Efficacy of psychosocial interventions for mental health outcomes in low-income and middle-income countries: an umbrella review

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Summary

Background Mental health conditions are leading causes of disability worldwide. Psychosocial interventions for these conditions might have a key role in their treatment, although applicability of findings to poor-resource settings might be a challenge. We aimed to evaluate the strength and credibility of evidence generated in low-income and middle-income countries (LMICs) on the efficacy of psychosocial interventions for various mental health outcomes.

Methods We did an umbrella review of meta-analyses of randomised studies done in LMICs. Literature searches were done in Medline, Embase, PsychINFO, CINAHL, Cochrane Library, and Epistemonikos from Jan 1, 2010, until May 31, 2019. Systematic reviews of randomised studies investigating the efficacy of psychosocial interventions for mental health conditions in LMICs were included. Systematic reviews of promotion, prevention, and protection interventions were excluded, because the focus was on treatment interventions only. Information on first author, year of publication, outcomes, number of included studies, and reported summary meta-analytic estimates was extracted from included meta-analyses. Summary effects were recalculated using a common metric and random-effects models. We assessed between-study heterogeneity, predictive intervals, publication bias, small-study effects, and whether the results of the observed positive studies were more than expected by chance. On the basis of these calculations, strength of associations was assessed using quantitative umbrella review criteria, and credibility of evidence using the GRADE approach. This study is registered with PROSPERO, number CRD42019135711.

Findings 123 primary studies from ten systematic reviews were included. The evidence on the efficacy of psychosocial interventions in adults with depression in humanitarian settings (standardised mean difference 0·87, 95% CI 0·67–1·07; highly suggestive association, GRADE: moderate) and in adults with common mental disorders (0·49, 0·36–0·62; highly suggestive association, GRADE: moderate) was supported by the most robust evidence. Highly suggestive strength of association was found for psychosocial interventions in adults with schizophrenia for functional outcomes, in adults with depression, and in adults with post-traumatic stress disorder in humanitarian settings. In children in humanitarian settings, and in children with disruptive behaviour, psychosocial interventions were supported by suggestive evidence of efficacy.

Interpretation A relatively large amount of evidence suggests the benefit of psychosocial interventions on various mental health outcomes in LMICs. However, strength of associations and credibility of evidence were quite variable, depending on the target mental health condition, type of population and setting, and outcome of interest. This varied evidence should be considered in the development of clinical, policy, and implementation programmes in LMICs and should prompt further studies to improve the strength and credibility of the evidence base.

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Introduction

Psychosocial interventions, broadly defined as non-pharmacological interventions focused on psychological or social factors, can improve symptoms, functioning, quality of life, and social inclusion when used in the treatment of people with mental health conditions.[1] Psychosocial interventions also align with the principles of personal recovery, such as the attainment of a fulfilling and valued life.[2,3] However, most studies assessing the efficacy of these interventions have been done in high-income countries, raising the issue of generalisability and applicability of findings to low-income and middle-income countries (LMICs).[4,5] Although the generalisability issue is theoretically relevant for any type of intervention, for psychosocial interventions there are several challenges specific to LMICs, including the need for training, fidelity checks, supervision, and monitoring, concerns about cultural and social acceptability, and considerations of feasibility related to differences in mental health infrastructure and resources.

Psychosocial interventions are typically delivered by mental health professionals. In LMICs, however, very few

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Research in context

Evidence before this study

Psychosocial interventions have a key role in the treatment of mental health conditions, because they might improve symptoms, functioning, quality of life, and social inclusion. Because most efficacy studies on these interventions have been done in high-income countries, generalisability and applicability of findings to poor-resource settings is uncertain. For this reason, several randomised studies, and subsequently systematic reviews, have examined the efficacy of psychosocial interventions on mental health outcomes in low-income and middle-income countries. However, the available evidence is controversial and fragmented into several reviews focusing on different populations, interventions, and outcomes, which makes appraisal of the evidence using a similar metric and methodological framework difficult.

Added value of this study

First, we showed how the strength and credibility of evidence generated in poor-resource settings on the efficacy of psychosocial interventions varies, depending on the target mental health condition, type of population, and outcome of interest. Second, on the basis of a robust methodological framework, a hierarchy of strength of associations and credibility of evidence was developed to assist policy makers and health-care providers. Third, we showed that psychosocial interventions delivered by providers who are not mental health professionals are supported by highly suggestive evidence of efficacy. Fourth, for some target mental health conditions and outcome measures, effect sizes are of considerable magnitude, suggesting that clinically meaningful results might be obtained.

Implications of all the available evidence

In contrast with the generic view that an absence of evidence exists in poor-resource settings, our results could inform governmental and non-governmental organisations and donors willing to implement or fund evidence-based mental health programmes in low-income and middle-income countries. However, between-study heterogeneity, predictive intervals that include the null value, and risk of small-study effects bias were the main limitations of the reviewed evidence. On clinical grounds, these results suggest that developing the capacity of non-specialist health-care providers to deliver psychosocial interventions might be considered an implementation strategy supported by a robust amount of evidence generated in poor-resource settings, as well as in humanitarian settings. More generally, the results of this review could be used to inform innovative strategies to build the clinical skills and capabilities of practitioners working in poor-resource settings.

mental health professionals might be available; therefore, for feasibility reasons, mental health interventions might be delivered by non-specialist professionals, including nurses without psychiatric training, lay health workers, or peer support workers.[6,7] Psychosocial interventions delivered by these workers might be less efficacious.

See Online for appendix

Several randomised studies, and subsequently systematic reviews, have examined the efficacy of psychosocial interventions on mental health outcomes in LMICs.[8,9] However, the available evidence is still controversial and fragmented into several reviews that focus on different populations, interventions, and outcomes, which makes appraisal of the evidence using a similar metric and methodological framework difficult. Furthermore, the low quality of evidence affects the credibility of risk estimates, but it has never been formally synthesised. The aim of this review of systematic reviews was to review all available data on psychosocial interventions to quantify the efficacy of psychosocial interventions for people with mental health conditions in LMICs .

Methods

Search strategy and selection criteria

We used an umbrella review methodology to systematically review all available reviews on the topic. Umbrella reviews are systematic overviews of systematic reviews and meta-analyses.[10–12] This review methodology was chosen because it could provide an overall picture of a broad health-care area and highlight whether the evidence base is consistent or contradictory.[13]

Medline, Embase, PsychINFO, CINAHL, Cochrane Library and Epistemonikos were searched from Jan 1, 2010, until May 31, 2019, to identify up-to-date systematic reviews. The complete search strategy is provided in the appendix (pp 4–5). No language restrictions were applied. Electronic database searches were supplemented by a manual search of reference lists from relevant studies. The Preferred Reporting Items for Systematic Reviews and Meta-analyses reporting standards were followed to document the process of systematic review selection.[14]

The selection of potentially relevant systematic reviews was made by inspection of titles and abstracts by two reviewers independently (CB, MP). In case of discrepancies, a third review author (GiT) was involved, and consensus reached by discussion. When titles and abstracts did not provide information on the inclusion and exclusion criteria, the full articles were obtained to verify eligibility. The full text of potentially included systematic reviews was obtained and carefully appraised by at least two reviewers. The reference lists of included articles were analysed for additional items not retrieved by the database searches.

Systematic reviews of randomised studies done in LMICs investigating the efficacy of psychosocial interventions for mental health conditions were included. Systematic reviews of promotion, prevention, and protection interventions were excluded, because the focus

was on treatment interventions only. Psychosocial interventions included any non-pharmacological intervention focused on psychological or social factors, including, but not limited to, individual, family, or group psychological therapies, education, training, or guidance.[15,16] Interventions with one or multiple components were included. Mental health conditions included any mental health problem along a continuum from mild, time-limited psychological distress to chronic, progressive, and severely disabling conditions.[17] Therefore, both systematic reviews of studies that assessed the presence of a mental health condition using a structured psychiatric diagnostic interview and systematic reviews of studies using validated or commonly used rating scales were included. Systematic reviews that used the World Bank country classifications to identify studies done in LMICs were included.

Only systematic reviews with a quantitative synthesis of trial results (meta-analysis) were retained. Systematic reviews without study-level effect sizes and 95% CIs were excluded. When two systematic reviews presented overlapping datasets on the same comparison, the systematic review with the largest number of component studies providing study-level effect sizes was retained for the main analysis, in agreement with umbrella review methodology.[10]

Data analysis

From each included systematic review, two investigators (CB and MP) independently extracted information on first author, year of publication, outcomes, number of included studies, and reported summary meta-analytic estimates. The following information was extracted from each primary study: year of publication, population (adults, children, or adolescents), mental health condition, type of psychosocial intervention, outcomes, type of professionals delivering the intervention, sample size, and study-specific standardised mean differences with corresponding 95% CIs.

The quality of included systematic reviews was independently assessed by two reviewers (DP, CG) using AMSTAR-2 (A Measurement Tool to Assess Systematic Reviews), a 16-point assessment tool of the methodological quality of systematic reviews (appendix p 14).[18] AMSTAR-2 has good inter-rater agreement, test-retest reliability, and content validity.[18]

Summary standardised mean differences with 95% CI were re-estimated using common metric and random-effects models because we were expecting high heterogeneity.[19] In order to produce a pragmatic measure of the efficacy of psychosocial interventions, the number needed to treat (NNT) was calculated using the formulae provided by Furukawa and colleagues.[20] We also estimated the 95% prediction interval for the summary random-effects estimates.[21] Prediction intervals further account for heterogeneity between studies and specify the uncertainty for the effect that would be expected in a new study examining that same research question.[21] Heterogeneity was evaluated with Cochran's Q statistic[22] (statistically significant for p value <0·10) and quantified with the I^2 metric.[23] Egger's test was used to evaluate potential publication and small-study effects biases.[24,25] A p value of 0·10 or less in the regression asymmetry test with a more conservative effect in the largest study was considered evidence for small-study effects bias.

We evaluated the excess significance to examine whether the observed number of studies with statistically significant results (positive studies, p<0·05) in each meta-analysis was larger than their expected number.[26] For each meta-analysis, the expected number was calculated as the sum of the statistical power estimates for each study in the meta-analysis. The power of each study was calculated by an algorithm using a non-central t distribution.[27] The estimated power depends on the plausible standardised mean difference. Because the true standardised mean difference for any meta-analysis is unknown, we assumed that the most plausible effect is given by the largest study. Excess significance for each meta-analysis was claimed at a p value of 0·10 or less.[26]

On the basis of these calculations, we classified the strength of each association as "convincing", "highly suggestive", "suggestive", or "weak" (appendix p 15).[12,28,29] Specifically, meta-analyses were free from biases (convincing, Class I) if they met the following criteria: p value of less than 10^{-6} based on random effects meta-analysis, more than 1000 participants, low or moderate between-study heterogeneity (I^2 <50%), 95% prediction interval that excluded the null value, and no evidence of small-study effects and excess significance. Highly suggestive association (Class II) criteria required more than 1000 participants, highly significant summary associations (p value $<10^{-6}$ by random-effects) and 95% prediction interval not including the null value.

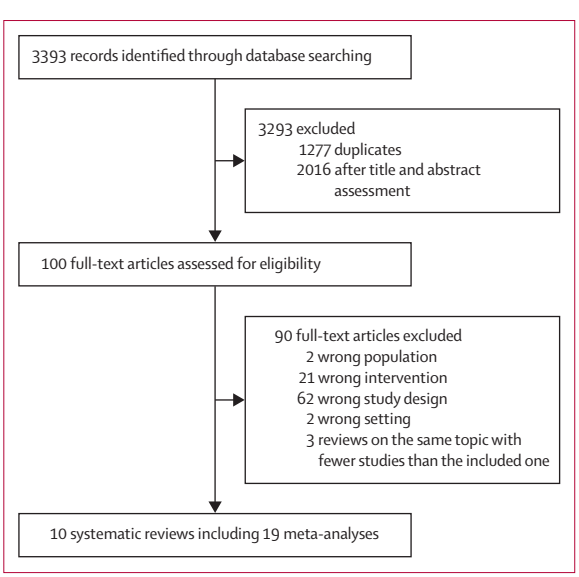


Figure 1: **Study profile**

	Population	Outcome	Studies (participants)	Random-effects significance threshold reached	I^2	Predictive interval	Random-effects standardised mean difference of the largest study (95% CI)	Egger's test p value	Significant studies		
									Observed	Expected	p value
Asher et al (2017)[2]	Adults with schizophrenia	Symptoms	7 (862)	0·005	94·7	−1·44 to 3·33	0·22 (−0·04 to 0·48)	0·043	5	5·33	0·68
De Silva et al (2013)[34]	Adults with schizophrenia	Social functioning	10 (1671)	$2·902 \times 10^{-6}$	89·7	−0·42 to 2·10	0·24 (0·10 to 0·38)	0·013	10	8·31	0·23
Cuijpers et al (2018)[35]	Adults with depression	Symptoms	35 (4668)	$2·172 \times 10^{-26}$	89·7	−0·03 to 2·22	0·62 (0·48 to 0·76)	0·0092	31	28·38	0·39
De Silva et al (2013)[34]	Adults with depression	Social functioning	12 (4098)	$3·639 \times 10^{-5}$	89·5	−0·35 to 1·28	0·06 (−0·05 to 0·16)	0·0037	5	6·47	0·41
van Ginneken et al (2013)[7]	Adults with PTSD	Symptoms	3 (223)	0·025	22·1	−2·26 to 2·98	0·28 (−0·17 to 0·73)	0·18	1	1·09	1·00
Singla et al (2017)[37]	Adults with common mental disorders	Symptoms	24 (6703)	$8·173 \times 10^{-13}$	83·2	−0·13 to 1·11	0·72 (0·58 to 0·87)	0·020	16	15·23	0·83
Rahman et al (2013)[36]	Adults with perinatal common mental disorders	Symptoms	14 (16 591)	$1·931 \times 10^{-5}$	79·9	−0·27 to 1·04	0·62 (0·44 to 0·80)	0·99	8	9·39	0·41
Purgato et al (2018)[38]	Adults with PTSD in humanitarian settings	Symptoms	16 (1272)	$8·623 \times 10^{-14}$	77·8	0·02 to 2·11	0·79 (0·54 to 1·04)	0·051	14	12·68	0·55
Purgato et al (2018)[38]	Adults with depression in humanitarian settings	Symptoms	14 (1254)	$1·515 \times 10^{-17}$	55·0	0·26 to 1·47	0·90 (0·65 to 1·15)	0·55	12	10·69	0·54
Purgato et al (2018)[38]	Adults with anxiety in humanitarian settings	Symptoms	5 (694)	$3·270 \times 10^{-9}$	48·1	0·03 to 1·44	0·48 (0·24 to 0·72)	0·086	5	4·57	1·00
Burkey et al (2018)[15]	Children with disruptive behaviour	Conduct problems	26 (6400)	$4·366 \times 10^{-8}$	76·9	−0·24 to 0·99	0·11 (−0·08 to 0·30)	0·0011	15	15·46	0·84
van Ginneken et al (2013)[7]	Children with PTSD or depression	Symptoms	3 (298)	0·003	78·7	−6·24 to 8·02	1·27 (0·84 to 1·70)	0·24	2	2·14	1·00
Purgato et al (2018)[38]	Children with PTSD in humanitarian settings	Symptoms	3 (130)	0·052	93·0	−18·3 to 21·4	0·06 (−0·59 to 0·72)	0·21	2	2·05	1·00
Purgato et al (2018)[39]	Children in humanitarian settings	PTSD symptoms	8 (2355)	$5·975 \times 10^{-4}$	80·2	−0·30 to 0·97	0·16 (−0·02 to 0·34)	0·29	4	4·52	0·73
Purgato et al (2018)[39]	Children in humanitarian settings	Depressive symptoms	10 (2672)	0·468	72·8	−0·47 to 0·58	0·07 (−0·11 to 0·25)	0·15	3	3·61	1·00
Purgato et al (2018)[39]	Children in humanitarian settings	Anxiety symptoms	7 (1969)	0·701	70·3	−0·49 to 0·56	0·14 (−0·06 to 0·33)	0·50	2	2·81	0·71
Turrini et al (2019)[16]	Adult and child refugees	PTSD symptoms	9 (856)	$7·802 \times 10^{-4}$	88·6	−0·84 to 2·53	0·65 (0·43 to 0·86)	0·34	6	5·47	1·00
Turrini et al (2019)[16]	Adult and child refugees	Depressive symptoms	5 (533)	$5·746 \times 10^{-5}$	92·7	−1·64 to 5·74	0·86 (0·64 to 1·09)	0·13	5	4·65	1·00
Turrini et al (2019)[16]	Adult and child refugees	Anxiety symptoms	2 (445)	0·075	94·7	..	0·45 (0·24 to 0·66)	..	2	1·99	1·00

PTSD=post-traumatic stress disorder.

Table 1: **Characteristics, quantitative synthesis, and umbrella review criteria of the 19 meta-analyses comparing psychosocial interventions and inactive controls**

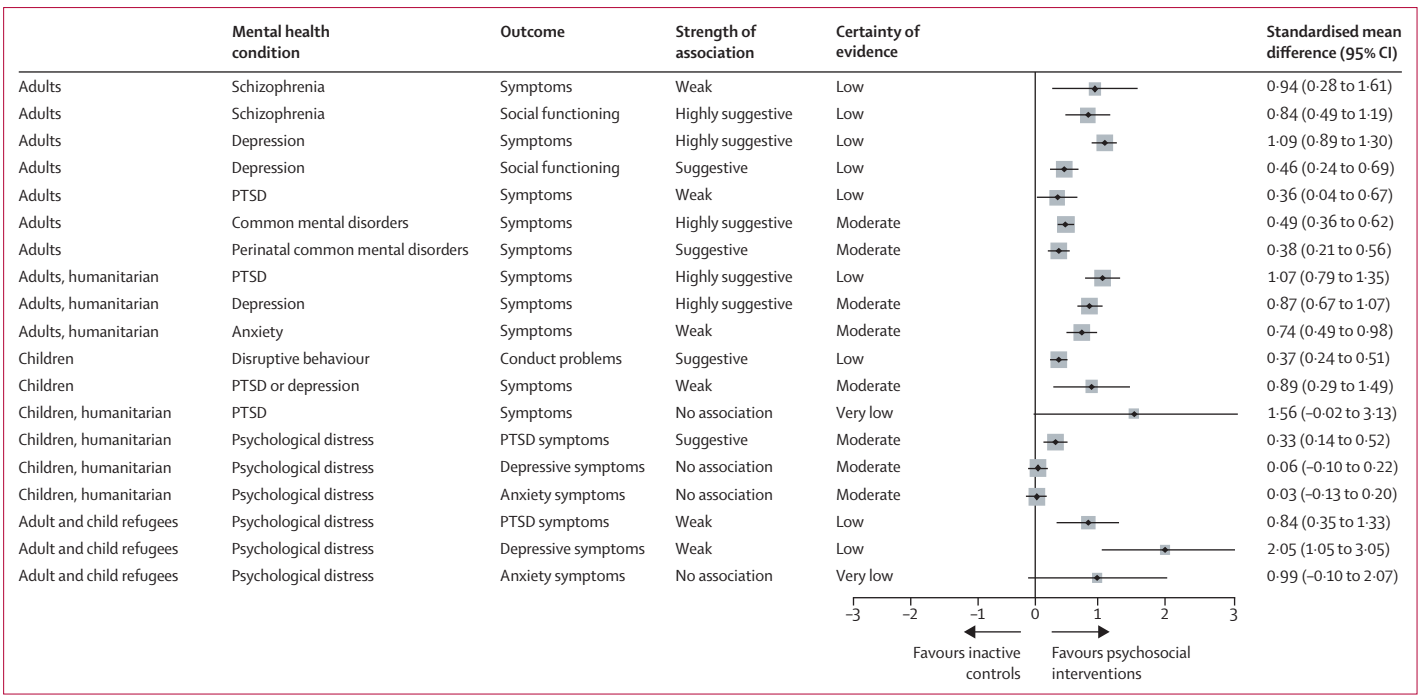
Suggestive evidence (Class III) criteria required only more than 1000 participants and a p value of 0·001 or less by random-effects. Weak association (Class IV) criteria required only a p value of 0·05 or less. Associations were considered non-significant if the p value was more than 0·05. Statistical analyses and power calculations were done using Stata version 12.0. p values were all two-tailed.

In addition to these quantitative criteria, the overall credibility in the estimates was qualitatively assessed by two reviewers (CB, MP) using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) method (appendix p 16).[30–33] GRADE produces a credibility of estimate for each outcome and supplies a tabular overview of findings easily understandable for intervention participants, policy makers, research planners, guideline developers, and other interested stakeholders.[33] Summary of findings tables were developed using the GRADEProGDT app.

This study is registered with PROSPERO, number CRD42019135711.

Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of



	Mental health condition	Outcome	Strength of association	Certainty of evidence	Standardised mean difference (95% CI)
Adults	Schizophrenia	Symptoms	Weak	Low	0·94 (0·28 to 1·61)
Adults	Schizophrenia	Social functioning	Highly suggestive	Low	0·84 (0·49 to 1·19)
Adults	Depression	Symptoms	Highly suggestive	Low	1·09 (0·89 to 1·30)
Adults	Depression	Social functioning	Suggestive	Low	0·46 (0·24 to 0·69)
Adults	PTSD	Symptoms	Weak	Low	0·36 (0·04 to 0·67)
Adults	Common mental disorders	Symptoms	Highly suggestive	Moderate	0·49 (0·36 to 0·62)
Adults	Perinatal common mental disorders	Symptoms	Suggestive	Moderate	0·38 (0·21 to 0·56)
Adults, humanitarian	PTSD	Symptoms	Highly suggestive	Low	1·07 (0·79 to 1·35)
Adults, humanitarian	Depression	Symptoms	Highly suggestive	Moderate	0·87 (0·67 to 1·07)
Adults, humanitarian	Anxiety	Symptoms	Weak	Moderate	0·74 (0·49 to 0·98)
Children	Disruptive behaviour	Conduct problems	Suggestive	Low	0·37 (0·24 to 0·51)
Children	PTSD or depression	Symptoms	Weak	Moderate	0·89 (0·29 to 1·49)
Children, humanitarian	PTSD	Symptoms	No association	Very low	1·56 (−0·02 to 3·13)
Children, humanitarian	Psychological distress	PTSD symptoms	Suggestive	Moderate	0·33 (0·14 to 0·52)
Children, humanitarian	Psychological distress	Depressive symptoms	No association	Moderate	0·06 (−0·10 to 0·22)
Children, humanitarian	Psychological distress	Anxiety symptoms	No association	Moderate	0·03 (−0·13 to 0·20)
Adult and child refugees	Psychological distress	PTSD symptoms	Weak	Low	0·84 (0·35 to 1·33)
Adult and child refugees	Psychological distress	Depressive symptoms	Weak	Low	2·05 (1·05 to 3·05)
Adult and child refugees	Psychological distress	Anxiety symptoms	No association	Very low	0·99 (−0·10 to 2·07)

Figure 2: **Reanalysis of the efficacy of psychosocial interventions in low-income and middle-income countries, with strength of association and certainty of evidence**
Grey boxes denote the effect sizes of studies, and the size of each box is proportional to the statistical weight of the included studies. PTSD=post-traumatic stress disorder.

the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results

The systematic search yielded 3393 records. After duplicate removal and inspection of titles and abstracts, 100 full-text articles were assessed for eligibility. Ten systematic reviews, including 123 primary studies and 20 417 participants, met the umbrella review inclusion criteria (figure 1).[2,7,15,16,34–39] Details of the reviews excluded and the reasons for exclusion are provided in the appendix (pp 6–13). From the included systematic reviews, we extracted information on 19 meta-analyses comparing psychosocial interventions with inactive controls (table 1). In terms of populations, psychosocial interventions were studied in adults with schizophrenia, depression, common mental disorders, perinatal common mental disorders, post-traumatic stress disorder (PTSD), anxiety, and in children with disruptive behaviour, PTSD, anxiety, depression and psychological distress without a diagnosis. In seven meta-analyses studies were done in humanitarian settings, and three included studies done in refugee populations. In terms of outcomes, psychotic, depressive, anxiety, PTSD, and conduct symptoms were considered, with two comparisons focusing on functioning in adults with schizophrenia and depression (table 1).

Of the ten systematic reviews identified, three included only studies of psychosocial interventions delivered by non-specialist health-care providers,[7,37,39] and seven pooled studies of psychosocial interventions delivered by non-specialist health-care providers and by both types of providers, usually non-specialists in differing forms of collaboration with specialist health-care providers.

Of the ten systematic reviews, three were of high quality according to the AMSTAR-2 scoring system,[7,38,39] one was of moderate quality,[15] and six received a low or critically low quality rating (appendix pp 17–19).[2,15,34–37] AMSTAR-2 detected that in five reviews a study protocol was not available, and study selection criteria were unclear. Additionally, the source of funding was reported by only one review (appendix pp 17–19).

A total of 15 meta-analyses reported a nominally statistically significant summary effect using random-effects models ($p \leq 0 \cdot 05$); however, prediction intervals excluded the null value in meta-analyses in adults with PTSD, depression, and anxiety in humanitarian settings (table 1). Significant heterogeneity (I^2>50%) was observed in all comparisons, with the exception of the meta-analysis on the efficacy of psychosocial interventions in adults with PTSD in the general population, and with anxiety in humanitarian settings (table 1). Risk of small-study effects bias was observed in eight comparisons, whereas excess of significance bias was undetected. However, some comparisons consisted of few studies (table 1), in which case the power of the test would be reduced.

None of the 19 meta-analyses had convincing strength of association according to quantitative umbrella review criteria, and none scored high with GRADE. However,

	Credibility of evidence	Age group	Mental health condition	Context	Outcome	Number needed to treat (95% CI)
Highly suggestive association						
Purgato et al (2018)[38]	Moderate	Adults	Depression	Humanitarian settings	Symptoms	3·0 (2·5–3·9)
Singla et al (2017)[37]	Moderate	Adults	Common mental disorders	General population	Symptoms	5·4 (4·2–7·4)
De Silva et al (2013)[34]	Low	Adults	Schizophrenia	General population	Social functioning	3·1 (2·2–5·4)
Cuijpers et al (2018)[35]	Low	Adults	Depression	General population	Symptoms	2·4 (2·1–2·9)
Purgato et al (2018)[38]	Low	Adults	PTSD	Humanitarian settings	Symptoms	2·5 (2·0–3·3)
Suggestive association						
Rahman et al (2013)[36]	Moderate	Adults	Common mental disorders	Perinatal	Symptoms	7·0 (4·7–13·2)
Purgato et al (2018)[39]	Moderate	Children	Psychological distress	Humanitarian settings	PTSD symptoms	8·0 (5·0–19·4)
De Silva et al (2013)[34]	Low	Adults	Depression	General population	Social functioning	5·7 (3·8–11·2)
Burkey et al (2018)[15]	Low	Children	Disruptive behaviour	General population	Conduct problems	7·1 (5·2–11·3)
Weak association						
Purgato et al (2018)[38]	Moderate	Adults	Anxiety	Humanitarian settings	Symptoms	3·5 (2·7–5·3)
van Ginneken et al (2013)[7]	Moderate	Children	PTSD or depression	General population	Symptoms	2·9 (1·9–9·2)
Asher et al (20)[2]	Low	Adults	Schizophrenia	General population	Symptoms	2·8 (1·8–9·7)
Turrini et al (2019)[16]	Low	Adults and children	Psychological distress	Refugees	PTSD symptoms	3·1 (2·0–7·6)
Turrini et al (2019)[16]	Low	Adults and children	Psychological distress	Refugees	Depressive symptoms	1·6 (1·4–2·5)
van Ginneken et al (2013)[7]	Low	Adults	PTSD	General population	Symptoms	7·5 (3·9–63·2)
No association						
Purgato et al (2018)[39]	Moderate	Children	Psychological distress	Humanitarian settings	Depressive symptoms	..
Purgato et al (2018)[39]	Moderate	Children	Psychological distress	Humanitarian settings	Anxiety symptoms	..
Purgato et al (2018)[38]	Very low	Children	PTSD	Humanitarian settings	Symptoms	..
Turrini et al (2019)[16]	Very low	Adults and children	Psychological distress	Refugees	Anxiety symptoms	..

PTSD=post-traumatic stress disorder.

Table 2: **Ranking of the 19 meta-analyses comparing psychosocial interventions and inactive controls by strength of association and credibility of evidence**

Strength of association was highly suggestive for five meta-analyses, suggestive for four, and weak for six (figure 2). According to GRADE, the credibility of evidence was moderate for eight meta-analyses, low for nine, and very low for two (figure 2; appendix pp 20–24).

The evidence on the efficacy of psychosocial interventions in adults with depression in humanitarian settings, and in adults with common mental disorders, was supported by the most robust evidence, followed by the evidence on the efficacy of psychosocial interventions in adults with schizophrenia on functioning outcomes, by the evidence in adults with depression in the general population, and by the evidence in adults with PTSD in humanitarian settings (table 2). NNT for these psychosocial interventions ranged between 2·4 and 5·4 (table 2). The evidence on the efficacy of psychosocial interventions in women during the perinatal period was supported by suggestive evidence (table 2).

In children, suggestive strength of association supported the efficacy of psychosocial interventions delivered in humanitarian settings, and of psychosocial interventions for conduct problems in children with disruptive behaviour (table 2). NNT for these psychological interventions ranged between 7·0 and 8·0 (table 2). All other psychosocial interventions were supported by weak evidence, and four comparisons did not show any association (table 2).

The evidence on the efficacy of cognitive behavioural therapy in adults with depression, and the evidence on the efficacy of interpersonal therapy in adults with common mental disorders, was supported by the most robust evidence, followed by the evidence on the efficacy of other psychological interventions and multicomponent collaborative care (table 3; appendix pp 63–81). Suggestive strength of association supported the efficacy of psychoeducation and parenting education programmes for women with common mental disorders in the perinatal period, whereas cognitive behavioural therapy for adults with PTSD in humanitarian settings was supported by highly suggestive strength of association (table 3; appendix pp 63–81).

In children, suggestive evidence was found for group-based, focused psychosocial interventions delivered in humanitarian settings. All other interventions were supported by weak strength of association or did not show any association (table 3).

Discussion

This umbrella review included 19 meta-analyses of studies done in LMICs assessing the efficacy of psychosocial interventions for a range of mental health outcomes. Overall, available experimental evidence suggests that psychosocial interventions might have a clinically relevant effect, although strength of associations and credibility of evidence were variable. We found that between-study heterogeneity, prediction intervals including the null value, and risk of small-study effects bias were the main factors bringing down the overall confidence in the evidence.

In adults, highly suggestive evidence supported psychosocial interventions in schizophrenia, depression, common mental disorders considered as a group, and in adults with depression and PTSD in humanitarian settings. The credibility of evidence ranged from moderate to low, indicating that the credibility in the estimate for some comparisons was not optimal. In children, psychosocial interventions were supported by at least suggestive evidence in conduct disorders and for PTSD

outcomes among children in humanitarian settings. In most of these comparisons, effect sizes were of considerable magnitude in adults and children, with low corresponding NNT values, indicating that clinically meaningful results might be obtained in addition to statistical significance. This finding expands previous data[2] showing that community-based psychosocial interventions might have a strong effect on symptom severity and functioning in schizophrenia and depression, and that psychological interventions are effective in depression and in people with common mental disorders in LMICs;[35,37] however, on the basis of umbrella review and GRADE criteria, none of these effect sizes reached the maximum of the ratings in terms of strength of association and evidence credibility.

The findings of this review might have policy and practice implications. From a policy perspective, the availability of a substantial body of experimental evidence generated in LMICs is a major finding and should be emphasised to contrast the generic view that evidence is absent in poor-resource settings.[8,40] This umbrella review showed that for psychosocial interventions the amount of evidence generated in LMICs is relatively large and viable for implementation initiatives. We argue that this message is of paramount relevance for governmental and non-governmental organisations, and donors, willing to implement or fund mental health programmes in LMICs.

These results might also be used to inform clinical practice. Linking evidence with practice remains challenging,[9,37,41–47] but the evidence from this review might give some practical suggestions. For example, because most psychosocial interventions were delivered by non-specialist health-care providers, alone or in collaboration with specialist providers, developing the capacity of non-specialist providers can be considered an implementation strategy supported by a robust amount of evidence generated in LMICs.[7,37,48] This approach could be crucial in ensuring that such interventions are sustainable, ethical, and of sufficient quality.[49,50] Depending on local culture and traditions, programmes aimed at fostering task-shifting initiatives between non-specialist mental health providers and informal community care providers could be developed to improve pathways to mental health care.[51,52] A second suggestion is a more responsive approach to the broad mental health needs of populations affected by humanitarian crises in LMICs, because we were able to show that psychosocial interventions for adults with depression and PTSD, and for children in humanitarian settings, are supported by at least suggestive evidence. Further research needs to confirm whether evidence-based psychosocial interventions can be safely and sustainably implemented in contexts where stressors are ongoing, because most of the included studies were done in the aftermath of humanitarian crises.[53] A third suggestion is the inclusion of psychosocial interventions for women in the perinatal period in mental health programmes, because epidemiological data show that a fifth to a third of women from LMICs experience symptoms of perinatal depression,[54–57] and we found suggestive evidence of efficacy for these interventions.

	Standardised mean difference (95% CI)	I^2	More than 1000 participants	Strength of association
Adults with schizophrenia—symptoms[2]				
Psychoeducation	0·91 (0·33 to 1·50)	54·3	No	Weak
Psychosocial rehabilitation	0·01 (–0·42 to 0·43)	81·0	No	No association
Case management	1·63 (0·96 to 2·29)	80·2	No	Weak
Adults with schizophrenia—social functioning[34]				
Psychoeducation	1·15 (0·05 to 2·25)	95·1	No	Weak
Multicomponent structured psychosocial interventions	0·33 (0·10 to 0·55)	0·0	No	Weak
Art therapy	0·71 (0·31 to 1·12)	..	No	Weak
Multicomponent community care	0·33 (0·10 to 0·55)	0·0	No	Weak
Adults with depression—symptoms[35]				
Interpersonal therapy	1·25 (0·96 to 1·54)	12·4	No	Weak
Cognitive behavioural therapy	1·16 (0·89 to 1·43)	92·0	Yes	Highly suggestive
Other psychotherapies	0·94 (0·89 to 1·30)	73·3	Yes	Suggestive
Adults with depression—social functioning[34]				
Interpersonal therapy	0·84 (0·39 to 1·29)	67·5	No	Weak
Problem solving	0·10 (–0·15 to 0·35)	..	No	No association
Morita therapy	0·66 (0·26 to 1·05)	..	No	Weak
Multicomponent collaborative care	0·35 (0·11 to 0·59)	89·0	Yes	Suggestive
Adults with PTSD—symptoms[7]				
Psychological interventions	0·22 (–0·10 to 0·54)	0·0	No	No association
Narrative exposure therapy	0·72 (0·18 to 1·26)	..	No	Weak
Adults with common mental disorders—symptoms[37]				
Psychoeducation	0·36 (0·13 to 0·58)	50·2	No	Weak
Psychosocial interventions	0·25 (0·14 to 0·36)	0·0	Yes	Suggestive
Cognitive behavioural therapy	0·67 (0·37 to 0·97)	89·5	Yes	Suggestive
Interpersonal therapy	0·80 (0·57 to 1·03)	75·1	Yes	Highly suggestive
Problem solving	0·64 (0·36 to 0·62)	0·0	No	Weak
Adults with perinatal common mental disorders[36]				
Parenting education	0·19 (0·09 to 0·30)	0·0	Yes	Suggestive
Psychoeducation	0·36 (0·21 to 0·51)	9·6	Yes	Suggestive
Multimodal cognitive behavioural therapy	0·94 (0·21 to 0·56)	93·0	Yes	Weak
Adults with PTSD in humanitarian settings[38]				
Eye movement desensitisation and reprocessing	2·01 (1·52 to 2·51)	2·4	No	Weak
Cognitive behavioural therapy	0·85 (0·58 to 1·13)	70·0	Yes	Highly suggestive
Interpersonal therapy	1·45 (0·44 to 2·47)	..	No	Weak
Thought field therapy	1·27 (0·91 to 1·63)	..	No	Weak
Adults with depression in humanitarian settings[38]				
Eye movement desensitisation and reprocessing	1·44 (0·99 to 1·88)	0·0	No	Weak
Cognitive behavioural therapy	0·81 (0·60 to 1·02)	45·6	No	Weak
Interpersonal therapy	0·84 (0·08 to 1·60)	58·9	No	Weak
Adults with anxiety in humanitarian settings[38]				
Cognitive behavioural therapy	0·74 (0·49 to 0·98)	48·1	No	Weak

(Table 3 continues on next page)

	Standardised mean difference (95% CI)	I^2	More than 1000 participants	Strength of association
(Continued from previous page)				
Children with disruptive behaviour[15]				
Child-focused cognitive behavioural therapy	0·79 (0·03 to 1·56)	86·3	No	Weak
Child-focused interpersonal therapy	0·04 (–0·23 to 0·31)	44·2	No	No association
Child-focused psychosocial interventions	0·39 (0·15 to 0·63)	64·7	Yes	Weak
Child-focused social skills training	0·25 (–1·06 to 1·56)	97·0	No	No association
Parent-focused psychosocial interventions	0·39 (0·15 to 0·64)	70·0	Yes	Weak
Parent-focused cognitive behavioural therapy	0·68 (0·22 to 1·14)	..	No	Weak
Multi-component psychosocial interventions	0·18 (–0·13 to 0·50)	74·7	No	No association
Classroom-based psychosocial interventions	0·49 (0·28 to 0·71)	0·0	No	Weak
Children with PTSD or depression[7]				
ERASE-Stress	1·27 (0·84 to 1·70)	..	No	Weak
Narrative exposure therapy	0·24 (–0·29 to 0·78)	..	No	No association
Group psychotherapy	1·12 (0·64 to 1·60)	..	No	Weak
Children with PTSD in humanitarian settings[38]				
Cognitive behavioural therapy	1·56 (–0·02 to 3·13)	93·0	No	No association
Children with psychological distress in humanitarian settings[39]				
Group-based focused psychosocial interventions—PTSD symptoms	0·33 (0·14 to 0·52)	80·2	Yes	Suggestive
Group-based focused psychosocial interventions—depressive symptoms	0·06 (–0·10 to 0·22)	72·8	Yes	No association
Group-based focused psychosocial interventions—anxiety symptoms	0·03 (–0·13 to 0·20)	70·3	Yes	No association
Adult and child refugees with psychological distrress[16]				
PTSD symptoms				
Eye movement desensitisation and reprocessing	2·04 (1·56 to 2·51)	11·2	No	Weak
Psychosocial interventions	0·69 (0·51 to 0·88)	0·0	No	Weak
Narrative exposure therapy	0·00 (–0·24 to 0·25)	0·0	No	No association
Depressive symptoms				
Psychosocial interventions	2·96 (0·27 to 5·66)	96·0	No	Weak
Eye movement desensitisation and reprocessing	1·46 (1·07 to 1·86)	0·0	No	Weak
Anxiety symptoms				
Eye movement desensitisation and reprocessing	1·56 (1·10 to 2·01)	..	No	Weak
Psychosocial interventions	0·45 (0·24 to 0·66)	..	No	Weak

PTSD=post-traumatic stress disorder.

Table 3: **Reanalysis comparing psychosocial interventions and inactive controls by type of psychosocial intervention**

The main limitations of this umbrella review are those of the systematic reviews included and, in turn, the limitations of the primary studies. The most frequently reported review shortcomings, detected by AMSTAR-2, were absence of a review protocol describing review methods before the review was done, of a thorough discussion of between-study heterogeneity, and of information on funding. According to umbrella review and GRADE criteria, publication bias could not be excluded for some comparisons, and issues in properly masking outcome assessment were detected. We were also unable to ascertain whether included meta-analyses included publications in languages other than English. These limitations decreased the strength of associations and credibility of evidence.

Additional limitations were related to the umbrella review methodology, because this approach is based on statistical reanalysis of meta-analyses. By definition, umbrella reviews include only systematic reviews that applied a quantitative approach to data presentation, whereas systematic reviews providing qualitative descriptions of the included studies, without applying meta-analytic techniques, are excluded. For example, systematic reviews that assessed the efficacy of psychosocial interventions in reducing intimate partner violence[58] or in reducing psychological distress in people with HIV[59] were excluded, because no meta-analysis was done. However, the absence of a meta-analytical approach is typically motivated by scarcity of sufficient and homogeneous experimental evidence, which therefore does not reach the minimum clinical and methodological requirements needed to be meta-analysed. Another limitation is that we did not analyse whether the efficacy of psychosocial interventions is moderated by length of follow-up, type of inactive control condition, type of provider, or by other clinical, social, or context-related variables.[60,61] Analysis of these variables was not feasible owing to the nature of the primary data. In terms of interventions, stratifying the analysis by type of psychosocial intervention inevitably decreased the power of the analysis, but provided clinical insights. For example, cognitive behavioural interventions for depression and PTSD and interpersonal therapy for adults with common mental disorders were supported by the most robust evidence, whereas very few evaluations of interventions had social components. In terms of outcomes, we were able to reanalyse functional outcomes, in addition to symptomatic improvement, for just two comparisons, which is unexpected in view of the emphasis on general wellbeing, functioning, and quality of life in studies involving people with mental disorders.[62] No meta-analyses were found on rare pragmatic outcomes, such as overall mortality, suicide, or deliberate self-harm.[63–65] A general limitation is that we did not consider promotion, prevention, or protection interventions.[66,67]

In view of the variability in the strength of associations and credibility of the evidence, action is required to support further research efforts in LMICs in diverse

settings. Several initiatives have aimed to improve the capacity of LMIC research centres to conduct high quality trials. These efforts need to be sustained and expanded to ensure rigorous evidence generation can take place, led by partners in LMICs, to address research questions that are relevant to low-resource settings.[68,69] In terms of populations, this review suggests a need for further studies involving children and adolescents, especially in humanitarian settings, and adults and children with a migrant background. A focus on mental health along a continuum from mild psychological distress to severely disabling conditions, as suggested by the *Lancet* Commission on global mental health and sustainable development,[17] seems an appropriate and feasible approach, although we note a scarcity of evidence for specific diagnostic conditions, such as bipolar disorder. In terms of interventions, considering the number and diversity of available psychosocial interventions, future research efforts should be directed to ascertain which delivery method would be more feasible and sustainable, assessing whether brief, basic, group, and non-specialist-delivered versions of existing evidence-based psychosocial interventions could be an affordable and scalable alternative, for example.[64,70–73] In terms of outcomes, assessment of the long-term effectiveness of these interventions would be relevant, including functional and quality of life measures, because they have been seldom considered by the studies included in this umbrella review. More generally, research activity needs to be more sensitive to questions and concerns arising from implementation activities, and implementation activities need to optimise the uptake of research findings into practice.

Given the pressing need for evidence-based answers for people with mental health conditions, and in view of the data on the efficacy of psychosocial interventions in adults and children, we argue that these forms of interventions should be made routinely available to distressed adults and children in LMICs, recognising that the feasibility and sustainability of psychosocial interventions, especially in the long term, might be a challenge.[74–77] In general, because psychosocial interventions are valued by service users as a complement to pharmacological treatment,[79] their involvement in this implementation process could contribute to mental health system strengthening.

Contributors

CB and MP designed the study. CB drafted the manuscript. CG, MN, GO, DP, FT, and GiT contributed to the database preparation and double check. CB, MP, and GO did data analyses. CG and DP assessed the quality of meta-analyses using AMSTAR-2. JA, CA, JE, OG, CH, MJ, CL, WT, VP, and GrT critically revised the manuscript. All authors commented on and approved the draft and final manuscripts.

Declaration of interests

We declare no competing interests.

Data sharing

All data included in this umbrella review were extracted from publicly available systematic reviews.

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