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## Transdiagnostic psychosocial interventions to promote mental health in forcibly displaced persons: a systematic review and meta-analysis

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### ABSTRACT

**Background:** People forced to leave their homes, such as refugees and internally displaced persons, are exposed to various stressors during their forced displacement, putting them at risk for mental disorders.

**Objective:** To summarize evidence on the efficacy of psychosocial interventions aiming to promote mental health and/or to prevent mental symptoms by fostering transdiagnostic skills in forcibly displaced persons of all ages.

**Method:** Four databases and reference lists were searched for randomized controlled trials on interventions in this population on 11 March 2022. Thirty-six studies were eligible, 32 studies (comprising 5299 participants) were included in random-effects multilevel meta-analyses examining the effects of interventions on mental symptoms and positive mental health (e.g. wellbeing) as well as moderators to account for heterogeneity. OSF Preregistration-ID: 10.17605/OSF.IO/XPMU3

**Results:** Our search resulted in 32 eligible studies, with 10 reporting on children/adolescents and 27 on adult populations. There was no evidence for favourable intervention effects in children/adolescents, with 44.4% of the effect sizes pointing to potentially negative effects yet remaining non-significant. For adult populations, our meta-analyses showed a close-to-significant favourable effect for mental symptoms,  $M(SMD) = 0.33$ , 95% CI  $[-0.03, 0.69]$ , which was significant when analyses were limited to high-quality studies and larger for clinical compared to non-clinical populations. No effects emerged for positive mental health. Heterogeneity was considerable and could not be explained by various moderators (e.g. type of control, duration, setting, theoretical basis). Certainty of evidence was very low across all outcomes limiting the generalizability of our findings.

**Conclusion:** The present review provides at most weak evidence for an effect favouring transdiagnostic psychosocial interventions over control conditions for adult populations but not for children and adolescents. Future research should combine the imperative of humanitarian aid in face of major crises with studying the diverse needs of forcibly displaced persons to improve and tailor future interventions.

### Intervenciones psicosociales transdiagnósticas para promover la salud mental en personas desplazadas por la fuerza: Una revisión sistemática y metaanálisis

**Antecedentes:** Las personas obligadas a abandonar sus hogares, como los refugiados y personas desplazadas internamente, están expuestas a diversos factores estresantes durante sus desplazamientos forzados, lo que los pone en riesgo de sufrir trastornos mentales.

**Objetivo:** Resumir la evidencia sobre la eficacia de intervenciones psicosociales orientadas a promover la salud mental y/o prevenir síntomas mentales mediante el fomento de estrategias transdiagnósticas en personas desplazadas a la fuerza de todas las edades.

**Método:** Se realizaron búsquedas en cuatro bases de datos y listas de referencia en busca de ensayos controlados aleatorizados sobre intervenciones en esta población el 11 de marzo del 2022. Treinta y seis estudios fueron elegibles, 32 estudios (que comprenden 5.299 participantes) se incluyeron en el metaanálisis multinivel de efectos aleatorios que examinó los efectos de las intervenciones sobre síntomas mentales y de salud mental positiva (ej. Bienestar) así como moderadores que den cuenta de la heterogeneidad. ID de registro previo de OSF: 10.17605/OSF.IO/XPMU3

**Resultados:** Nuestra búsqueda resultó en 32 estudios elegibles, con 10 que reportaban sobre niños/adolescentes y 27 en poblaciones adultas. No hubo evidencia de efectos favorables de la intervención en niños/adolescentes, con un 44.4% de los tamaños de efecto apuntando a

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### PALABRAS CLAVE

Refugiados; desplazamiento; revisión sistemática; metanálisis; intervención psicosocial; trans diagnóstico

### 关键词

难民; 流离失所; 系统综述; 元分析; 社会心理干预; 跨诊断

### HIGHLIGHTS

- This review is the first to examine the efficacy of transdiagnostic interventions for mental health promotion and prevention of mental disorders in forcibly displaced persons of all ages.
- Overall, we found no favourable effect of transdiagnostic interventions in both children/adolescents and adults. Excluding studies at high risk of bias, there was weak evidence for a small favourable effect in adults, but not in children and adolescents. Thus, so far, there is weak evidence for transdiagnostic interventions in forcibly displaced persons.
- Research efforts need to match care needs: While most people live and need care in low-income countries, the majority of research has been conducted in high-income countries.

efectos potencialmente negativos pero que no fueron significativos. Para las poblaciones adultas, nuestro metanálisis mostró un efecto favorable cercano a significativo para los síntomas mentales,  $M(SMD)=0.33$ , IC 95% [-0.03, 0.69], que fue significativo cuando los análisis se limitaron a estudios de alta calidad y más grandes para poblaciones clínicas en comparación con no clínicas. No surgieron efectos para salud mental positiva. La heterogeneidad fue considerable y no pudo ser explicada por varios moderadores (ej., tipo de control, duración, ambiente, base teórica). La certeza de la evidencia fue muy baja en todos los resultados lo cual limita la generalización de nuestros hallazgos.

**Conclusiones:** La presente revisión provee, como máximo, pruebas débiles de un efecto que favorece las intervenciones psicosociales transdiagnósticas sobre las condiciones de control para poblaciones adultas pero no para adolescentes y niños. La investigación futura debería combinar el imperativo de ayuda humanitaria frente a las grandes crisis con el estudio de las diversas necesidades de las personas desplazadas a la fuerza para mejorar y adaptar las intervenciones futuras.

## 促进被迫流离失所者心理健康的跨诊断社会心理干预：一项系统综述和元分析

**背景:** 被迫离开家园的人，如难民和国内流离失所者，在被迫流离失所期间会面临各种应激源，使他们面临精神障碍的风险。

**目的:** 总结旨在通过发展跨诊断技能来促进所有年龄段被迫流离失所者心理健康和/或预防精神症状的社会心理干预效果的证据。

**方法:** 在 2022 年 3 月 11 日搜索了四个数据库和参考列表，以查找在此群体中干预措施的随机对照试验。36 项研究符合条件，32 项研究（包括 5,299 名参与者）被纳入随机效应多水平元分析，以考查对精神症状和积极心理健康（例如幸福感）的干预以及解释异质性的调节因素。OSF 预注册号：10.17605/OSF.IO/XPMU3

**结果:** 我们的检索产生了 32 项符合条件的研究，其中 10 项针对儿童/青少年，27 项针对成年人。没有证据表明干预效果在儿童/青少年更有利，44.4% 的效应量指向有潜在负面作用但仍然不显著。对于成年人，我们的元分析显示对精神症状有接近显著的有利影响， $M(SMD)=0.33$ , 95% CI [-0.03, 0.69]，当分析仅限于高质量时显著且在临床群体比非临床人群效应更大。对积极心理健康没有影响。异质性相当大，无法被各种调节因素（例如，控制类型、持续时间、设置、理论基础）解释。所有结果的证据质量都非常低，限制了我们的研究结果的可推广性。

**结论:** 本综述至多支持跨诊断心理社会干预对成年人的效果优于控制条件的影响但对儿童和青少年则不然提供了微弱的证据。未来的研究应该将面对重大危机时人道主义援助的必要性与研究被迫流离失所者的不同需求结合起来，以改进和精确调整未来的干预措施。

## 1. Introduction

The invasion of Ukraine is among the most devastating humanitarian crises of recent history. As of 31 January 2023, about 8 million people have left Ukraine and more than 7 million have been internally displaced since the beginning of the Russian military offensive (United Nations High Commissioner for Refugees, 2022b). This adds to a global situation where many wars and armed conflicts (e.g. in Afghanistan, Ethiopia, Iran, Yemen) force people to leave their homes (United Nations High Commissioner for Refugees, 2022a, 2023). Several reviews have pointed to serious mental health effects of exposure to armed conflicts (Bendavid et al., 2021; Leon et al., 2022; Bryant et al., 2022b; Steel et al., 2009). Soldiers but also war- and conflict-affected civilians are at increased risk for mental health problems, including posttraumatic stress disorder (PTSD), anxiety and depressive disorders (Blackmore et al., 2020; Charlson et al., 2019; Morina et al., 2018).

In 2022, the global number of forcibly displaced persons has been pushed over 100 million, of which 42% are children and adolescents (United Nations High Commissioner for Refugees, 2021, 2022c). Forcibly displaced persons (also referred to as *involuntarily displaced persons*) are exposed to several macro-stressors

including the circumstances forcing people to leave their homes (e.g. armed conflicts), travel- and transit-related events (e.g. life-threatening events, physical harm), post-arrival stressors (e.g. uncertain asylum status), and integration/settlement-related problems (e.g. unemployment; [Sonne 2018]). As stressor exposure is among the leading causes for the onset and persistence of mental disorders (Zorn et al., 2017), the World Health Organization (WHO) presented a global action plan on the health of refugees which puts mental health as priority (World Health Organization, 2019).

A recent Cochrane umbrella review (Uphoff et al., 2019) provided an overview on mental health interventions for forcibly displaced persons differentiating between mental health promotion, prevention and treatment of common mental disorders. **Mental health promotion** is in most cases universal (i.e. it targets the general population), but it may also address high-risk groups like forcibly displaced persons. Primary outcomes of health-promoting interventions are often indicators of positive mental health rather than symptom measures, as health-promoting interventions aim at lowering the risk of mental disorders (Tol, 2015). **Prevention of**

**mental disorders or symptoms** can be understood as specific, population- and/or individual-based interventions aiming to minimize the burden of disease. Prevention can either be primary, that is, interventions aim at avoiding that a disease manifests, or secondary, that is, interventions aim at the early detection and management of diseases (World Health Organization, 2022b). In contrast to mental health promotion, which focuses on general mental health, prevention may also include symptom-specific strategies. These interventions can be differentiated from the **treatment of common mental disorders**, which aims at reducing symptoms of specific disorders after their manifestation. These may include cognitive behavioural therapies (CBTs; e.g. trauma-focused; [Ehlers, 2013]) or culturally sensitive CBT (Hinton et al., 2012), or other forms of psychotherapy (Shapiro, 2012). While several reviews examined the effects of psychotherapy in forcibly displaced persons in different age groups (Morina & Sterr, 2019; Thompson et al., 2018), so far, only one review targeted community-based prevention measures for forcibly displaced children and adolescents in high-income countries (Soltan et al., 2020, 2022), without finding evidence for favourable intervention effects on mental symptoms. However, quantitative summaries were limited to at most two studies per outcome, and the overall certainty of evidence was very low to low. Another review (Turrini et al., 2019) stated to examine psychosocial interventions in asylum seekers and refugees, finding evidence for beneficial effects on mental symptoms. However, as in many other reviews (Nocon et al., 2017; Tribe et al., 2014), this evidence synthesis largely considered treatments of specific, manifest mental disorders, limiting conclusions about interventions to promote mental health or to prevent mental health issues. Thus, no review is available for health-promoting interventions or prevention measures in adult populations (Turrini et al., 2019).

Delivering mental health interventions to forcibly displaced persons is challenging. Standard treatments that are effectively delivered in Western societies might not be as effective in this population (Uphoff et al., 2019). First, high rates of comorbidity (Bogic et al., 2015; McMahon, 2014) may decrease intervention effects. Second, the generalizability of findings from research with forcibly displaced persons is limited as most studies on mental health interventions are conducted in high-income countries, while most people live and need care in low-income countries (United Nations High Commissioner for Refugees, 2022b; Wainberg et al., 2017). Third, even in countries with national health services, mental health care use by forcibly displaced persons is low due to different barriers (e.g. language, stigma; [Satinsky et al., 2019]).

Reduced effectiveness of standard treatments, low contact coverage of specialized mental healthcare professionals and limited resources in low-income countries have resulted in an increasing interest in transdiagnostic interventions (Dawson et al., 2015). Those interventions go beyond single diagnostic categories by addressing shared common aetiological and maintenance processes of mental health problems as well as cognitive, affective, behavioural, and interpersonal features of mental disorders, that is, they assume a general latent psychopathological factor (Fusar-Poli et al., 2019). Processes targeted by transdiagnostic interventions are, for instance, emotion regulation (Cludius et al., 2020), rumination (Hsu et al., 2015), repetitive negative thinking (Drost et al., 2014), or psychological (in)flexibility (Paulus et al., 2016).

Recently, different transdiagnostic treatments for common mental disorders have been proposed for forcibly displaced persons (Dawson et al., 2015; Murray et al., 2014). Given the aim of mental health promotion to foster general mental health and wellbeing and the goal of prevention measures to avoid the onset and/or chronification of mental symptoms and disorders, transdiagnostic approaches are of major relevance in this field (O'Bryan et al., 2021). This notion is supported by a rapidly increasing number of organizations developing transdiagnostic programmes for forcibly displaced persons (Ager et al., 2011; Dawson et al., 2015; De Graaff et al., 2020; World Health Organization, 2022a) (see Table 1 for common intervention components).

Given the challenging circumstances under which mental health promotion and prevention in forcibly displaced persons needs to be delivered, intervention intensity is also a matter of debate (Rawlinson et al., 2020). Low-intensity interventions need less resources by using self-help materials, having six hours or less contact time, and being delivered by practitioners or trained supporters (Shafran et al., 2021). Reviews found low-intensity interventions to be effective in reducing mental symptoms (Bower et al., 2013; Hazell et al., 2016). Thus, especially low-intensity transdiagnostic interventions may have the potential to improve mental health care in forcibly displaced persons by targeting a broad range of symptoms, in low-resource settings and at lower costs than standard interventions (Dawson et al., 2015). At the same time, concerns were raised whether those low-intensity interventions are sufficient to meet the complex demands of this population due to rigid time schedules and their reliance on internal resources (Knefel et al., 2022).

So far, despite the enormous need for mental health promotion and prevention in forcibly displaced persons and the increasing interest in transdiagnostic interventions, a systematic review examining the

**Table 1.** Common components of transdiagnostic psychosocial interventions.

Components	Description
Behavioural activation	Behavioural activation interventions originate from the treatment of depressive disorders (Kanter et al., 2010), and include techniques to monitor and schedule activities or assess life goals and values. Behavioural activation may also include contingency management and procedures targeting behavioural avoidance (as observed in depression).
Emotion regulation	Emotion regulation describes any extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions (Aldao et al., 2010). The construct comprises both trait-level abilities (e.g. general ability to regulate emotions) and specific strategies (e.g. reappraisal, acceptance), and was found to represent an important transdiagnostic factor in the development of psychopathology (Aldao et al., 2016). Emotion regulation trainings often focus on the promotion of specific skills or strategies (e.g. reappraisal trainings).
Mindfulness	Mindfulness can be described as a process of openly attending to one's present moment experience with awareness (Creswell, 2017), which contrasts with many daily life experiences. Therefore, mindfulness interventions aim at fostering greater attention to and awareness of the present moment.
Problem management	Problem management (or problem-solving) describes interventions to improve individual management over practical problems (e.g. interpersonal conflicts; [Infurna & Luthar, 2018]). It often includes categorizing problems as potentially solvable, selecting a target problem and developing (alternative) plans to handle the problem.
Psychoeducation	Psychoeducation describes a standard intervention of cognitive behavioural therapy that conveys systematic, structured and didactic knowledge on (mental) illness and its treatment (Ekhtiari et al., 2017).
Relaxation	Relaxation trainings aim to reduce stress symptoms by fostering relaxation skills. Interventions may comprise different strategies (e.g. breathing exercises, progressive muscle relaxation; [Peters et al., 2008]).
Supportive counselling	Supportive counselling is often provided in form of (unstructured) counselling tailored to participants' needs and aims at strengthening individual resources (Neuner et al., 2004). Such interventions often focus on interpersonal problems as well as developing plans and hope for the future.
Stress management	Stress management refers to a broad range of psychological strategies aiming to control individual levels of stress. The most common programme is the Stress Inoculation Training (Meichenbaum, 2017) which comprises relaxation techniques, attention diversion and behavioural activation.

Notes: This table presents information on common components of transdiagnostic psychosocial interventions aiming to promote mental health and/or to prevent mental symptoms or disorders. The selection builds on literature in the field of transdiagnostic interventions (Martin et al., 2018; Marchette & Weisz, 2017), but is neither complete nor discrete.

effect of interventions targeting transdiagnostic factors is missing. The present study aimed at addressing this gap by providing an evidence synthesis on both low- and high-intensity transdiagnostic psychosocial interventions to promote mental health and/or to prevent mental symptoms in children/adolescents and adults affected by forced displacement. In contrast to previous reviews, our aim was to map potential multidimensional effects of transdiagnostic interventions by examining multiple outcomes including mental symptoms and positive mental health. Moreover, we aimed at examining moderators influencing their efficacy.

## 2. Methods

This systematic review adheres to standards outlined by the Cochrane Collaboration (Higgins et al., 2022) and is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; [Page et al., 2021]). Differences between the preregistration of this review (preregistration-ID: 10.17605/OSF.IO/XPMU3) and the final review are presented as Supplementary Material (SM1). Most importantly, the review type evolved from a rapid to a systematic review and analyses were performed separately for children/adolescents and adult samples.

### 2.1. Search strategy

The search strategy was developed based on previous systematic reviews (Uphoff et al., 2019). Four databases were searched from inception of each database to 11 March 2022, including the Cochrane Central Register of Controlled Trials (CENTRAL), Ovid

PsycINFO, and Embase (including Embase Core, Medline, and PubMed).

The strategy comprised three clusters of search terms that were searched in title, abstract and keywords: terms related to (i) forcibly displaced persons, (ii) interventions, and (iii) mental health outcomes. Within clusters, terms were combined with the Boolean operator OR, while clusters were combined using AND. For PsycINFO and Embase, common filters for randomized controlled trials were used (Glanville et al., 2019; National Health and Medical Research Council, 2013). If available, we used Medical Subject Heading (MeSH) and Emtree (for Embase). Search strategies are presented in SM2. Moreover, reference lists of included studies and related systematic reviews were screened for eligible studies.

### 2.2. Selection criteria

Eligible studies were published (cluster) randomized controlled trials ([c]RCTs). Participants were forcibly displaced persons based on the definitions provided by the UNHCR (United Nations High Commissioner for Refugees, 2016), including refugees, asylum seekers and internally displaced persons (see SM3). Samples were included irrespective of the geographical location of the triggering conflict, their age and physical/mental health status. Interventions were eligible if they aimed at promoting mental health, preventing mental symptoms and/or providing psychosocial support. Interventions were considered to be transdiagnostic when they explicitly targeted transdiagnostic factors (e.g. emotion regulation, rumination) or stated to

promote general mental health or prevent mental symptoms. We included interventions that were described as based on psychotherapy (e.g. CBT), but excluded interventions solely consisting of disorder-specific psychotherapy or pharmacological treatments. All comparators were eligible. To be eligible for quantitative synthesis, studies were required to report on at least one primary mental health outcome at post-intervention assessment, including psychological distress, depressive, anxiety and PTSD symptoms or positive mental health.

### 2.3. Study selection

Following de-duplication, titles/abstracts were screened by two reviewers independently using Rayyan (Ouzzani et al., 2016). Interrater reliability ( $kappa = .57$ ) was moderate at title/abstract level (Landis & Koch, 1977). At full-text level, eligibility was also double-screened, resulting in substantial interrater reliability ( $kappa = .63$ ). At both stages of screening, disagreements were resolved through discussion or by consulting a third reviewer.

### 2.4. Data extraction

A customized data extraction sheet was developed for this review. Data were extracted by one reviewer and checked by a second reviewer. Any disagreements were resolved through discussion or consultation of a third reviewer.

### 2.5. Quality appraisal

#### 2.5.1 Risk of bias

Two team members independently assessed the risk of bias of included studies using the Cochrane risk-of-bias tool for randomized trials (RoB2; [Sterne et al., 2019]). We assessed the following bias domains: (i) randomization process, (ii) deviations from the intended interventions, (iii) missing outcome data, (iv) outcome measurement, and (v) selection of reported results. For cRCTs, we additionally assessed risk of bias due to identification/recruitment of participants. In addition to bias ratings per domain, the overall bias at study and outcome level was assessed. Judgments could be 'low' or 'high' risk of bias or express 'some concerns' (Sterne et al., 2019). All disagreements were resolved through discussion or by consulting a third reviewer.

#### 2.5.2 Publication bias

We examined a potential publication bias using visual inspections of contour-enhanced funnel plots (Peters et al., 2008) as well as statistically by approximating Begg and Mazumdar rank correlation test (Begg & Mazumdar, 1994), which are available for multilevel

models by including sampling error as moderator to the main analyses. In case the sampling error would significantly predict effect sizes, this can be interpreted as indicative of a publication bias.

### 2.6. Data synthesis

Included studies were summarized narratively and in tabular form. Pairwise meta-analyses were performed for primary outcomes if more than two studies were available, and if these were sufficiently homogeneous in terms of interventions (i.e. length, design, providers, theoretical basis, etc.) and outcomes (i.e. examining mental symptoms or positive mental health). For studies with multiple intervention arms, it was determined which group was relevant for this review. However, in none of these multi-arm studies, more than one intervention group was eligible for inclusion in our review.<sup>1</sup> In meta-analyses, we combined active and passive control groups. However, potential differences between passive and active controls were examined by means of subgroup analyses. In case data needed for effect size calculation was missing or unclear, study authors were contacted.

Meta-analyses were performed in *R* version 4.2.2 (R Core Team, 2021) using the package *metafor* (Viechtbauer, 2010). All analyses used random-effects models and maximum likelihood estimations. Due to differential clinical implications, we performed pairwise meta-analyses for children/adolescents and adult populations separately. Standardized mean differences (SMDs, Hedges'  $g$ ) at post-intervention assessment were used as effect size and their 95% confidence intervals (CIs) as indicator of their significance. SMDs were calculated based on means and standard deviations (SDs), with positive SMDs indicating favourable intervention effects for all outcomes. We additionally calculated 95% prediction intervals (PIs; i.e. an estimate of the interval in which 95% of future observations will fall) to account for uncertainty of meta-analytical findings (Deeks et al., 2022). Effect sizes of cRCTs were corrected for clustering effects (Higgins et al., 2022). As no cRCTs reported corrected standard errors, we used the formula  $1 + (M - 1) \cdot ICC$  to estimate the design effect, with  $M$  being the average cluster size and  $ICC$  the intra-cluster correlation coefficient (Higgins et al., 2022). As no  $ICC$  from cRCTs was available, we used  $ICC = .05$  as a mild conservative estimate for primary analyses, and  $ICC = .10$ , a more conservative estimate, for sensitivity analyses.

Our main analyses aimed at answering the question of whether there is an effect of transdiagnostic psychosocial interventions on overall mental symptoms. For this purpose, we used a multilevel approach nesting effect sizes of symptom measures within studies and outcome types (Assink & Wibbelink, 2016). Thereby, our model allowed for correlations of effect sizes

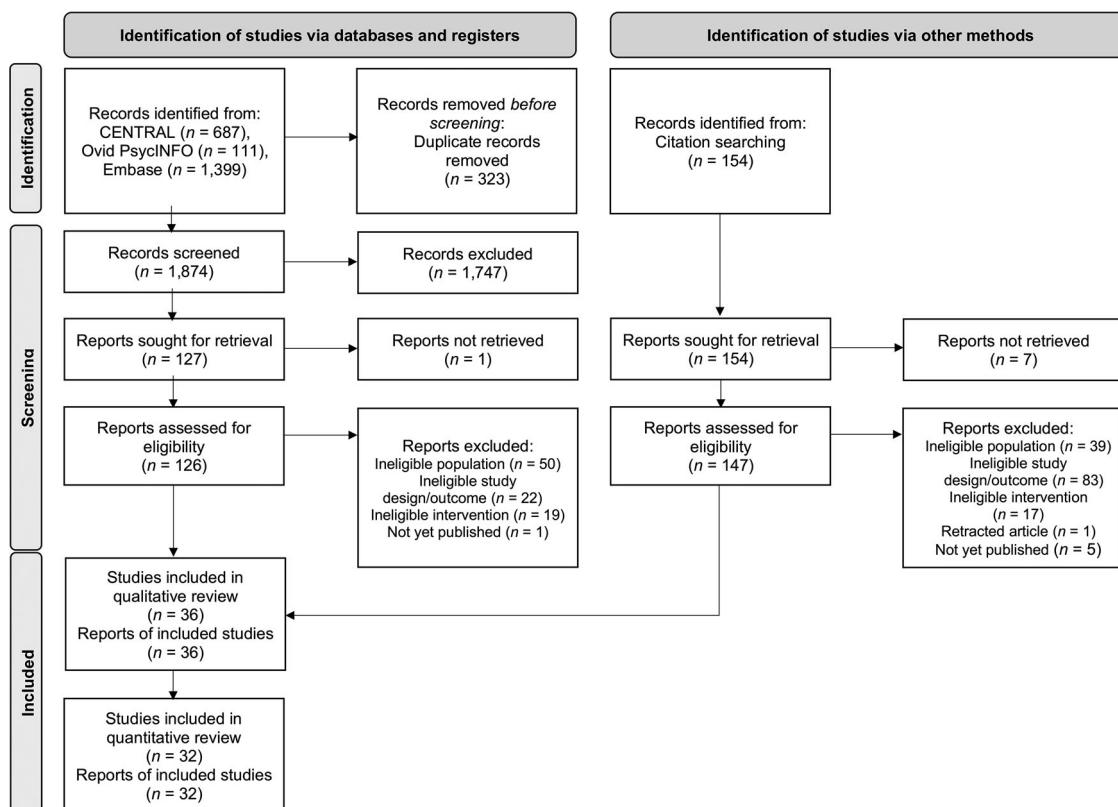
coming from the same study as well as for correlations of effect sizes that came from different studies but assessed the same outcome (see SM4 for exemplary R code). Additional analyses aimed at answering the question of whether there is an effect of transdiagnostic psychosocial interventions on specific symptom types and positive mental health. For this purpose, we used traditional meta-analyses for all primary outcomes in the subgroups of children/adolescents and adults.

Statistical heterogeneity was assessed using Cochran's Q statistic (Cochran, 1954), with a significant Q test indicating the presence of heterogeneity. To assess the amount of heterogeneity, we used the  $I^2$  statistic (range: 0–100%;  $\geq 50\%$  indicates substantial heterogeneity; [Deeks et al., 2022]). As part of the multilevel approach, we differentiated between heterogeneity related to between-study and between-outcome differences (Assink & Wibbelink, 2016).

Due to substantial between-study heterogeneity, we performed several moderator analyses in the subgroups of children/adolescents and adults based on the meta-analytical approach used for primary analyses. Analyses were limited to the higher-level outcome categories of mental symptoms and positive mental health as the larger number of effect estimates available for these analyses resulted in higher statistical power and reduced the number of statistical tests (i.e. type-I error inflation). We used

subgroup analyses for categorical variables (e.g. intervention settings) when at least three effect sizes per subgroup were available and meta-regression for omnibus moderation test and continuous moderators (e.g. intervention duration), with a significant  $Q_M$  statistic indicating the presence of a moderator effect. Moderator analyses were performed for control conditions (passive vs. active), sample type<sup>2</sup> (clinical vs. non-clinical), intervention intensity (low- vs. high-intensity; [Shafran et al., 2021]), intervention setting (individual vs. group), intervention location (low/lower-middle-income vs. upper-middle/high-income following the World Bank Atlas classification; [World Bank, 2022]), intervention providers (lays/non-professionals vs. professionals), theoretical basis (CBT vs. others), intervention duration and publication year. In case of children/adolescents, we also compared effect estimates from interventions targeting children/adolescents versus parents, caregivers, or families.

Sensitivity analyses for mental symptoms and positive mental health were performed based on the risk of bias assessment (for domains with relevant between-study variation), ICC estimates for cRCTs, and study designs. The certainty of evidence for primary outcomes at post-intervention was assessed in duplicate for both age groups using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE; [Schünemann et al., 2022]).



**Figure 1.** PRISMA flow chart illustrating the study selection process.

### 3. Results

#### 3.1. Search outcomes

Databases yielded 2197 records, and 323 duplicates were removed. Of 1874 records screened at title/abstract level, 127 were assessed at full-text level. Moreover, 154 records were identified by citation searching of which 147 were assessed at full-text level. Taken together, this resulted in 36 eligible studies for the qualitative review and 32 eligible studies (from 32 records) for the quantitative synthesis (see Figure 1). Of these 32 studies, 10 studies reported outcomes for children and adolescents and 27 for adults, with five studies reporting data for both age groups.

#### 3.2. Study characteristics

The characteristics of 36 included studies published between 2001 and 2022 are presented in Table 2. The studies were performed in various countries, including Germany, Jordan (five studies each), Lebanon, the United States, Uganda (three studies each), Austria, Tanzania, and Turkey (two studies each). Transdiagnostic interventions included the WHO interventions Problem Management Plus (PM+; 5 studies) and Self-Help Plus (SH+; 3 studies) in adult samples, as well as Early Adolescent Skills for Emotions (EASE; 2 studies), and Teaching Recovery Techniques (TRT, 2 studies) for children/adolescents. Other interventions were only examined in single studies.

Most studies reported on refugees and/or asylum seekers (children/adolescents: 60%; adults: 89.7%), while fewer studies included internally displaced persons (children/adolescents: 26.6%; 6.9%) and had mixed samples (children/adolescents: 13.3%; adults: 3.4%). In both age groups, most studies were designed as RCTs (children/adolescents: 66.7%; adults: 82.8%), while cRCTs were less common (children/adolescents: 33.3%; adults: 17.2%).

The 36 studies comprised 14,133 observations from 5299 forcibly displaced persons in total (children/adolescents: 1427; adults: 3872). The mean age of was 13.00 years [*SD* 3.16] for children/adolescents and 34.10 years [*SD* 5.32] for adult samples. On average, 42.5% [*SD* 22.2] of the child/adolescent samples were female, while 58.2% [*SD* 26.3] of the adult samples self-identified as women. The most common triggers for displacement were wars (children/adolescents: 66.7%; adults: 58.6%), while mixed events (children/adolescents: 20.0%; adults: 20.7%) and armed conflicts (children/adolescents: 13.3%; adults: 20.7%) were less common. Interventions for children/adolescents had a mean duration of 8 weeks (range: 0.5–20 weeks) and were comparable long for adults (9

weeks; range: 1–52 weeks). Interventions were delivered in host/resettlement countries (children/adolescents: 46.7%; adults: 79.3%) or in refugee camps (children/adolescents: 53.3%; adults: 17.2%), with only one intervention for adults being delivered in the home country (3.4%). When classifying interventions according to components presented in Table 1, the vast majority of studies combined different components (children/adolescents: 93.3%; adults: 96.6%). Across both age groups, the most frequently used components were psychoeducation (children/adolescents: 73.3%; adults: 75.9%), problem management (children/adolescents: 53.3%; adults: 58.6%), and relaxation (children/adolescents: 53.3%; adults: 48.3%). Active (mostly enhanced care as usual; children/adolescents: 53.3%; adults: 40.0%) and passive control conditions (mostly wait-list controls; children/adolescents: 53.3%; adults: 60.0%) were almost equally common.

#### 3.3. Quality appraisal

##### 3.3.1 Risk of bias

Overall, there was a moderate to high risk of bias (see Figure 2 and SM5). Main flaws across the included studies and outcomes were found for outcome measurement due to reliance on self-report measures in non-blinded interventions (100.0% some concerns or high-risk ratings in both age groups), selective reporting (children/adolescents: 100%, adults: 66.3%), randomization (children/adolescents: 25.9%; adults: 30.0%), deviations from interventions (children/adolescents: 25.2%; adults: 27.5%), and missing outcome data (children/adolescents: 18.5%; adults: 21.3%).

##### 3.3.2 Publication bias

Meta-regression models provided no clear evidence for an association of standard errors and effect size estimates (children/adolescents:  $Q_M[19] = 2.34$ ,  $p = .142$ ; adults:  $Q_M[57] = 1.17$ ,  $p = .283$ ). However, visual inspections of contour-enhanced funnel plots suggested the presence of a publication bias for the analyses on adult samples (see SM6). Effect sizes were more likely to fall into the right significant border area of the funnel plot, while a comparable number of studies balancing these findings on the left side was missing.

#### 3.4. Quantitative findings

##### 3.4.1 Pairwise meta-analyses – main analyses

*Children and adolescents.* Thirteen studies (comprising 27 effect sizes across four outcomes from 2776 observations of 1427 participants) were included in the meta-analyses on children and adolescents. Across all mental symptom categories, we found no evidence

**Table 2.** Characteristics of the included studies.

Study ID	Country	Reason for forced displacement	Population (type; age (M ± SD); %women)	$n_{\text{randomized}}$ , $n_{\text{IG}}$ , $n_{\text{CG}}$	Intervention name	Intervention components	Type control group	Outcomes
Acarturk et al. (2022a)	Turkey	Syrian civil war	Refugees/asylum seekers; IG: 31.22 years ± 8.89, CG: 31.72 years ± 9.16; IG: 63.98%, CG: 61.88%	642, IG: 322, CG: 320	Self-Help Plus (SH+) combined with enhanced care as usual	Mindfulness, problem management, psychoeducation	Enhanced care as usual	Depressive symptoms (A), psychological distress (A), PTSD symptoms (A), positive mental health (A)
Acarturk et al. (2022b)	Turkey	Syrian civil war	Refugees/asylum seekers; IG: 37.59 years ± 12.93, CG: 38.42 years ± 8.87; IG: 66.7%, CG: 68.2%	46; IG: 24, CG: 22	Group Problem Management Plus (PM+) combined with enhanced care as usual	Behavioural activation, problem management, stress management, supportive counselling	Enhanced care as usual	Psychological distress (A), PTSD symptoms (A)
Aizik-Reebs et al. (2021)	Israel	Conflicts in Eritrea	Refugees/asylum seekers; 31.8 years ± 5.21; IG: 52.1%, CG: 36.7%	158, IG: 60, CG: 98	Mindfulness-Based Trauma Recovery for Refugees (MBTR-R)	Mindfulness, psychoeducation, relaxation	Wait-list	Anxiety symptoms (A), depressive symptoms (A), PTSD symptoms, positive mental health (A)
Akhtar et al. (2021a)	Jordan	Syrian civil war	Refugees/asylum seekers; IG: 43.43 years ± 7.82, CG: 42.52 years ± 6.42; IG: 68.57%, CG: 72.41%	64, IG: 35, CG: 29	Group Problem Management Plus (PM+)	Behavioural activation, problem management, stress management, supportive counselling	Enhanced care as usual	Psychological distress (CA), anxiety symptoms (A), depressive symptoms (A), psychological distress (A), PTSD symptoms (A)
Akhtar et al. (2021b)	Jordan	Syrian civil war	Refugees/asylum seekers; IG: 11.52 years ± 1.35, CG: 12.00 years ± 1.33; IG: 45.45%, CG: 42.31%	59 or 64 (ambiguous data), IG: 33 or 35 (ambiguous data), CG: 26 or 29 (ambiguous data)	Early Adolescent Skills for Emotions (EASE)	Behavioural activation, problem management, psychoeducation, relaxation, stress management	Enhanced care as usual	Depressive symptoms (CA), psychological distress (CA), PTSD symptoms (CA), positive mental health (CA), psychological distress (A)
Ali (2020)	Jordan	Syrian civil war	Refugees/asylum seekers; age (range): 30–50 years; 100%	40, IG: 20, CG: 20	Counselling Programme	Problem management, psychoeducation, supportive counselling	No intervention control	PTSD symptoms (A), positive mental health (A)
Betancourt et al. (2020)	USA	Armed conflicts in Somalia	Refugees/asylum seekers (majority); <i>Somali Bantu</i> : children: 14.6 years (NR), caregivers: 41.77 years (NR), <i>Bhutanese</i> : children: 14.35 years (NR), caregivers: 40.97 years (NR); <i>Somali Bantu</i> : children: 59.2%, caregivers: 79%, <i>Bhutanese</i> : children: 53.10%, caregivers: 52%	262, IG: 130, CG: 132	Family Strengthening Intervention for refugees (FSI-R)	Psychoeducation, stress management	Care as usual	Depressive symptoms (CA), PTSD symptoms (CA), PTSD symptoms (A), anxiety and depressive symptoms (A)
Bolton et al. (2007)	Uganda	Ugandan civil war	Internally displaced persons; IG: 14.7 years ± 1.0, CG: 15.2 years ± 1.2; IG: 58%, CG: 57%	338 (IPT-G: 104, 24 excluded), IG: 105, CG: 104	Creative Play (CP)	Relaxation, supportive counselling	Wait-list	Depressive symptoms (CA)
Bryant et al. (2022a)	Jordan	Syrian civil war	Refugees/asylum seekers; IG: 39.38 years ± 6.71, CG: 40.68 years ± 7.13; IG: 71.1%, CG: 75.2%	410, IG: 204, CG: 206	Group Problem Management Plus (PM+)	Behavioural activation, problem management, stress management, supportive counselling	Enhanced care as usual	Anxiety symptoms (A), depressive symptoms (A), PTSD symptoms (A), psychological distress (CA)

De Graaff et al. (2020)	Netherlands	Syrian civil war	Refugees/asylum seekers; IG: 37.6 years ± 11.8, CG: 38.6 years ± 12.7; IG: 60%, CG: 60%	60; IG: 30, CG: 30	Problem Management Plus (PM+) combined with care as usual	Behavioural activation, problem management, stress management, supportive counselling	Care as usual	Anxiety symptoms (A), depressive symptoms (A), psychological distress (A), PTSD symptoms (A)
Dybdahl (2001)	Bosnia and Herzegovina	Yugoslav Wars	Internally displaced persons; mothers: 30.70 years ± 4.90, children: 5.40 years ± 0.70; 100% (mother-child dyads), children: 55.17%	87, IG: 42, CG: 45	Psychosocial intervention and medical intervention	Problem management psychoeducation, supportive counselling	Medical intervention only	Depressive symptoms (CA), wellbeing (CA), PTSD symptoms (A), positive mental health (A)
El-Khani et al. (2021)	Lebanon	Syrian civil war	Refugees/asylum seekers; age: NR; IG: 32.8%, CG: 26.9%	119, IG: 41, active CG: 38, waitlist CG: 40	Teaching Recovery Techniques (TRT) + Parenting component	Emotional regulation, problem management, psychoeducation, relaxation, stress management	Wait-list	Anxiety symptoms (CA), depressive symptoms (CA), PTSD symptoms (CA), anxiety symptoms (A), depressive symptoms (A), PTSD symptoms (A)
Fine et al. (2021)	Tanzania	Burundian unrest	Refugees/asylum seekers; adolescents: IG: 12.7 years ± 1.4, CG: 12.0 years ± 1.5, caregivers: IG: 40.3 years ± 11.7, CG: 38.6 years ± 8.02; adolescents: IG: 63.2%, CG: 47.7%, caregivers: IG: 77.1%, CG: 79.3%	clusters = 6 (randomization before recruitment of individual participants from clusters), IG: adolescents: 40; caregivers: 37, CG: adolescents: 46; caregivers: 31	Early Adolescent Skills for Emotions (EASE)	Behavioural activation, problem management, psychoeducation, relaxation, stress management	Enhanced care as usual	Psychological distress (CA), PTSD symptoms (CA), positive mental health (CA), psychological distress (A)
Goodkind et al. (2020)	USA	Mixed (Afghanistan, Africa, Iraq and Syria)	Refugees/asylum seekers; IG: 36.18 years ± 12.47, CG: 33.51 years ± 10.73; IG: 41%, CG: 59%	290, IG: 119, CG: 171	Refugee Well-being Project (RWP)	Psychoeducation, supportive counselling	WL + stress management session (optional)	Anxiety symptoms (A), depressive symptoms (A), emotional distress (A)
Greene et al. (2021)	Tanzania	Conflicts in the Democratic Republic of the Congo	Refugees/asylum seekers; IG: 34.46 years ± 8.15, CG: 32.61 years ± 9.70; 100%	311, IG: 153, CG: 158	Multi-sectoral integrated violence – and mental health focused intervention (Nguvu)	Emotion regulation, psychoeducation, relaxation, supportive counselling	Care as usual	Anxiety symptoms (A), depressive symptoms (A), PTSD symptoms (A)
Hamid et al. (2021)	Syria	Syrian civil war	Internally displaced persons; IG: 10.9 years ± 1.4, CG: 11.1 years ± 1.4; IG: 61.7%, CG: 65.5%	121, IG: 61, CG: 60	Psychosocial Support (PSS) integrated with oral health educational programme	Psychoeducation, relaxation, supportive counselling	No intervention control	PTSD symptoms (CA)
Hasha et al. (2020)	Norway	Syrian civil war	Refugees/asylum seekers; IG: 39 years ± 11, CG: 34 years ± 11; IG: 38%, CG: 41%	101, IG: 50, CG: 51	Physiotherapy Activity and Awareness Intervention (PAAI)	Mindfulness, relaxation	Wait-list	Psychological distress (A), PTSD symptoms (A)
Hilado et al. (2019)	USA	Mixed (Democratic Republic of Congo, Burma, including Rohingya Burmese, Columbia, Cuba, Ecuador, Mexico, Iran, Iraq, and Syria)	Refugees/asylum seekers (majority); IG: 29.9 years (NR), CG: 30.3 years (NR); number of families with female child: IG: 41.6%, CG: 52.5%	200, IG: 101, CG: 99	Baby TALK home visiting services	Psychoeducation, supportive counselling	No intervention control	Psychological distress (A)

(Continued)

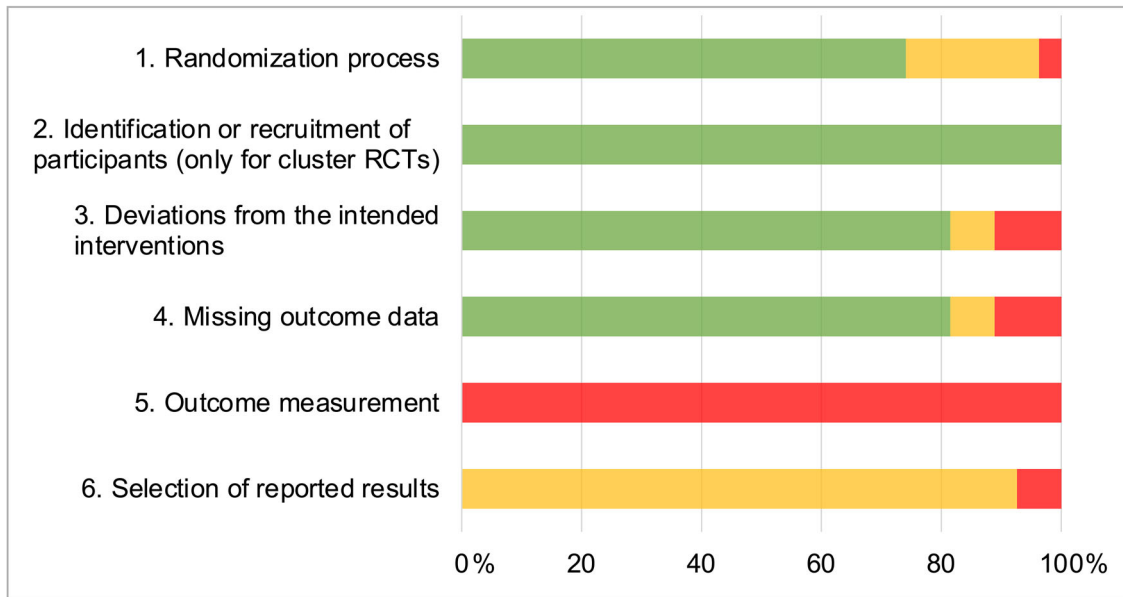
**Table 2.** Continued.

Study ID	Country	Reason for forced displacement	Population (type; age (M ± SD); %women)	$n_{\text{randomized}}$ , $n_{\text{IG}}$ , $n_{\text{CG}}$	Intervention name	Intervention components	Type control group	Outcomes
Koch et al. (2020)	Germany	Afghan war	Refugees/asylum seekers; IG: 18.36 years ± 1.50, CG: 18.41 years ± 1.82; 0%	44, IG: 22, CG: 22	Skills-Training of Affect Regulation – A Culture-sensitive Approach (STARC)	Behavioural activation, emotion regulation, psychoeducation, relaxation	No intervention control	Psychological distress (A), PTSD symptoms (A)
Lange-Nielsen et al. (2012)	State of Palestine	Gaza war	Internally displaced persons; 14.54 years ± 1.47; IG: 50%, CG: 50%	124, IG: 66, CG: 58	Writing for Recovery	Emotion regulation with focus on emotional processing	Wait-list	Anxiety symptoms (CA), depressive symptoms (CA), PTSD symptoms (CA)
Miller et al. (2020b)	Lebanon	Syrian civil war	Refugees/asylum seekers (75%) and internally displaced persons; Caregiver relationship to index child: Mother: IG: 52.6%, CG: 47.9%; Father: IG: 47.4%, CG: 47.9%; Grandmother: IG: 0%; CG: 1.4%; Grandfather: IG: 0%; CG: 1.4%; Other relative: IG: 0%; CG: 1.4%	151, IG: 78, CG: 73	Caregiver Support Intervention (CSI)	Mindfulness, problem management, psychoeducation, relaxation, stress management	Wait-list	Psychological distress (A), positive mental health (A), positive mental health (CA)
Miller et al. (2020a)	Lebanon	Syrian civil war	Refugees/asylum seekers (≥ 74%) and internally displaced persons; age (range): 10–15 years; IG: 50%; CG: 49%	325, IG: 168, CG: 157	I-Deal Life Skills Intervention	Emotion regulation, problem management, psychoeducation, relaxation	Active control: Structured recreational activity group	Psychological distress (CA), positive mental health (CA)
Neuner et al. (2004)	Uganda	Sudanese civil war	Refugees/asylum seekers; IG: 33.8 years ± 7.9, CG: 34.2 years ± 6.9; IG: 57.1%, CG: 75.0%	43 (NET: 17), IG: 14, CG: 12	Supportive Counselling	Problem management, psychoeducation, supportive counselling	Psychoeducation group	Psychological distress (A), PTSD symptoms (A), positive mental health (A)
Ooi et al. (2016)	Australia	Mixed (war/conflicts in Burundi, Congo, Guinea, Ethiopia, Kenya, Sierra Leone, Sudan, Tanzania, Uganda, Burma, Thailand, Sri Lanka, Afghanistan, Iran, and Iraq)	Refugees/asylum seekers; IG: 13.13 years ± 1.50, CG: 12.05 years ± 1.75; IG: 27%, CG: 46%	82, IG: 45, CG: 37	Teaching Recovery Techniques (TRT)	Emotional regulation, psychoeducation, relaxation, problem management, stress management	Wait-list	Psychological distress (CA), depressive symptoms (CA), PTSD symptoms (CA)
Orang et al. (2022)	Germany	Mixed (war/conflicts in Iran, Syria and Afghanistan)	Refugees/asylum seekers (approx. 90%); IG: 30.42 years ± 7.79, CG: 30.75 years ± 8.43; IG: 21.4%, CG: 17.5%	103, IG: 53, CG: 50	Value-based Counselling (VBC)	Behavioural activation, psychoeducation, relaxation, supportive counselling	Wait-list	Anxiety symptoms (A), depressive symptoms (A), PTSD symptoms (A)
Purgato et al. (2020)	Italy, Germany, Austria, Finland, UK	Mixed (war/conflicts in Syria, Afghanistan, Pakistan, Iraq, and Nigeria)	Refugees/asylum seekers; IG: 32.96 years ± 10.78, CG: 31.54 years ± 9.51; IG: 28.26%, CG: 30.13%	459, IG: 230, CG: 229	Self-Help Plus (SH+)	Mindfulness, problem management, psychoeducation, stress management	Enhanced care as usual	Depressive symptoms (A), psychological distress (A), PTSD symptoms (A), positive mental health (A)
Renner et al. (2011)	Austria	Second Chechen War	Refugees/asylum seekers; 34.83 years ± 9.78; 46.1%	94, IG: 25, CG: 31	Culture-Sensitive and Resource Oriented Peer (CROP)	Problem management, psychoeducation, relaxation	Wait-list	Psychological distress (A), PTSD symptoms (A)
Röhr et al. (2021)	Germany	Syrian civil war	Refugees/asylum seekers; IG: 32.98 years ± 11.0, CG: 33.67	133, IG: 65, CG: 68	Smartphone-based app Sanadak	Emotion regulation, mindfulness,	Psychoeducational reading material	Anxiety symptoms (A), depressive symptoms

			years ± 11.4; IG: 33.8%, CG: 42.6%			psychoeducation, relaxation	(identical to the information delivered by the app)	(A), PTSD symptoms (A), positive mental health (A)
Salihu et al. (2021)	Nigeria	on-going ethno-religious crisis in Nigeria	Internally displaced persons; 18 to above 50, majority between 18 and 29 years; IG: 66.0%, CG: 62.2%	198, IG: 100, CG: 98	Psychoeducation combined with African Circle Dance (ACD)	Psychoeducation, relaxation, stress management	Psychoeducation only	Anxiety symptoms (A), depressive symptoms (A)
Scheiber et al. (2019)	Austria	Mixed (war/conflicts in Afghanistan, one from Pakistan)	Refugees/asylum seekers; IG: 16.67 years ± 0.72, CG: 16.19 years ± 0.78; 0%	55, IG: 18, CG: 37	Resilience training	Emotion regulation, psychoeducation, supportive counselling	Wait-list	Trauma, depressive and anxiety symptoms (CA), positive mental health (CA)
Shaw et al. (2021)	Malaysia	Afghan war, Rohingya conflict	Refugees/asylum seekers; IG: 32.23 years ± 8.33, CG: 31.91 years ± 7.50; 100%	127, IG: 62, CG: 64	Parenting Intervention	Mindfulness, problem management, relaxation, supportive counselling	Wait-list	Psychological distress (A)
Spaaij et al. (2022)	Switzerland	Syrian civil war	Refugees/asylum seekers; IG: 39.55 years ± 10.67, CG: 40.27 years ± 9.17; IG: 45.2%, CG: 57.1%	59, IG: 31, CG: 28	Problem Management Plus (PM+)	Behavioural activation, problem management, stress management, supportive counselling	Enhanced care as usual	Anxiety symptoms (A), depressive symptoms (A), PTSD symptoms (A)
Spanhel et al. (2022)	Germany	Mixed (war/conflicts in Syria and Afghanistan)	Refugees/asylum seekers; IG: 29.2 years ± 6.9, CG: 27.7 years ± 6.6; IG: 30.3%, CG: 24.2%	66, IG: 33, CG: 33	eSano Sleep-e	Psychoeducation, relaxation	Wait-list	Depressive symptoms (A), psychological distress (A)
Tol et al. (2020)	Uganda	Armed conflicts in South Sudan	Refugees/asylum seekers; IG: 30.9 years ± 10.3, CG: 31.0 years ± 11.4; 100%	694, IG: 331, CG: 363	Self-Help Plus (SH+) combined with enhanced care as usual	Mindfulness, problem management, psychoeducation, stress management	Enhanced care as usual	Depressive symptom (A), psychological distress (A), PTSD symptoms (A), positive mental health (A)
Walz et al. (2020)	Germany	Mixed (war/conflicts in Afghanistan, Syria, Guinea)	Refugees/asylum seekers; IG: 17.1 years ± 1.0, CG: 16.8 years ± 0.9; 0%	49, IG: 23, CG: 26	Stability training	Emotion regulation, psychoeducation	Wait-list	Psychological distress (CA)
Weinstein et al. (2016)	Jordan	Syrian civil war	Refugees/asylum seekers; 28.80 years ± 10.53; 48.8%	41, IG: 24, CG: 17	Need Satisfaction Intervention	Supportive counselling with special focus on need satisfaction	No intervention control	Depressive symptoms (A), PTSD symptoms (A)

Notes: (A) = outcome reported for adults; ACD = African Circle Dance; CA = outcome reported for children/adolescents; CAU = care as usual, CG = control group; CP = Creative Play; CROP = Culture-Sensitive and Resource Oriented Peer; IG = intervention group; CSI = Caregiver Support Intervention; PM+ = Problem Management Plus; IPT-G = Interpersonal Psychotherapy For Groups; PAAI = Physiotherapy Activity and Awareness Intervention; RWP = Refugee Well-being Project (RWP); SH+ = Self-Help Plus; STARC = Skills-Training of Affect Regulation – A Culture-sensitive Approach; TRT = Teaching Recovery Techniques; VBC = Value-Based Counselling.

### A. Children and adolescents



### B. Adults



**Figure 2.** Risk of bias in percentages across studies and outcomes (effect sizes) assessed using the Cochrane risk-of-bias tool for randomized trials (RoB 2). Results are presented separately for children/adolescents (A) and adult samples (B).

for an effect favouring transdiagnostic psychosocial interventions,  $M(SMD) = 0.08$ , 95% CI  $[-0.21, 0.36]$ ,  $p = .562$ , with moderate heterogeneity,  $Q(21) = 75.31$ ,  $p < .001$ ,  $I^2 = 69.9\%$  (see Table 3 and Figure 3). The majority of heterogeneity derived from between-study differences (49.5%), while between-outcome differences accounted for 20.4%. To note, nine of 22 effect sizes (40.9%) pointed to potentially negative intervention effects, however, these effects remained non-significant across all studies. Moreover, for none of the single symptom categories, there was evidence for an effect favouring psychosocial interventions,  $M(SMDs) = -0.22$ – $0.19$ ,  $ps \geq .271$ . Also for positive mental health, there was no evidence for an effect favouring transdiagnostic

psychosocial interventions,  $M(SMD) = -0.03$ , 95% CI  $[-0.26, 0.20]$ ,  $p = .823$ , with moderate heterogeneity in this analysis,  $Q(4) = 5.93$ ,  $p = .205$  and  $I^2 = 39.1\%$ . For this outcome, three out of five effect sizes (60.0%) were numerically negative. However, again, none of the primary study effects was significant. Overall certainty of evidence was very low for all analyses in this age group (see SM7).

*Adults.* Twenty-six studies (comprising 67 effect sizes across four outcomes from 11,357 observations of 3872 participants) were included in the meta-analyses on adult samples (see Figure 4). Across all mental symptom categories, we found no evidence for an effect favouring transdiagnostic psychosocial

**Table 3.** Results of main analyses (multilevel and traditional meta-analyses) for primary outcomes comparing transdiagnostic psychosocial interventions with control conditions.

Analysis	<i>n</i>	<i>k</i>	<i>M</i> (SMD)	Confidence interval		Prediction interval		<i>p</i>	<i>Q</i>	<i>df</i>	<i>p</i> ( <i>Q</i> )	<i>I</i> <sup>2</sup> ( <i>I</i> <sub>S</sub> , <i>I</i> <sub>O</sub> )
				95% <sub>l</sub>	95% <sub>u</sub>	95% <sub>l</sub>	95% <sub>u</sub>					
<b>Children and adolescents</b>												
Mental symptoms (ML)	12	22	0.08	-0.21	0.36	-0.67	0.83	.562	75.31	21	<.001	69.9 (49.5, 20.4)
Psychological distress (T)	8	8	-0.01	-0.21	0.20	-0.39	0.38	.951	10.18	7	.179	33.7
Depressive symptoms (T)	6	6	-0.22	-0.65	0.22	-1.28	0.85	.332	33.19	5	<.001	84.7
Anxiety symptoms (T)	2	2	0.09	-0.53	0.72	-0.90	1.09	.767	4.31	1	.038	76.8
PTSD symptoms (T)	6	6	0.19	-0.15	0.52	-0.55	0.92	.271	14.62	5	.012	67.4
Positive MH (T)	5	5	-0.03	-0.26	0.20	-0.42	0.36	.823	5.93	4	.205	39.1
<b>Adults</b>												
Mental symptoms (ML)	26	58	0.33	-0.03	0.69	-1.45	2.10	.072	441.38	57	<.001	96.1 (95.3, 0.8)
Psychological distress (T)	16	16	0.44	0.22	0.67	-0.36	1.25	<.001	67.35	15	<.001	82.0
Depressive symptoms (T)	14	14	0.22	-0.32	0.76	-1.82	2.26	.430	136.07	13	<.001	97.4
Anxiety symptoms (T)	8	8	0.40	-0.09	0.89	-1.08	1.88	.113	65.98	8	<.001	92.2
PTSD symptoms (T)	19	19	0.27	-0.15	0.70	-1.55	2.09	.208	163.67	18	<.001	96.1
Positive MH (T)	9	9	0.63	-0.14	1.41	-1.76	3.03	.111	56.80	8	<.001	98.3

Notes: The multilevel meta-analysis on symptom measures included psychological distress, depressive symptoms, anxiety and PTSD symptoms. Due to qualitative differences, positive MH was analysed separately and comprised measures of life satisfaction, wellbeing and quality of life. For all outcomes, SMDs were calculated in a way that positive values indicate favourable effects of an intervention (i.e. reductions of mental symptoms or increases in positive mental health).

*df* = degrees of freedom; *I*<sup>2</sup> = heterogeneity index in percentage (range: 0% – 100%); *I*<sub>S</sub><sup>2</sup> = heterogeneity accounted for by between-study differences; *I*<sub>O</sub><sup>2</sup> = heterogeneity accounted for by between-outcome differences; *k* = number of effect sizes; MH = mental health; ML = multilevel meta-analysis, *n* = number of studies; PTSD = posttraumatic stress disorder; *Q* = Cochran's *Q* statistic with *p* value; SMD = standardized mean difference; T = traditional meta-analysis; 95%<sub>l</sub> = lower boundary of the 95% confidence/prediction interval; 95%<sub>u</sub> = upper boundary of the 95% confidence/prediction interval.

interventions, *M*(SMD) = 0.33, 95% CI [-0.03, 0.69], *p* = .072, with considerable heterogeneity, *Q*(57) = 441.38, *p* < .001, *I*<sup>2</sup> = 96.1%, of which the majority was accounted for by between-study differences (95.3%), while between-outcome differences were of minor importance (0.8%). Examining single symptom categories, we found evidence for a small to moderate effect in favour of transdiagnostic psychosocial interventions for psychological distress, *M*(SMD) = 0.44, 95% CI [0.22, 0.67], *p* < .001, again with substantial heterogeneity, *Q*(15) = 67.35, *p* < .001, *I*<sup>2</sup> = 82.0%. For other symptom categories and positive mental health, there was no evidence for an effect favouring transdiagnostic psychosocial interventions, *M*(SMDs) 0.22–0.63, *ps* ≥ .111. Overall certainty of evidence was very low for all analyses on adult samples (see SM7).

### 3.4.2 Moderators

Moderator analyses were performed for mental symptoms and positive mental health in both age groups (see Table 4).

**Control condition.** We did not find evidence for a moderator effect of the type of control condition (passive vs. active control) on mental symptoms and positive mental health, *ps* ≥ .203.

**Clinical vs. non-clinical samples.** There was no evidence for a moderation by sample type in children and adolescents, while effects on mental symptoms in adults were larger and significant in clinical compared to non-clinical samples, *Q*<sub>M</sub>(1,55) = 8.08, *p* = .006.

**Intervention intensity.** While the small number of studies did not allow for an analysis of intervention intensity in children/adolescents, the analyses in adult

samples provided no evidence for differences between low- and high-intensity interventions, *ps* ≥ .152.

**Intervention setting.** In adult samples, there was no evidence for a moderation by intervention setting (individual vs. group), *p* = .229.

**Intervention location.** When we compared effects for interventions delivered in low/lower middle-income countries with those delivered in upper-middle/high-income countries, we found no moderation, *ps* ≥ .542.

**Intervention providers.** When comparing interventions delivered by professionals with those delivered by lays or non-professionals, we found no moderation, *ps* ≥ .295.

**Target group.** For children and adolescents, we examined whether interventions solely targeting children/adolescents differed from interventions delivered to parents, caregivers or families. However, we found no moderator effect for mental symptoms, *p* = .282.

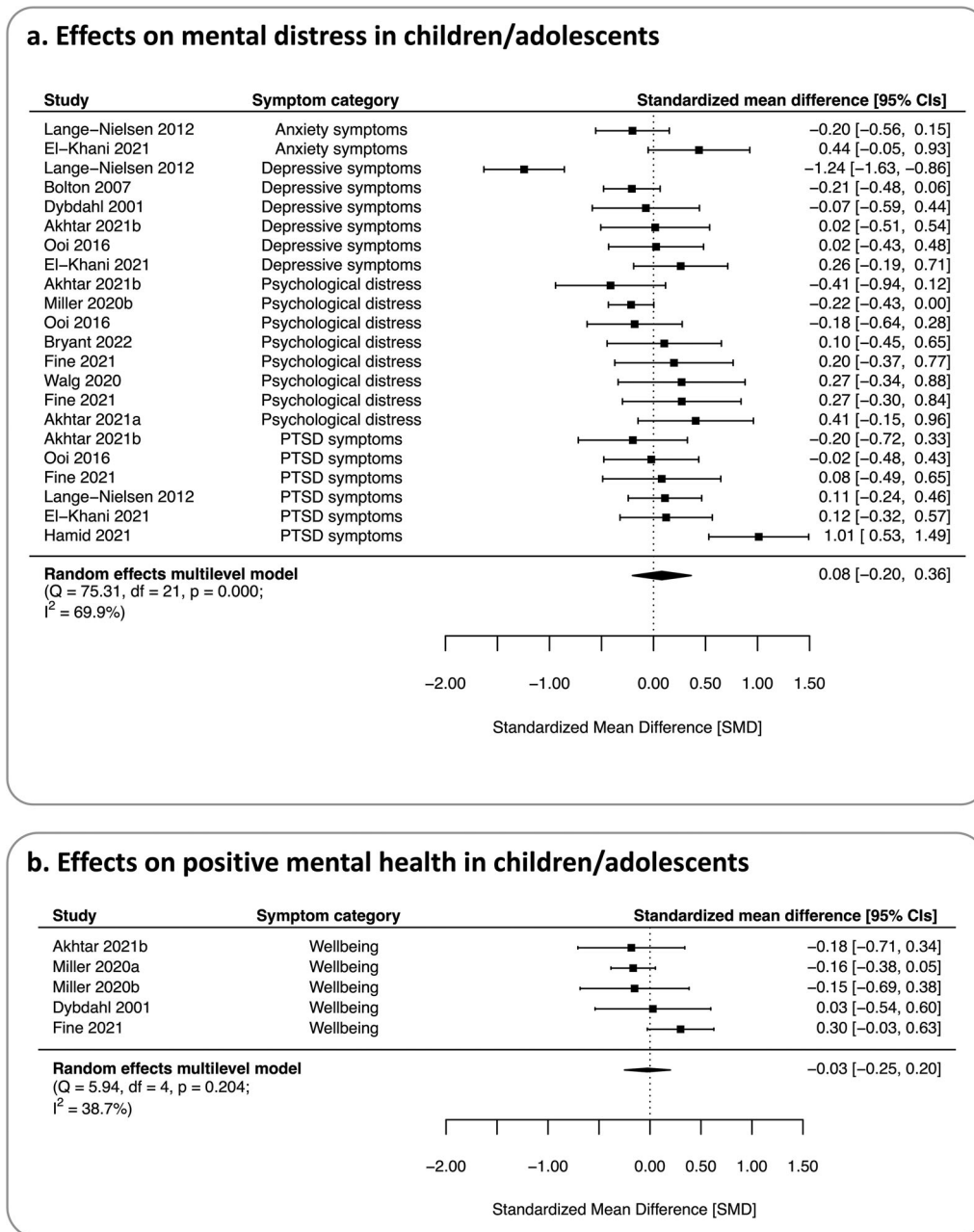
**Intervention duration.** Analyses examining intervention duration as moderator yielded no evidence for a moderator effect, *ps* ≥ .068.

**Theoretical basis.** When we compared interventions grounded in CBT with those relying on other concepts (e.g. creative play; [Bolton et al., 2007]), we found no moderator effects in adults, *p* = .376.

**Improvement over time.** Meta-regressions examining publication year as moderator did not provide evidence for changes of efficacy over time, *ps* ≥ .250.

### 3.4.3 Sensitivity analyses

**Risk of bias.** We re-estimated our primary analyses on mental symptoms excluding effect estimates at risk of different bias domains (i.e. some concerns or high risk;



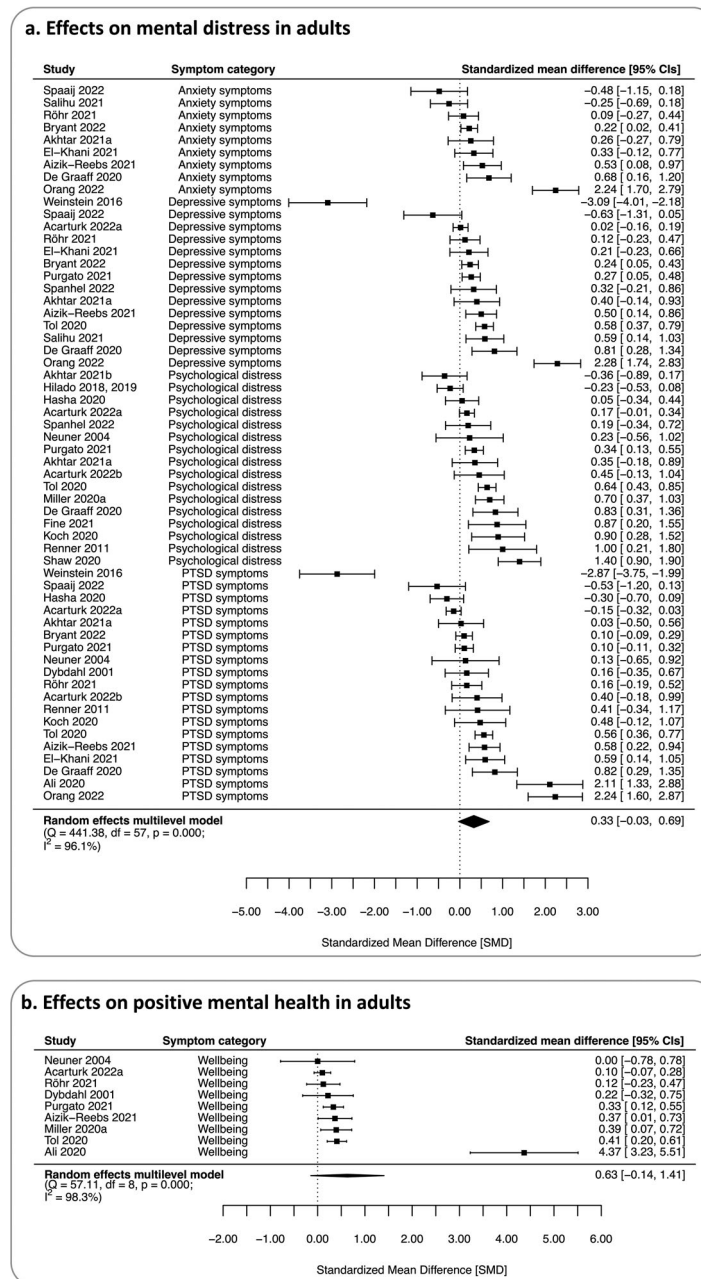
**Figure 3.** Forest plots of the multilevel meta-analyses on mental symptoms and the traditional meta-analysis on positive mental health in child/adolescent samples. Positive effect estimates indicate an effect favoring transdiagnostic psychosocial interventions over control conditions. CI: confidence interval; df: degree of freedom; I<sup>2</sup>: heterogeneity index in percentage (range: 0–100%); Q: Cochran’s Q statistic with p value.

see SM8). For children and adolescents, our results on mental symptoms and positive mental health remained unchanged. All re-estimations provided no evidence for an effect favouring transdiagnostic psychosocial interventions,  $M(\text{SMDs})$  0.08–0.15,  $ps \geq .276$  For adult populations, sensitivity analyses provided a more positive view on transdiagnostic psychosocial interventions. All analyses on mental symptoms correcting for single bias domains provided evidence for a small to moderate favourable intervention effect,  $M(\text{SMDs})$  0.21–0.50,  $ps \leq .047$ . For positive mental health, excluding effect estimates at risk for bias caused by randomization and selective reporting yielded small favourable effects of transdiagnostic psychosocial interventions,  $ps < .001$ .

*Impact of cRCTs.* We re-estimated our meta-analyses on primary outcomes using a more conservative estimate of ICC for cRCTs (ICC = .10; see SM9). For both age groups, our results remained unchanged. Also, when we excluded cRCTs from our analyses, our results remained the same.

#### 4. Discussion

The present review was the first to provide an evidence synthesis on the efficacy of transdiagnostic psychosocial interventions to promote mental health and/or to prevent mental symptoms in forcibly displaced persons. Our analyses revealed substantial age-related differences: While there was no evidence



**Figure 4.** Forest plots of the multilevel meta-analyses on mental symptoms and the traditional meta-analysis on positive mental health in adult samples. Positive effect estimates indicate an effect favoring transdiagnostic psychosocial interventions over control conditions. CI: confidence interval; df: degree of freedom;  $I^2$ : heterogeneity index in percentage (range: 0–100%); Q: Cochran’s Q statistic with p value.

for beneficial effects in children and adolescents, there was some (at least close-to-significance) evidence favouring transdiagnostic psychosocial interventions over control conditions in adults. Except for larger intervention effects in clinical compared to non-clinical adult samples, various moderator analyses could not account for residual between-study differences. Moreover, sensitivity analyses pointed to a relevant impact of risk of bias. When removing effect estimates of studies at risk for bias from our analyses, all analyses on mental symptoms in adult samples provided evidence favouring interventions over control conditions. Thus, insufficient study quality may have resulted in an underestimation of intervention effects in adult samples, while

studies at high risk of bias did not account for our results in child and adolescent samples.

The finding that there is no evidence for the efficacy of transdiagnostic psychosocial interventions in children and adolescents, with overall 44.4% of the effect sizes even pointing to potentially negative effects, is alarming. Children and adolescents make up for almost half of the population of forcibly displaced persons and are exposed to numerous hardships of forced displacement in a crucial phase of their physical, emotional, social and cognitive development (Scharpf et al., 2021; United Nations High Commissioner for Refugees, 2021). Thereby, they are at particular risk for the onset and persistence of mental disorders (Fazel et al., 2012), making mental health promotion

**Table 4.** Results of moderator analyses on categorial and continuous variables.

Children/adolescents	Mental distress		Positive mental health	
	<i>n/k</i>	<i>M(SMD) [(95%) (CI)], p</i>	<i>n/k</i>	<i>M(SMD) [(95%) (CI)], p</i>
<b>Control condition</b>				
Wait-list/ no intervention	6/10	0.09 [-0.28, 0.46], <i>p</i> = .618	-	-
Active control/ (E)CAU	6/13	0.08 [-0.28, 0.44], <i>p</i> = .651	3	-0.15 [-0.34, 0.04], <i>p</i> = .132
Subgroup difference	12/23	$Q_M(1,20) = 0.00, p = .964$	-	-
<b>Sample type</b>				
Clinical	7/11	0.19 [-0.10, 0.49], <i>p</i> = .176	3	0.04 [-0.28, 0.36], <i>p</i> = .236
Non-clinical	3/7	-0.07 [-0.51, 0.37], <i>p</i> = .744	-	-
Subgroup difference	10/18	$Q_M(1,16) = 1.13, p = .305$	-	-
<b>Intervention intensity</b>				
Low	11/21	-0.02 [-0.24, 0.22], <i>p</i> = .889	5	-0.03 [-0.25, 0.20], <i>p</i> = .827
High	-	-	-	-
Subgroup difference	-	-	-	-
<b>Intervention setting</b>				
Individual	-	-	-	-
Group	12/12	0.08 [-0.20, 0.36], <i>p</i> = .562	5	-0.03 [-0.25, 0.20], <i>p</i> = .827
Subgroup difference	-	-	-	-
<b>Intervention location</b>				
Low/ lower-middle-income countries	5/9	0.03 [-0.34, 0.39], <i>p</i> = .871	3	0.03 [-0.25, 0.32], <i>p</i> = .822
Upper-middle/ high-income countries	7/13	0.13 [-0.34, 0.39], <i>p</i> = .443	-	-
Subgroup difference	12/22	$Q_M(1,20) = 0.26, p = .616$	-	-
<b>Intervention providers</b>				
Lays or non-professionals	4/8	-0.13 [-0.33, 0.06], <i>p</i> = .144	4	0.00 [-0.26, 0.26], <i>p</i> = .979
Professionals	8/14	0.18 [-0.23, 0.59], <i>p</i> = .362	-	-
Subgroup difference	12/22	$Q_M(1,20) = 1.13, p = .301$	-	-
<b>Target group</b>				
Children/adolescents	8/16	0.01 [-0.30, 0.32], <i>p</i> = .940	3	-0.15 [-0.34, 0.04], <i>p</i> = .132
Parents/caregivers/families	4/6	0.24 [-0.17, 0.66], <i>p</i> = .243	-	-
Subgroup difference	12/22	$Q_M(1,20) = 1.22, p = .282$	-	-
<b>Intervention duration</b>				
Duration (in minutes)	12/22	$Q_M(1,20) = 0.20, p = .660$	5	$Q_M(1,20) = 3.34, p = .068$
<b>Theoretical basis</b>				
Cognitive behavioural therapy	8/16	0.10 [-0.14, 0.33], <i>p</i> = .385	3	-0.11 [-0.49, 0.27], <i>p</i> = .585
Other	-	-	-	-
Subgroup differences	-	-	-	-
<b>Improvement over time</b>				
Publication year	12/22	$Q_M(1,20) = 1.40, p = .250$	9	$Q_M(1) = 0.15, p = .697$
<b>Adults</b>				
<b>Control condition</b>				
Wait-list/ no intervention	12/21	0.45 [-0.09, 0.98], <i>p</i> = .098	4	1.19 [(0.04), (2.35)], <i>p</i> = .043
Active control/ (enhanced) care as usual	14/37	0.23 [-0.26, 0.71], <i>p</i> = .349	5	0.19 [-0.81, 1.21], <i>p</i> = .704
Subgroup difference	26/58	$Q_M(1,56) = 0.37, p = .543$	9	$Q_M(1) = 1.62, p = .203$
<b>Sample type</b>				
Clinical	16/37	0.68 [(0.39), (0.98)], <i>p</i> < .001	4	1.25 [(0.01), (2.50)], <i>p</i> = .049
Non-clinical	8/18	-0.01 [-0.41, 0.39], <i>p</i> = .977	4	0.14 [-1.09, 1.37], <i>p</i> = .822
Subgroup difference	24/55	$Q_M(1,55) = 8.08, p = .006$	8	$Q_M(1) = 1.55, p = .213$
<b>Intervention intensity</b>				
Low	19/45	0.29 [-0.14, 0.71], <i>p</i> = .180	3	1.43 [(0.10), (2.76)], <i>p</i> = .035
High	7/13	0.44 [-0.26, 1.13], <i>p</i> = .180	6	0.26 [-0.63, 1.15], <i>p</i> = .563
Subgroup difference	26/58	$Q_M(1,56) = 0.14, p = .709$	9	$Q_M(1) = 2.05, p = .152$
<b>Intervention setting</b>				
Individual	8/20	0.01 [-0.62, 0.64], <i>p</i> = .972	-	-
Group	18/38	0.47 [(0.04), (0.89)], <i>p</i> = .032	7	0.80 [-0.13, 1.72], <i>p</i> = .091
Subgroup difference	26/58	$Q_M(1,56) = 1.48, p = .229$	-	-
<b>Intervention location</b>				
Low/ lower-middle-income countries	5/9	0.46 [-0.36, 1.28], <i>p</i> = .262	3	0.27 [-1.16, 1.70], <i>p</i> = .708
Upper-middle/ high-income countries	21/49	0.30 [-0.11, 0.70], <i>p</i> = .148	6	0.82 [-0.20, 1.84], <i>p</i> = .114
Subgroup difference	26/58	$Q_M(1,56) = 0.14, p = .712$	9	$Q_M(1) = 0.37, p = .542$
<b>Intervention providers</b>				
Lays or non-professionals	9/21	0.27 [-0.18, 0.73], <i>p</i> = .235	4	0.31 [-0.98, 1.60], <i>p</i> = .638
Professionals	13/28	0.59 [(0.20), (0.97)], <i>p</i> = .004	4	1.14 [-0.19, 2.47], <i>p</i> = .092
Subgroup difference	22/49	$Q_M(1,47) = 1.12, p = .295$	8	$Q_M(1) = 0.78, p = .376$
<b>Intervention duration</b>				
Duration (in minutes)	26/58	$Q_M(1,56) = 0.74, p = .393$	9	$Q_M(1) = 0.18, p = .672$
<b>Theoretical basis</b>				
Cognitive behavioural therapy	18/44	0.37 [-0.07, 0.81], <i>p</i> = .095	8	0.67 [-0.23, 1.57], <i>p</i> = .144
Other	6/11	-0.01 [-0.76, 0.73], <i>p</i> = .974	-	-
Subgroup differences	24/55	$Q_M(1,53) = 0.80, p = .376$	-	-
<b>Improvement over time</b>				
Publication year	26/58	$Q_M(1,56) = 0.43, p = .514$	9	$Q_M(1) = 0.27, p = .605$

Notes:  $Q_M(df)$  = omnibus test for moderators, which follows approximately a  $\chi^2$  distribution (with associated degrees of freedom); *k* = number of effect estimates; SMD = standardized mean difference; *p* = *p* value; 95% CI = 95% confidence interval.

As results were at high risk to be biased by single studies, we do not report on moderation tests when three or less effect estimates were available per subgroup. In these cases, we only present subgroup results for the level with at least three effect estimates.

and prevention of mental symptoms a priority in this age group (World Health Organization, 2018). Our findings tie in with a recent meta-analysis on the efficacy of psychotherapies for PTSD and depression in forcibly displaced children and adolescents finding no evidence for an effect favouring psychotherapies over control conditions (Morina & Sterr, 2019) and another review finding symptom reductions only for one out of three programmes (Alzaghoul et al., 2022). These results raise the question of what may account for these null effects. In general, research on child and adolescent populations was rare and often associated with low study quality, which may also reflect that research is difficult to conduct due to cultural differences in the perception and presentation of mental symptoms as well as in the conceptualization and stigmatization of mental illness (Frounfelker et al., 2020; Kananian et al., 2020). Moreover, levels of importance placed on the value of research are likely to differ between cultures (Frounfelker et al., 2020). These difficulties may impact on the design and delivery of interventions, which both have to be critically evaluated for cultural appropriateness (Betancourt et al., 2020; Hodes & Vostanis, 2019). Difficulties specific to intervention delivery and adherence in children and adolescents (e.g. ethical concerns when assigning children to control conditions; [Gearing et al., 2012]) may add to these general challenges in the work with forcibly displaced persons (Silove et al., 2017). Furthermore, the low study quality may also reflect that research has not been a priority in this population. Interventions may be tailored to meet urgent demands in forcibly displaced children/adolescents (e.g. adjusting to a new educational system) that could not be captured appropriately by standard outcome measures. Our finding of more heterogeneous responses across different outcomes supports the idea of larger between-outcome heterogeneity in children/adolescents compared to adults. This in line with previous studies on the multidimensionality of responses to stress in children (Infurna & Luthar, 2018; Martinez-Torteya et al., 2017), which may also apply to intervention effects in stressor-exposed populations. Therefore, previous reviews on psychosocial interventions for children and adolescents called for multi-outcome research and the inclusion of positive mental health outcomes (e.g. wellbeing and resilience; [Frounfelker et al., 2020; Uphoff et al., 2019]). For the first time, the current review included these outcomes, however, without finding evidence for favourable effects. The only study providing evidence for a favourable effect of transdiagnostic interventions in children and adolescents assessed PTSD symptoms as single outcome (Hamid et al., 2021), finding a mix of information on dental/oral health and psychosocial support to have a large favourable effect. In this study, psychosocial support included trauma healing,

information on (not further specified) ‘friendly behavior’ and positive visions of the future. However, as other studies using similar interventions provided no evidence for favourable effects (e.g. Ooi et al., 2016), differences in intervention components may not (fully) account for the differential efficacy. Another reason for the null effects obtained by our meta-analyses may lie in our findings being limited to post-intervention assessments instead of trajectories of mental health. Intervention effects may become more visible over longer periods (Frounfelker et al., 2020). However, the small number of studies including follow-up periods in our analyses point to even smaller intervention effects over time (El-Khani et al., 2021).

Overall, our findings may partly be accounted for by specific challenges in delivering interventions to children and adolescents after displacement. Due to the very low certainty of evidence across all outcomes, we have very little confidence in the effect estimate provided by our analyses and the true effect is likely to be substantially different (Schünemann et al., 2022). Thus, the small body of evidence does not allow to answer the question of whether interventions in this age group have favourable effects, have no effect, or may even have negative effects. However, in none of the included studies, numerically negative effects were significant, thus, negative effect sizes might also reflect variation around a ‘true’ null effect or a decrease of stigma and/or an increase in awareness of mental symptoms after the intervention as observed previously for other interventions (Ertl et al., 2011; Im et al., 2018). However, the question remains open why this effect should occur (more pronounced) at younger ages. Unfortunately, we were unable to perform several moderator analyses for children/adolescents as no or only one study was available per subgroup. Thus, based on our findings we cannot answer the question of what makes these interventions ineffective. However, the weak evidence – in line with previous reviews (Alzaghoul et al., 2022; Soltan et al., 2020; Soltan et al., 2022; Morina & Sterr, 2019) – points to the urgent need to critically evaluate and improve interventions for young forcibly displaced persons and to rigorously test their efficacy and (their likely questionable) cost-effectiveness. In case, a more solid evidence base provides support for the finding that existing interventions have no favourable effects for children/adolescents, care providers need to respond with adapting existing programmes or develop new evidence-based prevention programmes. However, so far, our findings cannot be used for such impactful decisions.

Findings in the adult sample were more promising by at least providing evidence for a small to moderate effect of transdiagnostic psychosocial interventions on overall mental symptoms and positive mental health

after the exclusion of effect estimates at high risk of bias. However, these findings also must be interpreted with caution. While we found evidence for an effect favouring psychosocial interventions on overall mental symptoms in our sensitivity analyses, this effect seems to arise mainly from intervention effects on psychological distress, whereas we found no evidence for the efficacy in reducing single symptom categories. At the same time, the greater efficacy for overall psychological distress may also provide evidence for the truly transdiagnostic nature of the interventions. Moreover, we found larger favourable effects for clinical compared to non-clinical populations. This may reflect that intervention effects can only unfold if participants experience a certain level of distress and interventions may not be useful for stressor-exposed populations not (yet) experiencing elevated levels of distress. The finding may also point to some studies underestimating intervention effects due to floor effects (i.e. already low symptoms cannot be further reduced), but may also show that secondary prevention might be more important in this population. Besides this finding, the large amount of heterogeneity could not be accounted for by other moderators like intervention intensity. This may be attributed to the heterogeneity of interventions ranging from (unstructured) supportive counselling (Neuner et al., 2004) to interventions specifically addressing coping with trauma (El-Khani et al., 2021). Moreover, moderator effects may also be more complex and interdependent. For instance, we could not test whether high-intensity interventions were more effective in low- or high-income countries as the number of studies was too small for such analyses. Future reviews based on more primary studies may shed light on interactions of moderators. Also, overall low study quality reflected in a heightened risk of bias in different domains may cause unsystematic variance.

Looking at the studies with large effect estimates in adult samples, that is, focusing on studies that may report on particular auspicious interventions, six studies emerged (Ali, 2020; de Graaff et al., 2020; Koch et al., 2020; Orang et al., 2022; Renner et al., 2011; Shaw et al., 2021). In a study with moderate risk of bias, de Graaff et al. (2020) compared the efficacy of peer-provided problem management plus (PM+) combined with care as usual (CAU) to CAU only, finding PM+ (Dawson et al., 2015), a combination of stress management, problem management, behavioural activation and strengthening of social support, to reduce mental symptoms. Moreover, Koch et al. (2020) examined the efficacy of a transdiagnostic intervention to enhance emotion regulation finding a large effect on psychological distress. Both interventions clearly address transdiagnostic factors, however, with PM+ addressing a broad set of factors and the emotion regulation training focusing on a

single factor. The remaining four studies with large effect sizes in adult samples were associated with at least ‘some concerns’ for risk of bias in three out of five domains (Ali, 2020; Orang et al., 2022; Renner et al., 2011; Shaw et al., 2021). Thus, so far, no clear picture of effective interventions can be drawn.

Overall, there is little research on mental health promotion and prevention of mental symptoms in forcibly displaced persons compared to research on similar interventions in other populations at lower risk for mental disorders (Conley et al., 2015; Galante et al., 2021). Moreover, the present review again showed that a major shortcoming of previous research is the focus on interventions delivered in upper-middle to high-income countries (Nosè et al., 2017; Soltan et al., 2022; Uphoff et al., 2019). In case of our quantitative synthesis, 70 of 94 effect sizes (74.5%) came from upper-middle- or high-income countries, which stands in strong contrast to the fact that 82% of forcibly displaced persons live and need care in low-income and developing countries (United Nations High Commissioner for Refugees, 2022b; Wainberg et al., 2017). Our moderator analysis did not point to relevant differences between the efficacy of interventions delivered in upper-middle-/high-income and low-/lower-middle-income countries, but our review does not allow for strong conclusions on interventions delivered in the latter countries. It is likely that the location of intervention delivery matters (Soltan et al., 2022), yet the current state of research does not allow for a more nuanced picture. Future studies need to overcome this mismatch between care needs and research efforts.

#### 4.1. Limitations

For this review, we searched four databases, thus, we cannot exclude that we missed relevant studies. To make up for the relatively small number of databases, we performed extensive citation searching of related (umbrella) systematic reviews and included studies, resulting in another two relevant studies. Moreover, we made some minor changes from the preregistration of this systematic review that are detailed in SM1. In line with recommendations of the Cochrane collaboration (Cuijpers et al., 2017; Higgins et al., 2022), we refrained from analysing pre-to-post changes within our quantitative summary, as we could not obtain data on pre-to-post value correlations. In such cases, analyses of pre-to-post changes may yield misleading results and ‘correct’ unsuccessful randomization processes, as seen in some of the included studies (Weinstein et al., 2016). Thus, our findings may diverge from those of the study authors who mostly based their conclusions on pre-to-post changes or between-group comparisons of pre-to-post changes. Moreover, we were not able to perform

a (component) network meta-analysis. Such an analysis would be valuable to compare different interventions with each other and rank intervention components according to their efficacy. In case of our review, the method was not applicable as requirements for network meta-analyses (Salanti, 2012) were not met (i.e. there were non-random differences in effect modifiers like symptom severity between comparisons). Future meta-analyses based on more comparable studies may make use of network meta-analysis to shed light on the relative efficacy of intervention components.

Moreover, some of the included studies also aimed at targeting other outcomes than mental symptoms and positive mental health (e.g. reducing pain; [Hasha et al., 2020]), enhancing emotion regulation capacities (Koch et al., 2020), improving sleep quality (Röhr et al., 2020), promoting oral health (Hamid et al., 2021) or need satisfaction (Weinstein et al., 2016). These outcomes were not part of the current review. Thus, our results only allow for conclusions on mental health, but should not be misinterpreted as overall evaluation of the included interventions as these may be effective in addressing other outcomes.

A major issue of included studies was the imprecise definition of interventions and study samples. In many cases, it remained unclear whether interventions aimed at mental health promotion, prevention or even treatment of mental disorders. For the purpose of the current review, we followed intervention aims as defined by study authors and excluded studies that specifically focused on the treatment of mental disorders. However, in some cases, this may result in inconsistent in- and exclusion of interventions. The most accurate distinction would base on sample characteristics (Tol, 2015), yet, mental health states were only insufficiently assessed in most studies.

Another limitation is the large heterogeneity of samples included in the present review. Assuming that being displaced from Ukraine due to the Russian military offensive is similar to a displacement from Syria as consequence of civil war is highly oversimplifying. At the same time, even two persons forced to leave the same country may have entirely different life experiences, may be exposed to different stressors, and may therefore have different requirements to transdiagnostic psychosocial interventions. So far, the amount of research does not allow for research questions on single conflict settings or subpopulations. However, such research is needed to tailor interventions to diverse needs at individual but also cultural level.

Overall, study quality was low, and risk of bias was high across all analyses. This may also reflect the challenges of conducting high-quality research under circumstances that may not allow for rigid research protocols. Methodological shortcomings of these

studies are understandable, but at the same time impede establishment of a solid evidence base (Frounfelker et al., 2020).

#### **4.2. What can we learn for current and future crises?**

The current systematic review does not allow for a strong recommendation in favour of any transdiagnostic psychosocial intervention. However, we may learn from its findings for interventions in face of future crises.

First, our findings show that there is an urgent need for action in the field of transdiagnostic psychosocial interventions for children and adolescents. There is no evidence for the efficacy of existing interventions, suggesting revisiting those with at least small to medium favourable effects (Hamid et al., 2021) and exploring reasons for the lack of efficacy for other interventions. These interventions may fail to meet the complex demands of children and adolescents after forcibly displacement by being insufficiently adapted to children/adolescents' life experiences, provided at the wrong time (i.e. before established safety) or in unfavourable settings (e.g. refugee camps), or may be ineffective as most of them only target individuals but not their caregivers and families (Frounfelker et al., 2020). Embedding transdiagnostic interventions in broader concepts addressing multilevel problems of forcibly displaced children and adolescents (e.g. making friends, participating in school) after establishing basic human rights may have a greater potential to improve mental health or to prevent mental symptoms. Current and future crises should be used to understand children and adolescents' needs after forced displacement in greater depth and to actively involve them in intervention design, delivery, and evaluation.

Second, in adult populations, there is a strong need for high-quality research allowing to examine intervention components. For the current review, we were not able to make use of network meta-analyses to examine the efficacy of single components. However, as most interventions are multi-component training programmes, it is essential to disentangle their efficacy to combine most efficient components into one programme. For such studies, it would also be essential to provide detailed information on delivered interventions (van Agteren et al., 2021; Michie et al., 2013). A more detailed description of intervention characteristics may also allow to identify circumstances that account for the surprising (in)efficacy of the same intervention in similar contexts (De Graaff et al., 2020; Spaaij et al., 2022).

Third, interventions and samples included in this review were heterogeneous. This may also point to the fact that a deeper understanding of effect

modifiers for single interventions is needed. Recently registered traditional (Schäfer et al., 2022) and individual-participant data (IPD; [de Graaff et al., 2022]) meta-analysis projects on the WHO programmes PM+ and Step-by-Step may point into this direction. However, such projects are also urgently needed for interventions delivered to children and adolescents like EASE (Brown et al., 2019; Dawson et al., 2019). The combination of traditional and IPD analyses may allow to identify study- and participant-level moderators of specific interventions.

Fourth, future research may put larger efforts into the state-of-the-art assessment of positive mental health (Chmitorz et al., 2018; Kalisch et al., 2021). Deviating from our initial plan, we were unable to perform a meta-analysis on resilience due to an insufficient number of studies reporting on this outcome. Especially when examining interventions to promote mental health, outcomes beyond mental symptoms may be more eligible to capture intervention effects.

## 5. Conclusion

The present review was the first to summarize evidence on the efficacy of both low- and high-intensity transdiagnostic psychosocial interventions for forcibly displaced persons in different age groups. Our analyses provided weak evidence for an effect favouring transdiagnostic psychosocial interventions over control conditions for adult but not for child and adolescent populations. Substantial between-study heterogeneity could not be explained by moderators except for larger favorable effects in clinical compared to non-clinical samples in adults. The findings of the current review point to an urgent need of improving transdiagnostic psychosocial interventions for children and adolescents and to identify efficient training components in adult populations. Current and future crises require firm humanitarian aid and may also provide an opportunity to examine needs in diverse populations of forcibly displaced persons in greater depth to tailor future interventions.

## Notes

1. Multi-arm studies (e.g. [50]) included in this review compared disorders-specific psychotherapy with unspecific health promotion or psychosocial support programs (as relevant to this review) and no-intervention controls. In these cases, we only included the latter two groups, while the disorder-specific psychotherapy was not considered.
2. Clinical samples were those that on average exceeded the cut-off criteria in at least one standard mental health measure at baseline assessment (e.g. Patient Health Questionnaire 9 [74]) or were explicitly recruited for high mental burden.

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## Authors contributions

SKS: conceptualization, methodology, formal analysis, data curation, writing (original draft), visualization, project administration; AMK: conceptualization, methodology, data curation, writing (original draft), project administration; SL: conceptualization, data curation, writing (review & editing), project administration; JB: data curation, writing (review & editing); MS: data curation, writing (review & editing); JSW: conceptualization, methodology, data curation, writing (review & editing); KL: conceptualization, methodology, resources, writing (review & editing), supervision.

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## Data availability statement

Data are available upon reasonable request from the corresponding author.

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