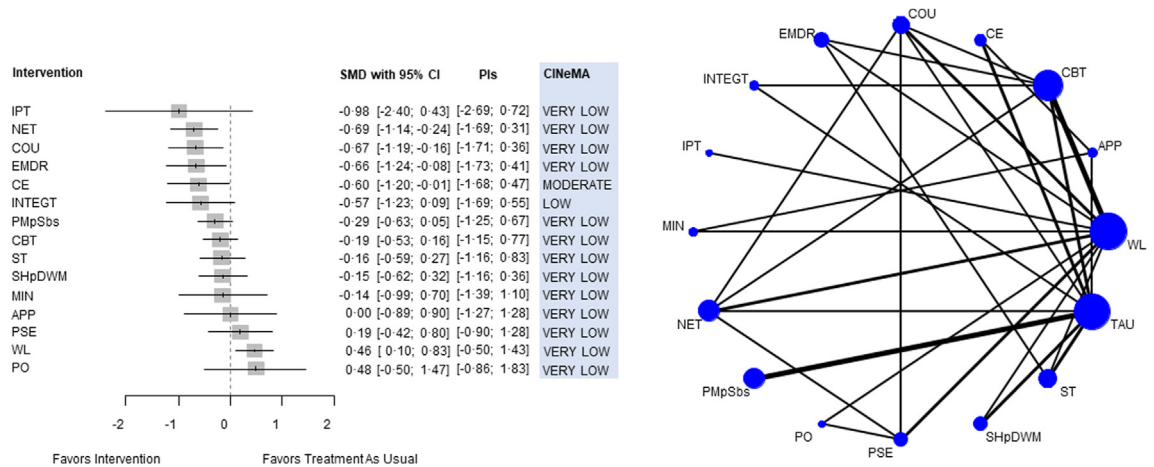
Fig. 2: Forest plot comparing each intervention with TAU for PTSD symptoms. Network plot of evidence: the thickness of edges is proportional to the number of studies comparing the two interventions, and the size of nodes is proportional to the number of studies including that intervention. SMD—standardized mean difference; CI—confidence interval; PIs: Prediction intervals; APP—attentional/psychological placebo; CBT—cognitive behavioural therapy; CE—creative expressive interventions; COU—counselling; EMDR—eye movement desensitization and reprocessing; INTEGT—integrative therapy; IPT—interpersonal therapy; MIN—mindfulness; NET–narrative exposure therapy; PMpSbS—Problem Management Plus/Step by Step; PO—problem-solving therapy; PSE—psychoeducation; SHpDWM—self-help plus/doing what matters in times of stress; ST—supportive therapy; TAU—treatment as usual.

NET, counselling, and EMDR. While these interventions showed point estimates above the clinically significant cut-off, suggesting a moderate effect size, their confidence intervals indicate the possibility of smaller effect sizes. The prediction intervals for all interventions were not significant. When compared to the waiting list, all interventions except for mindfulness, psychoeducation, problem-solving therapy, and attentional/psychological placebo, showed better efficacy in reducing PTSD symptoms, with SMDs ranging from −1.45 (IPT) to −0.46 (TAU). However, the confidence in the evidence was rated as very low. In terms of p-scores, Interpersonal therapy and NET were identified as the top-ranking interventions. Nevertheless, the effect estimate for Interpersonal therapy was highly imprecise and non-significant, while NET was also associated with a greater reduction in PTSD symptoms compared to CBT, psychoeducation, and problem-solving therapy, albeit with very low confidence in the evidence. No significant differences were observed for other interventions (Supplementary—ANNEX L). The overall network heterogeneity was moderate to substantial (estimated between-studies standard deviation [SD]: tau = 0.444; I^2 = 80%). Intra-loop incoherence emerged for three loops: EMDR, supportive therapy, and waitlist; counselling, NET and TAU; CBT, counselling and TAU. There was no inconsistency between direct and indirect estimates, except for the comparisons of counselling versus TAU and EMDR versus waitlist. However, according to the design-by-treatment interaction test, there was no evidence of global inconsistency (p-value = 0.311) (Supplementary—ANNEX L).

A few interventions demonstrated greater efficacy in reducing depressive symptoms than TAU, specifically PM+/SbS, CBT, Integrative therapy, and NET (Fig. 3), although the prediction intervals for all interventions were not significant. PM+/SbS was studied in participants with probable PTSD, CMDs, and psychological symptoms; CBT targeted participants with mixed diagnoses and symptoms; Integrative therapy targeted participants with diagnoses of depression and CMDs; and NET was primarily focused on participants with PTSD diagnoses. Confidence in the evidence was rated moderate for Integrative therapy, which showed point estimates above the clinically significant cut-off, indicating a moderate effect size, and was identified as the top-ranking intervention. At the same time, it was low for NET and CBT, and very low for PM+/SbS, with NET showing point estimates above the clinically significant cut-off. In contrast, CBT and PM+/SbS fell within the range of clinically unimportant differences. CBT, Integrative therapy, and NET outperformed attentional/psychological placebo, although the confidence in the evidence was low. When compared to the waiting list, all interventions were associated with a greater reduction in depressive symptoms, with SMDs ranging from −1.39 (IPT) to −0.58 (FPI). In head-to-head comparisons, Integrative therapy was associated with a greater reduction in depressive symptoms than family parenting interventions, mindfulness, problem-solving therapy, and psychoeducation, with confidence in the evidence rated as low. Similarly, NET was superior to family parenting interventions and psychoeducation, with a low confidence in the evidence (Supplementary—ANNEX M). A moderate heterogeneity was found
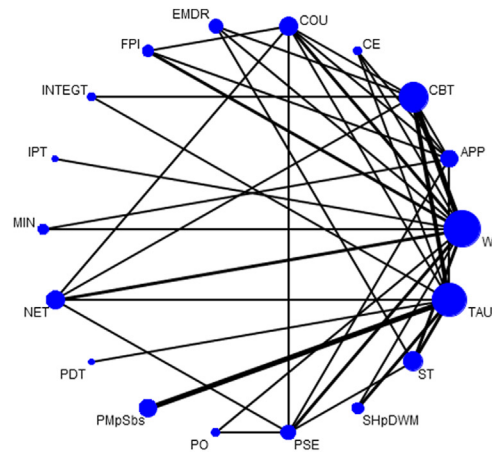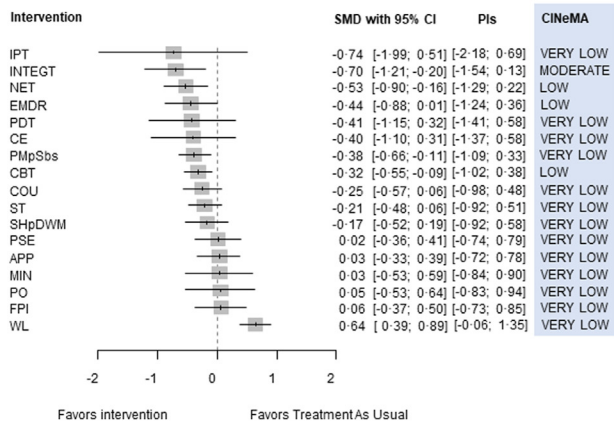
Fig. 3: Forest plot comparing each intervention with TAU for depressive symptoms. Network plot of evidence: the thickness of edges is proportional to the number of studies comparing the two interventions and the size of nodes is proportional to the number of studies including that intervention. SMD—standardized mean difference; CI—confidence interval; PIs: Prediction intervals; APP—attentional/psychological placebo; CBT—cognitive behavioural therapy; CE—creative expressive interventions; COU—counselling; EMDR—eye movement desensitization and reprocessing; FPI—family parenting intervention; INTEGT—integrative therapy; IPT—interpersonal therapy; MIN—mindfulness; NET–narrative exposure therapy; PDT—psychodynamic therapy; PMpSbS—Problem Management Plus/Step by Step; PO—problem solving therapy; PSE—psychoeducation; SHpDWM—self-help plus/doing what matters in times of stress; ST—supportive therapy; TAU—treatment as usual.

(estimated between studies SD: tau = 0.328; I^2 = 70%). Intra-loop incoherence emerged for four loops: attentional/psychological placebo, counselling, and family parenting interventions; problem-solving therapy, psychoeducation, and waitlist; creative expression, SH+/DWM, TAU, and waitlist; attentional/psychological placebo, creative expressive interventions, family-parenting interventions, and waiting list. There was no inconsistency between direct and indirect estimates, except for comparing counselling and family parenting interventions. However, there was no evidence of global inconsistency according to the design-by-treatment interaction test (p-value = 0.584) (Supplementary—ANNEX M).
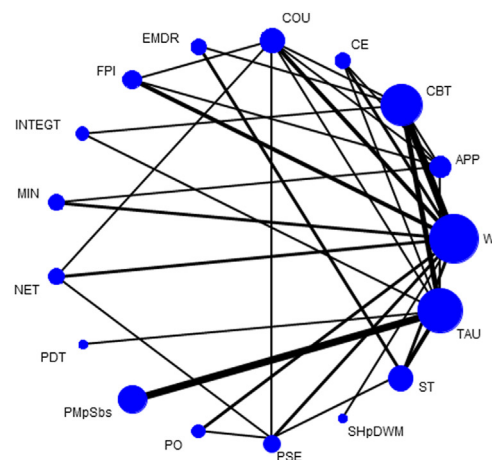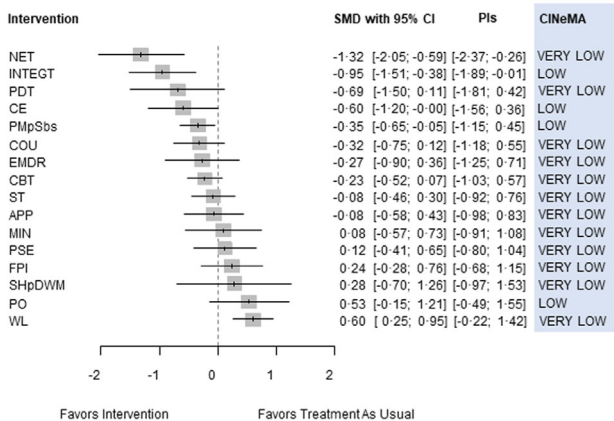

Fig. 4: Forest plot comparing each intervention with TAU for anxiety symptoms. Network plot of evidence: the thickness of edges is proportional to the number of studies comparing the two interventions, and the size of nodes is proportional to the number of studies including that intervention. SMD—standardized mean difference; CI—confidence interval; PIs: Prediction intervals; APP—attentional/psychological placebo; CBT—cognitive behavioural therapy; CE—creative expressive interventions; COU—counselling; EMDR—eye movement desensitization and reprocessing; FPI—family parenting intervention; INTEGT—integrative therapy; MIN—mindfulness; NET–narrative exposure therapy; PDT—psychodynamic therapy; PMpSbS—Problem Management Plus/Step by Step; PO—problem solving therapy; PSE—psychoeducation; SHpDWM—self-help plus/doing what matters in times of stress; ST—supportive therapy; TAU—treatment as usual.

In terms of anxiety symptoms, Integrative therapy, NET, and PM+/SbS were found to be significantly more effective compared to TAU, with creative expressive interventions touching the line of non-significance (Fig. 4). NET and Integrative therapy were identified as the top-ranking interventions based on p-scores, showing significant prediction intervals and point estimates above the clinically significant cut-off. Notably, Integrative therapy was studied in participants with diagnoses of depression and CMDs, and NET was primarily focused on participants with PTSD diagnoses. However, despite both interventions showed moderate effect estimates, they demonstrated very low and low confidence in the evidence, respectively. Similarly, although PM+/SbS had a precise effect estimate, its confidence in the evidence was low and its point estimates fell within the range of clinically unimportant differences. When compared with the waiting list, all interventions showed to be effective in reducing anxiety symptoms except for family parenting interventions, mindfulness, problem-solving therapy, and SH+/DWM (Fig. 4), with SMDs ranging from -1.92 (NET) to -0.48 (PSE). In terms of head-to-head comparisons, Integrative therapy was more effective than several interventions, including CBT, problem-solving therapy, and psychoeducation, with a moderate confidence in the evidence, and mindfulness, SH+/DWM, attentional/psychological placebo, and supportive therapy, with a low confidence in the evidence. Among these, CBT showed superiority over problem-solving therapy only, with a very low confidence in the evidence. NET showed a greater reduction in anxiety symptoms compared with CBT, EMDR, counselling, family parenting interventions, PM+/SbS, problem-solving therapy, psychoeducation, SH+/DWM, attentional/psychological placebo, and supportive therapy. However, confidence in the evidence was very low. Creative expressive interventions were more effective than family parenting interventions and psychoeducation, with low confidence in the evidence, and problem-solving therapy, with moderate confidence in the evidence. Likewise, counselling outperformed family parenting interventions and problem-solving therapy, with a low confidence in the evidence. Finally, both psychodynamic therapy and PM+/SbS were superior to problem-solving therapy, with very low and low confidence in the evidence, respectively. The overall network heterogeneity was moderate (estimated between studies SD: tau = 0.369; I^2 = 72%). Intra-loop incoherence emerged for three loops: CBT, Integrative therapy, and TAU; NET, psychoeducation, and waitlist; CBT, creative expressive interventions, supportive therapy, TAU, and waitlist. There was no inconsistency between direct and indirect estimates, except for NET versus psychoeducation and NET versus waitlist comparisons. However, there was no evidence of global inconsistency according to

the design-by-treatment interaction test (p-value = 0.139) (Supplementary—ANNEX N).

For the comparison with at least ten studies (waiting list versus CBT) the ROB-MEN tool showed evidence of small study effects for PTSD and depression, but not for anxiety. However, the trim and fill method did not suggest presence of missing studies (Supplementary—ANNEXES L–N).

In the subgroup analyses for PTSD outcome, no statistically significant differences were found between psychosocial interventions and TAU for subgroups involving participants with a formal diagnosis, studies conducted in HICs, or those who were not refugees, asylum seekers, or internally displaced, due to wide confidence intervals. Consistent with the main analysis, NET and counselling demonstrated moderate effect estimates when compared to TAU in studies conducted in LMICs and among refugees and asylum seekers, though counselling was close to the threshold of non-significance in this population. EMDR also showed effectiveness in this population. Within the individual interventions' subgroup, NET and EMDR approached statistical significance, while counselling proved effective in group interventions. Creative expressive interventions, which were marginally non-significant in the main analysis but had moderate confidence in the evidence, demonstrated increased effectiveness in group interventions and among participants without formal PTSD diagnosis.

For the depression outcome, no significant differences were noted in the migrant subgroup, or participants with a formal diagnosis. However, PM+/SbS showed borderline significance in the subgroup of individual interventions and participants without a formal diagnosis. Consistently with the results of the primary analyses, among refugees and asylum seekers, NET, Integrative therapy, CBT, and PM+/SbS were more effective than TAU, with EMDR also gaining significance. Only Integrative therapy was significant in HICs, while NET and PM+/SbS remained significant in LMICs, with EMDR also gaining borderline significance. As for PTSD, in group interventions, creative expressive interventions showed moderate efficacy, while CBT remained barely significant, and supportive therapy achieved statistical significance.

For anxiety outcome, Integrative therapy, NET, and PM+/SbS remained significant in the subgroup of refugees, asylum seekers and internally displaced persons, as well as in LMICs, where counselling and psychoeducation also gained significance. In HICs and individual interventions, both NET and Integrative therapy showed significance, though with less precise confidence intervals. Creative expressive interventions showed moderate efficacy for group interventions, and both supportive therapy and psychodynamic therapy became significant. Among participants without a formal diagnosis, creative expressive interventions,

counselling, and PM+/SbS were effective, while no significant differences were noted in participants with a formal diagnosis.

The test for overall network heterogeneity was significant across all subgroups.

The sensitivity analyses were generally consistent with the primary analyses. Specifically, the analysis excluding studies evaluating derivatives of CBT yielded results consistent with the main outcomes. However, the sensitivity analysis excluding trials at high risk of bias led to a minor shift in the p-score ranking for PTSD, with EMDR emerging as the top intervention. In this context, EMDR showed a moderate and precise effect estimate. Finally, when considering only studies involving participants with a formal PTSD diagnosis, there was no statistically significant evidence supporting the benefit of any psychosocial interventions compared to TAU. However, CBT, counselling, EMDR, and NET were found to be significantly more effective than WL, with NET and EMDR identified as the top-ranking interventions based on p-scores. Notably, while the confidence in the evidence was not reassessed during this sensitivity analysis, it ranged from low to very low in the primary analyses, with very few comparisons rated as moderate (Supplementary—ANNEXES Q–S).

Secondary outcome

Attentional and psychological placebo, along with CBT, PM+/SbS, and problem-solving therapy were less acceptable compared to treatment as usual. Family parenting interventions were more acceptable than attentional and psychological placebo, CBT, counselling, and waitlist. Problem-solving therapy was less acceptable than NET, creative expressive interventions, and supportive therapy. Intra-loop incoherence emerged for three loops involving attentional/psychological placebo, creative expressive interventions, and TAU; and creative expressive interventions, waitlist, and TAU respectively with NET and CBT. However, there was no evidence of inconsistency between direct and indirect estimates. Moreover, the network did not show significant overall incoherence (design-by-treatment test, p-value = 0.32) nor heterogeneity (estimated between-studies SD: tau = 0; I^2 = 0%; p-value = 0.811) (Supplementary—ANNEX P).

Discussion

The current NMA included almost a hundred studies and almost 20,000 participants to assess the comparative treatment outcomes of different psychosocial interventions delivered to asylum seekers, refugees, and other migrant populations.

The results revealed that several interventions, including NET, counselling, EMDR, and creative expressive intervention, were more effective than TAU for PTSD symptoms, though all exhibited overlapping confidence intervals. Creative expressive interventions had moderate confidence in the evidence, but the effect estimate was close to the threshold of non-significance. Confidence in the evidence for NET, counselling, and EMDR was rated as very low, although they showed point estimates above the clinically significant cut-off. For depressive symptoms, interventions like Integrative therapy, NET, PM+/SbS, and CBT demonstrated greater efficacy than TAU. Integrative therapy showed a moderate effect size and was identified as the top-ranked intervention with moderate confidence in the evidence. However, this conclusion is based on a very limited number of studies. For anxiety symptoms, NET, Integrative therapy, and PM+/SbS were significantly more effective than TAU, but they resulted in a low confidence in the evidence, despite moderate effect estimates, especially for NET whose confidence interval lies above the clinically significant cut-off. Head-to-head comparisons remain largely inconclusive due to the low confidence in the evidence. For PTSD symptoms, NET showed greater efficacy compared to CBT, psychoeducation, and problem-solving therapy, although with very low confidence in the evidence. For depressive symptoms, Integrative therapy outperformed family parenting interventions, mindfulness, problem-solving therapy, and psychoeducation, but with a low confidence in the evidence. Similarly, NET was superior to family parenting interventions and psychoeducation, with low confidence in the evidence. For anxiety symptoms, Integrative therapy and NET appeared more effective than a range of interventions, but confidence in the evidence varied from moderate to very low. While certain interventions seem to perform better, the overall reliability of these results is weakened by the low confidence, making them indicative but not definitive. Also, subgroup analyses suggest that, while certain interventions show promise, further research is needed to strengthen the evidence base and determine their generalizability across different settings and populations. Finally, in terms of acceptability, individual preference has proven to be an important factor to consider when selecting interventions, as it can significantly influence engagement, adherence, and overall treatment outcomes.

Previous meta-analyses have shown the benefit of certain interventions like NET, EMDR, and CBT, but no definitive differences between them have emerged. Our findings align with Kip and colleagues,[157] who found NET to have a medium to large effect on PTSD and depression symptoms compared to control conditions at follow-up. However, the study highlighted considerable heterogeneity, suggesting that efficacy can vary. Similarly, Molendijk and colleagues[158] supported the efficacy of EMDR in forced migrants. However, Wright and colleagues[159] found no significant differences between EMDR and other psychological treatments in their individual participant meta-analysis, although not

specifically focused on migrants, which echoes our finding of very low confidence in the evidence for EMDR. Our results also align with studies like Sambucini and colleagues,[160] which supported the efficacy of interventions based on CBT techniques for depressive symptoms, but Daniel and colleagues[161] reported low-quality evidence for CBT-based interventions in forcibly displaced persons, similar to our findings. This contrasts with Turrini and colleagues' network meta-analysis,[162] which found CBT more effective than TAU for PTSD. Additionally, our findings are also consistent with a recent systematic review[163] that showed that PM + and SbS, two World Health Organization (WHO) low-intensity psychosocial interventions, are effective in reducing distress indicators like anxiety, depressive or post-traumatic stress disorder symptoms and promoting positive mental health in populations exposed to adversities. Despite the potential of these interventions, our findings and previous studies stress the recurring theme of low confidence in evidence across interventions due to heterogeneity and variability in study quality. This highlights the ongoing need for more high-quality research to better assess the comparative effectiveness of psychosocial interventions across different settings and populations.

The present review has some limitations. First, most studies included refugees and asylum-seekers, while economic migrants and other migrant groups were less commonly studied. This would suggest an over-representation of refugee studies compared to epidemiological figures on different types of migrants, which show a predominance of economic migrants,[164] thus reducing the applicability of the findings to the real world. A second limitation is that the included studies differed concerning the background origins of the included populations, the reason for migration, time since resettlement, country of origin and resettlement, the type of outcome measures, the content and modalities of delivering psychosocial interventions, and the modalities of questionnaire administration. All these differences are likely to have contributed to the high level of statistical heterogeneity that was detected, and that was not fully explained by subgroup and sensitivity analyses. Furthermore, while meta-regression results suggested that baseline severity might be an effect modifier for anxiety outcome, it is important to acknowledge that the presence of other sources of heterogeneity cannot be ruled out. To further explore heterogeneity, we could have conducted additional subgroup analyses, such as grouping interventions into face-to-face versus digital, or those with a specific focus on trauma versus others, or task-shifting versus non-task-shifting. However, we anticipated that this would have increased the chances of finding statistical associations by chance, and therefore only the a priori planned subgroup analyses were conducted and reported. The heterogeneity and poor methodological quality of the

primary studies may have affected the accuracy and reliability of the results, although no evidence of inconsistency was found. Third, small study bias was identified for PTSD and depression, specifically in the CBT-WL comparison, making it not possible to completely rule out an overall risk of bias. In addition, while ClinicalTrials.gov and CENTRAL were searched, other clinical trial registries were not, raising the possibility that some unpublished studies may have been overlooked. Fourth, the limited number of direct comparisons may have affected the robustness of our results, which should be interpreted with caution. For example, in certain subgroup analyses, the limited number of studies available for each comparison made it difficult to distinguish between heterogeneity and inconsistency. This limitation is likely tied to the inherent challenges of conducting research with migrant populations. Factors such as cultural differences between migrants and host countries, lack of cultural mediators, and the added complexity of acculturation stress often hinder the feasibility and quality of studies in these groups. These challenges may contribute to the scarcity of research, which may also have impacted the certainty of evidence. Future research should address these gaps in the evidence base to provide a more comprehensive understanding of the interventions and strengthen the conclusions. Fifth, we made the a priori decision to only analyse data at post-intervention, as we anticipated that a relevant number of studies lacked long-term data and networks may have been poorly connected, leaving uncertainty about the long-term effects of psychosocial interventions. Additionally, since the migrant population is inherently in transition and demands urgent assessment, this approach aligns with the needs of humanitarian and emergency interventions, which often require early interventions and rapid evaluations. Another limitation is that local and cultural adaptation of psychosocial interventions was poorly reported, which may weaken the accuracy of the conclusions of the studies. Moreover, only PTSD, depression, and anxiety outcomes were considered. We made this choice because these are the best-studied mental health outcomes in this population, while data for other mental health conditions are still too limited to be re-analysed to produce meaningful pooled estimates. Future research should consider discussing the potential availability of other symptom domains, such as psychotic symptoms and substance use, in the studies included. Finally, as many studies contributing to the outcomes of depression and anxiety involved participants with a primary diagnosis of PTSD or varying degrees of psychological distress, most of whom did not meet the diagnostic criteria for a depressive or an anxiety disorder, there is a need for future research to focus on interventions targeting specific diagnoses. As a result, the improvements in depression and anxiety symptoms observed in these studies may reflect the

alleviation of comorbid symptoms within the context of PTSD treatment, rather than the direct treatment of depression or anxiety as distinct clinical entities. This would allow for a more accurate evaluation of the efficacy of these interventions in treating depression and anxiety as separate clinical conditions.

Despite these limitations, the evidence summarised here has important research implications. While certain interventions show potential, they are limited by the low or very low confidence in the evidence. Future research should, therefore, prioritize high methodological rigour to yield more definitive conclusions. Secondly, the considerable heterogeneity across studies highlights the need for more tailored research that should be expanded beyond refugees and asylum seekers to include economic and other types of migrant populations to better understand the generalizability of the interventions and to better reflect the epidemiology of migration on a global scale. The lack of clear differences between interventions in head-to-head comparisons indicates the need for more studies directly comparing multiple interventions. This will help to determine whether specific therapies are more effective for certain mental health outcomes or populations. Exploring the effectiveness of interventions targeting specific diagnostic categories is essential, as psychological interventions for different conditions target distinct mechanisms. Understanding these differences is critical for accurately tailoring interventions and ensuring that therapeutic approaches address the underlying mechanisms specific to each disorder. Thirdly, studies with long-term assessments of intervention efficacy are needed to consolidate findings and assess whether the benefits of psychosocial interventions are maintained over time. Also, future research should explore the effectiveness of interventions that aim to promote positive mental health by strengthening psychological well-being, resilience, coping, and prosocial behaviour, among others.[165,166] Finally, there is a need to test and develop selective and indicated prevention interventions focused on preventing the onset of disorders in populations not screened for diagnoses or without any symptoms, but exposed to risk factors.[8,167] By addressing these gaps, future research could provide more robust evidence on the comparative effectiveness of psychosocial interventions, thereby informing clinical guidelines and improving mental health outcomes for migrant populations.

In addition to research implications, the evidence has significant policy implications. First and foremost, the considerable heterogeneity in intervention outcomes indicates a need for strategic resource allocation towards high-quality research that addresses existing evidence gaps regarding the effectiveness of psychosocial interventions. Policymakers should prioritize rigorous studies that assess both short- and long-term impacts, ensuring mental health services are guided by reliable data and ultimately leading to improved health outcomes. Moreover, the observed low confidence in the effectiveness of various psychosocial interventions underscores the necessity for evidence-based guidelines tailored to the specific needs of different migrant groups. Policies should also focus on programs that enhance coping mechanisms and promote positive mental health among migrants, thereby mitigating mental health issues before they escalate into more severe conditions. Also, engaging with communities to understand their unique mental health needs and preferences is crucial for ensuring that the interventions provided are relevant and acceptable. Finally, since some interventions are less effective than others, there is a critical need for training healthcare providers in evidence-based practices that have shown better outcomes in various populations. This will help ensure that interventions are not only implemented but are done so in a manner that maximizes their efficacy.

By addressing these considerations, policymakers could enhance the quality and impact of mental health interventions for migrant populations, fostering better mental health outcomes and overall well-being.

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