

**HELPING
ADOLESCENTS
THRIVE**



**Guidelines on mental health promotive
and preventive interventions for
adolescents: helping adolescents thrive**

**Web Annex. GRADE evidence profiles and
tables of included studies**

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and preventive interventions for
adolescents: helping adolescents thrive**

**Web Annex. GRADE evidence profiles and
tables of included studies**

ADVANCED PROOF

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PICO 1: Preventive interventions for all adolescents

PICO 1: Preventive interventions for all adolescents

GRADE Evidence Profile

Certainty assessment		No of patients		Effect		Certainty	Importance					
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision			Other considerations	psychosocial interventions	treatment as usual	Relative (95% CI)	Absolute (95% CI)
Positive mental health – Face-to-face interventions												
67	randomized trials	serious ^a	very serious ^b	not serious	serious ^c	publication bias strongly suspected ^d	26069	21332	-	SMD 0.257 SD higher (better; 0.097 higher to 0.416 higher)	⊕○○○ VERY LOW	CRITICAL
Mental disorders (depression and anxiety) – Face-to-face interventions												
48	randomized trials	serious ^a	serious ^e	not serious	not serious	none	21967	16867	-	SMD 0.088 SD lower (better; 0.151 lower to 0.025 lower)	⊕⊕○○ LOW	CRITICAL
Aggressive, disruptive, and oppositional behaviour – Face-to-face interventions												
47	randomized trials	serious ^a	very serious ^b	not serious	serious ^c	publication bias strongly suspected ^d	24275	16927	-	SMD 0.294 SD lower (better; 0.564 lower to 0.024 lower)	⊕○○○ VERY LOW	CRITICAL

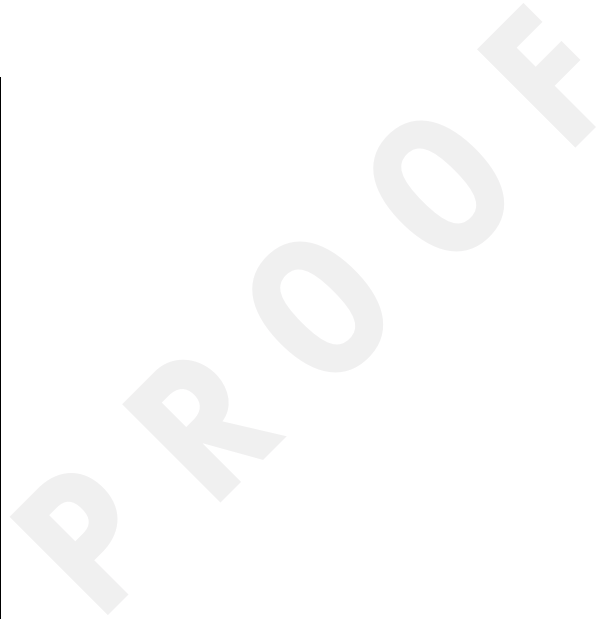
WHO Guidelines on mental health promotive and preventive interventions for adolescents

Certainty assessment		No of patients				Effect		Importance			
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	treatment as usual		Relative (95% CI)	Absolute (95% CI)	Certainty
	Substance use – Face-to-face interventions										
43	randomized trials	not serious	very serious ^b	not serious	serious ^f	none	46566	-	SMD 0.040 SD lower (better; 0.117 higher)	⊕○○○ VERY LOW	CRITICAL
Self-harm and suicide - not reported – Face-to-face interventions											
-	-	-	-	-	-	-	-	-	-	-	CRITICAL
School attendance - not reported – Face-to-face interventions											
-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Risky sexual and reproductive health behaviours - not reported – Face-to-face interventions											
-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

CI: Confidence interval; SMD: Standardized mean difference.

Explanations

- Note: Results from existing systematic reviews
- a. Downgrade by one for risk of bias: over 30% of one category (outcome assessor-blinding) had high risk of bias.
- b. Downgrade by two for inconsistency: significant and high heterogeneity.
- c. Downgrade by one for imprecision: 95% CI spans unimportant benefit and important benefit.
- d. Downgrade for asymmetrical funnel plot: publication bias suspected.
- e. Downgrade by one for inconsistency: significant heterogeneity more than 75%.
- f. Downgrade by one for imprecision: 95% CI spans unimportant benefit and important harm.



Summary of Findings Table

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI) **	No of participants (studies)	Certainty of the evidence (GRADE)	Comments †
	Risk with treatment as usual	Risk with psychosocial interventions				
Positive mental health - Face-to-face interventions	-	SMD 0.257 SD higher (better; 0.097 higher to 0.416 higher)	Approximate OR = 1.59 (1.19 to 2.12)	47401 (67 RCTs)	⊕○○○ VERY LOW ^{a,b,c,d}	It is not known whether psychosocial interventions increase positive mental health when compared to treatment as usual.
Mental disorders (depression and anxiety) - Face-to-face interventions	-	SMD 0.088 SD lower (better; 0.151 lower to 0.025 lower)	Approximate OR = 0.85 (0.76 to 0.96)	38834 (48 RCTs)	⊕⊕○○ LOW ^{a,e}	Psychosocial interventions may decrease mental disorders slightly when compared to treatment as usual.
Aggressive, disruptive, and oppositional behaviour - Face-to-face interventions	-	SMD 0.294 SD lower (better; 0.564 lower to 0.024 lower)	Approximate OR = 0.59 (0.36 to 0.96)	41202 (47 RCTs)	⊕○○○ VERY LOW ^{a,b,c,d}	It is not known whether psychosocial interventions decrease aggressive, disruptive and oppositional behaviour when compared to treatment as usual.
Substance use - Face-to-face interventions	-	SMD 0.040 SD lower (better; 0.117 lower to 0.302 higher)	Approximate OR = 0.93 (0.81 to 1.73)	103322 (43 RCTs)	⊕○○○ VERY LOW ^{d,e,f}	It is not known whether psychosocial interventions decrease substance use when compared to treatment as usual.
Self-harm and suicide - not reported - Face-to-face interventions	-	-	-	-	-	
School attendance - not reported - Face-to-face interventions	-	-	-	-	-	
Risky sexual and reproductive health behaviours - not reported - Face-to-face interventions	-	-	-	-	-	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
****** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hesselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.
 † Glenton, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study. *Medical Decision Making*. DOI:10.1177/0272989X10375853

CI: Confidence interval; **SMD**: Standardized mean difference; **OR**: Odds ratio.

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

Explanations

Note: Results from existing systematic reviews:

- Downgrade by one for risk of bias: over 30% of one category (outcome assessor blinding) had high risk of bias.
- Downgrade by two for inconsistency: significant and high heterogeneity.
- Downgrade by one for imprecision: 95% CI spans unimportant benefit and important benefit.
- Downgrade for asymmetrical funnel plot: publication bias suspected.
- Downgrade by one for inconsistency: significant heterogeneity more than 75%.
- Downgrade by one for imprecision: 95% CI spans unimportant benefit and important harm.

PICO 2A: Preventive interventions for adolescents exposed to violence

Table of Included studies

Author and year	Country, territory and area	Programme intent	Study design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Auslander et al. (2017)	USA	Prevent mental disorders (depression and PTSD) and promote social problem-solving	RCT	34 (n=27)	14.6, 1.3	100%	n/a	History child maltreatment investigated by Child Protective Services, history of trauma causing various difficulties as determine by referring caseworker/therapist
Carrion et al. (2013)	USA	Prevent mental disorders (depression, anxiety and PTSD)	RCT	69 (n=65)	11.56, 1.90	91%	9%	Referral by trained school staff based on symptoms and impairment associated with trauma and violence exposure
Danielson et al. (2012)	USA	Prevent mental disorders (depression, anxiety, and PTSD), promote family cohesion, and prevent risk behaviours (externalizing behaviours, substance use)	RCT	30	14.80, 1.51	88%	12%	Screened for eligibility at clinic specializing in trauma
O'Callaghan et al. (2013)	Democratic Republic of the Congo	Prevent mental disorders (depression, anxiety, and PTSD), promote prosocial behaviour, and prevent conduct problems	RCT	52	16.02, 0.80	100%	n/a	Modified Traumatic Life Events Questionnaire to determine who had witnessed/experienced rape/sexual violence
van Rosmalen-Nooijans et al. (2017)	Netherlands	Prevent mental disorders (depression and anxiety)	RCT	100	18.55, 2.57	91%	9%	Self-reported experience of family violence and registration on Ftv homepage
Stein et al. (2003)	USA	Prevent mental disorders (depression, anxiety, and PTSD), and prevent disruptive behaviour	RCT	126	10.95, 0.35	56%	44%	Modified version of the 34- item Life Events Scale to assess exposure to violence and symptoms of PTSD
Wolfe et al. (2003)	USA	Prevent mental disorders (internalizing problems), prevent interpersonal sensitivity, hostility, and externalizing behaviours, and promote emotional support	RCT	191 (n=158)	15.18, 1.09	50%	50%	Referral by Child Protection Services Maltreated youths attending special needs school in the community

GRADE Evidence Profile

Certainty assessment		No of patients					Effect		Certainty	Importance		
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	psychosocial interventions	treatment as usual			Relative (95% CI)	Absolute (95% CI)
Positive mental health												
4	randomized trials	very serious ^a	not serious	serious ^b	very serious ^c	none	152	115	-	SMD 0.187 SD higher (better; 0.374 lower to 0.748 higher)	⊕○○○ VERY LOW	CRITICAL
Mental disorders (depression and anxiety)												
7	randomized trials	very serious ^a	very serious ^d	serious ^b	very serious ^c	none	301	257	-	SMD 0.339 SD lower (better; 1.219 lower to 0.541 higher)	⊕○○○ VERY LOW	CRITICAL
Aggressive, disruptive, and oppositional behaviours												
4	randomized trials	very serious ^a	very serious ^d	serious ^b	very serious ^c	none	196	170	-	SMD 0.347 SD lower (better; 1.575 lower to 0.881 higher)	⊕○○○ VERY LOW	CRITICAL
Substance use												
1	randomized trials	not serious	not serious	very serious ^e	very serious ^c	none	15	15	-	SMD 0.049 SD higher (worse; 0.364 lower to 0.462 higher)	⊕○○○ VERY LOW	CRITICAL
Mental disorders (disorders specifically related to stress)												
7	randomized trials	very serious ^a	very serious ^d	serious ^b	very serious ^c	none	301	257	-	SMD 0.002 SD higher (worse; 1.046 lower to 1.050 higher)	⊕○○○ VERY LOW	CRITICAL
Self-harm and suicide – not reported												

Certainty assessment												
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	№ of patients		Effect		Certainty	Importance
							psychosocial interventions	treatment as usual	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Risky sexual and reproductive health behaviours - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
School attendance – not reported												
												IMPORTANT

CI: Confidence interval; SMD: Standardized mean difference.

Explanations

Note: Results from *de novo* review and meta-analysis:

- a. Downgrade by two for risk of bias; some domains are high risk of bias.
- b. Downgrade by one; these studies represent a certain subset of violence (sexual / history of maltreatment) but not necessarily broader community-level violence.
- c. Downgrade by two; 95% CI spanning important harm and important benefit.
- d. Downgrade by two for inconsistency, considerable and highly significant heterogeneity.
- e. Downgrade by one for indirectness: only one study.



Summary of Findings Table

Outcomes	Anticipated absolute effects [†] (95% CI) Risk with treatment as usual	Relative effect (95% CI) ^{**}	N [‡] of participants (studies)	Certainty of the evidence (GRADE)	Comments [†]
Positive mental health	- SMD 0.187 SD higher (better; 0.374 lower to 0.748 higher)	Approximate OR = 1.40 (0.51 to 3.87)	267 (4 RCTs)	⊖○○○ VERY LOW ^{a,b,c}	It is not known whether psychosocial interventions promote positive mental health for adolescents exposed to violence when compared to treatment as usual.
Mental disorders (depression and anxiety)	- SMD 0.339 SD lower (better; 1.219 lower to 0.541 higher)	Approximate OR = 0.54 (0.11 to 2.66)	558 (7 RCTs)	⊖○○○ VERY LOW ^{a,b,c,d}	It is not known whether psychosocial interventions prevent mental health disorders (depression, anxiety) for adolescents exposed to violence when compared to treatment as usual.
Aggressive, disruptive, and oppositional behaviours	- SMD 0.347 SD lower (better; 1.575 lower to 0.881 higher)	Approximate OR = 0.53 (0.06 to 4.93)	366 (4 RCTs)	⊖○○○ VERY LOW ^{a,b,c,d}	It is not known whether psychosocial interventions prevent aggressive, disruptive, and oppositional behaviours for adolescents exposed to violence when compared to treatment as usual.
Substance use	- SMD 0.049 SD higher (worse; 0.364 lower to 0.462 higher)	Approximate OR = 1.09 (0.52 to 2.31)	30 (1 RCT)	⊖○○○ VERY LOW ^{c,e}	It is not known whether psychosocial interventions prevent substance use for adolescents exposed to violence when compared to treatment as usual.
Mental disorders (disorders specifically related to stress)	- SMD 0.002 SD higher (worse; 1.046 lower to 1.050 higher)	Approximate OR = 1.00 (0.15 to 6.69)	558 (7 RCTs)	⊖○○○ VERY LOW ^{a,b,c,d}	It is not known whether psychosocial interventions prevent mental disorders (disorders specifically relating to stress) for adolescents exposed to violence when compared to treatment as usual.
Self-harm and suicide – not reported	-	-	-	-	-
Risky sexual and reproductive health behaviours – not reported	-	-	-	-	-
School attendance – not reported	-	-	-	-	-

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
****** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hesselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.
† Glenton, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience. *A Qualitative Study. Medical Decision Making*. DOI:10.1177/0272889X10378853

CI: Confidence interval; SMD: Standardized mean difference; OR: Odds ratio.

GRADE Working Group grades of evidence

High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

Explanations

- Note: Results from *de novo* review and meta-analysis:
- a. Downgrade by two for risk of bias: more than 30% of studies have high risk of bias for some domains.
- b. Downgrade by one; these studies represent a certain subset of violence (sexual / history of maltreatment) but not necessarily broader community-level violence.
- c. Downgrade by two; 95% CI spanning important harm and important benefit.
- d. Downgrade by two for inconsistency: considerable and highly significant heterogeneity.
- e. Downgrade by one for indirectness: only one study.

PICO 2B: Preventive interventions for adolescents exposed to poverty

Table of Included studies

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, sd)	Girls (%)	Boys (%)	Poverty definition
Araya et al. (2013)	Chile	Prevent depression and anxiety; promote problem-solving	cRCT	2508	14.5, 0.9	44.5%	55.5%	Municipal schools serving most low-income children in Chile
Berger et al. (2018)	United Republic of Tanzania	Prevent depression, anxiety, social difficulties, and disciplinary problems; promote prosocial behaviour	cRCT	183	12.46, 0.91	50.8%	49.2%	School children from a high-poverty district
Dray et al. (2017)	Australia	Prevent internalizing and externalizing symptoms; promote resilience and prosocial behaviour	cRCT	3115	12-16	50%	50%	All selected schools were in a socio-economically disadvantaged Local Government Area, with a core of <1000 using the Socio-Economic Indexes for Areas
Gaete et al. (2016)	Chile	Prevent depression and anxiety	RCT	342	15.9, 0.9	50.3%	49.7%	Municipal schools providing education to secondary school students from low socio-economic families; having a Beck Depression Inventory score ≥ 10 (among boys) and ≥ 15 (among girls).
Ismayilova et al. (2018)	Burkina Faso	Prevent depression and PTSD; promote self-esteem	cRCT	360	12.60, 1.52	46.9%	53.1%	Families living in ultra-poverty; identified using a Participatory Wealth Ranking (PWR) exercise
Lang et al. (2009)	USA	Prevent internalizing and externalizing symptoms; promote self-esteem	cRCT	55	13.8, 1.4	43.6%	56.4%	Four affordable housing communities in Los Angeles invited to participate; mean family income between \$13,000-\$14,000
Leventhal et al. (2015)	India	Prevent depression and anxiety; promote psychological and social well-being	cRCT	2665	12.99, 1.17	100%	n/a	State of Bihar chosen for intervention, as it has one of India's poorest populations
Mendelson et al. (2015)	USA	Prevent depression and anxiety	RCT	49	12-15	63.3%	36.7%	Adolescents recruited from schools serving disadvantaged communities

Roberts et al. (2010)	Australia	Prevent depression, anxiety, and externalizing behaviours; promote social skills	cRCT	496	11.99, 0.34	54.4%	45.6%	Schools were randomly sampled from the lowest decile of SES based on the Australian Census Index of Socio-economic Status
Sibinga et al. (2013)	USA	Prevent internalizing and externalizing symptoms; promote mindfulness and positive coping	RCT	41	12.5, n/s	n/a	100%	At a tuition-free middle school for boys in financial need, with academic potential
Stanton et al. (2000)	USA	Prevent fighting and substance use; promote communication	RCT	237	12-16	49.0%	51.0%	Low income parent-youth dyads recruiting from public housing developments
Velasquez et al. (2015)	Colombia	Prevent depression, anxiety, and aggression; promote prosociality	RCT	125	12.31, 1.9	57.9%	42.1%	Urban sample of Colombian students coming from disadvantaged backgrounds attending a public school
Zandkarimi et al. (2018)	Islamic Republic of Iran	Prevent depression and anxiety	RCT	50	11 - 18	100%	n/a	Girls selected from charity centres considered vulnerable socioeconomic income groups; had a stress cut off point of 12 on the Depression, Anxiety and Stress Scale

GRADE Evidence Profile

Certainty assessment		No of patients					Effect		Certainty	Importance	
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	psychosocial interventions	treatment as usual	Relative (95% CI)	Absolute (95% CI)	
Mental disorders (depression and anxiety)											
12	randomized trials	very serious ^a	very serious ^b	not serious	serious ^c	publication bias strongly suspected ^d	5945	4044	-	SMD 0.243 SD lower (better; 0.576 lower to 0.091 higher)	CRITICAL
Positive mental health											
10	randomized trials	very serious ^a	very serious ^b	not serious	very serious ^e	publication bias strongly suspected ^d	5783	4002	-	SMD 0.244 SD higher (better; 0.202 lower to 0.691 higher)	CRITICAL
Mental disorders (disorder specifically related to stress)											
1	randomized trials	very serious ^a	not serious	serious ^f	not serious	none	25/240 (10.4%)*	17/120 (14.2%)*	IRR 0.72 (0.55 to 0.93)	40 fewer (better) per 1,000 patient(s) per 12 to 24 months (from 10 fewer to 64 fewer)	CRITICAL
Aggressive, disruptive and oppositional behaviours											
7	randomized trials	very serious ^a	serious ^g	not serious	serious ^c	none	2522	1730	-	SMD 0.106 SD lower (better; 0.333 lower to 0.12 higher)	CRITICAL
Substance use											
1	randomized trials	not serious	not serious	serious ^f	very serious ^e	none	91/121 (75.2%)	85/116 (73.3%)	RR 1.015 (0.811 to 1.270)	11 more (worse) per 1,000 (from 138 fewer to 198 more)	CRITICAL
Self-harm and suicide – not reported											
-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Risky sexual and reproductive health behaviours – not reported											
-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
School attendance – not reported											

Certainty assessment				No. of patients			Effect		Certainty	Importance
No. of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	treatment as usual	Relative (95% CI)		
-	-	-	-	-	-	-	-	-	-	IMPORTANT

* The incidence rate for the comparison group was approximated using control risk at baseline (mean score of 5.8/40); the incidence rate for the intervention group was approximated using the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: Confidence interval; SMD: Standardized mean difference; MD: Mean difference; IRR: Incidence rate ratio; RR: Risk ratio.

Explanations

Note: Results from de novo review and meta-analysis.

a. Downgrade by two for risk of bias: more than 30% of studies have high risk of bias for some domains.

b. Downgrade by two for inconsistency: considerable and highly significant heterogeneity.

c. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant harm.

d. Downgrade by one for publication bias: asymmetrical funnel plot.

e. Downgrade by two for imprecision: 95% CI spanning important benefit and important harm.

f. Downgrade by one for indirectness: only one study.

g. Downgrade by one for inconsistency: moderate heterogeneity.



Summary of Findings Table

Outcomes	Anticipated absolute effects* (95% CI) Risk with treatment as usual	Relative effect (95% CI)**	No of participants (studies)	Certainty of the evidence (GRADE)	Commentist
Mental disorders (depression and anxiety)	- SMD 0.243 SD lower (better; 0.576 lower to 0.091 higher)	Approximate OR = 0.64 (0.35 to 1.18)	9989 (12 RCTs)	⊕○○○ VERY LOW a,b,c,d	It is not known whether psychosocial interventions prevent mental disorders (depression and anxiety) for adolescents exposed to poverty when compared to treatment as usual.
Positive mental health	- SMD 0.244 SD higher (better; 0.202 lower to 0.691 higher)	Approximate OR = 1.56 (0.69 to 3.49)	9785 (10 RCTs)	⊕○○○ VERY LOW a,b,d,e	It is not known whether psychosocial interventions promote positive mental health for adolescents exposed to poverty when compared to treatment as usual.
Mental disorders (disorder specifically related to stress)	142 per 1,000***	IRR 0.72 (0.55-0.93)	360 (1 RCT)	⊕○○○ VERY LOW a,f	It is not known whether psychosocial interventions prevent mental disorders (disorders relating specifically to stress) for adolescents exposed to poverty when compared to treatment as usual.
Aggressive, disruptive and oppositional behaviours	- SMD 0.106 SD lower (better; 0.333 lower to 0.12 higher)	Approximate OR = 0.83 (0.55 to 1.24)	4252 (7 RCTs)	⊕○○○ VERY LOW a,c,g	It is not known whether psychosocial interventions prevent aggressive, disruptive and oppositional behaviours for adolescents exposed to poverty when compared to treatment as usual.
Substance use	733 per 1,000 744 per 1,000 (594 to 931)	RR 1.015 (0.811 to 1.270)	237 (1 RCT)	⊕○○○ VERY LOW e,f	It is not known whether psychosocial interventions prevent substance use for adolescents exposed to poverty when compared to treatment as usual.
Self-harm and suicide – not reported	-	-	-	-	-
Risky sexual and reproductive health behaviours – not reported	-	-	-	-	-
School attendance – not reported	-	-	-	-	-

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).
 ** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hasselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.
 *** The incidence rate for the comparison group was approximated using control risk at baseline (mean score of 5.8/40).
 † Glendon, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study. *Medical Decision Making*. DOI:10.1177/0272989X10375853

CI: Confidence interval; SMD: Standardized mean difference; MD: Mean difference; IRR: Incidence rate ratio RR: Risk ratio; OR: Odds ratio.

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very low certainty: We have very little confidence in the effect estimate. The true effect is likely to be substantially different from the estimate of effect.

Explanations
 Note: Results from de novo review and meta-analysis.
 a. Downgrade by two for risk of bias: more than 30% of studies have high risk of bias for some domains.
 b. Downgrade by two for inconsistency: considerable and highly significant heterogeneity.
 c. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant harm.
 d. Downgrade by one for publication bias: asymmetrical funnel plot.
 e. Downgrade by two for imprecision: 95% CI spanning important benefit and important harm.
 f. Downgrade by one for indirectness: only one study.
 g. Downgrade by one for inconsistency: moderate heterogeneity.

PICO 2C: Preventive interventions for adolescents exposed to humanitarian emergencies

Table of Included studies

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Al-Mohdadi et al. (2017)	Jordan	To prevent death anxiety	RCT	50	9-12	40.0%	60.0%	Students in a conflicted-affected area selected
Annan et al. (2017); Puffer et al. (2017)	Thailand	To prevent internalizing and externalizing problems, and promote social competencies	RCT	479	10.3, 1.61	51.0%	49.0%	Caregivers had to be of Burmese origin
Bahar et al. (2008)	Turkey	To prevent depression and anxiety	RCT	187	13.3, 0.62	48.0%	52.0%	Adolescents were students of primary schools in the Gölcük earthquake area
Barron et al. (2013)	occupied Palestinian territory, including east Jerusalem	To prevent stress disorders (PTSD)	RCT	140	11.1, 1.04	42.9%	52.1%	Adolescents were school students in Nablus, an area with high levels of ongoing violence
Barron et al. (2016)	occupied Palestinian territory, including east Jerusalem	To prevent stress disorders (PTSD) and depression	RCT	154	13.5, 0.81	59.7% (n=139)	40.3% (n=139)	Fulfilling criteria indicative of PTSD on the CRIES-8
Berger et al. (2009)	Sri Lanka	To prevent PTSD, functional problems somatic complaints, and depression, and promote hope	cRCT	166	9-14	47.6%	52.4%	School selected in Welligama, based on extent of loss and suffering in the tsunami
Berger et al. (2012)	Israel	To prevent PTSD, functional problems somatic complaints, separation anxiety, and general anxiety	RCT	154	12.8, 1.0	53.9%	46.1%	Adolescents living Sderot exposed to ongoing war-related threat

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Berger et al. (2016)	Israel	To prevent PTSD, functional problems somatic complaints, and anxiety	RCT	200	Grade 3 - 6	55.0%	45.0%	Adolescents in schools in Orakim exposed to intense rocket fire in the 2008 Gaza war
Betancourt et al. (2014)	Sierra Leone	To promote positive mental health and prevent psychological distress, posttraumatic stress, functional impairment, and increase social support	RCT	436	18.0, 2.4	45.6%	54.4%	Psychological distress levels and self-reported impairment in daily functioning
Bolton et al. (2007)	Uganda	To prevent depression	RCT	338	15.0	57.0%	46.7%	Adolescents living in 2 camps for internally displaced persons and scoring greater than 32 on depression screening and greater than 0 on function scale with symptoms for at least one month
Ertl et al. (2011)	Uganda	To prevent depression, functional impairment, PTSD, and suicidal ideation	RCT	85	18.35	55.3%	44.7%	Former child soldiers screening positive for PTSD (Posttraumatic Stress Diagnostic Scale) applying DSM-IV criteria for PTSD, diagnosis confirmed by clinical experts according to the CAPS
Hermenau et al. (2013)	Democratic Republic of the Congo	Prevent PTSD and aggression	RCT	38	19.0, 2.02	n/a	100.0%	Only male former combatants and child soldiers who reported combat experience were included in this study
Jordans et al. (2010)	Nepal	Prevent aggression and depression, and promote positive mental functioning	cRCT	325	12.7, 1.04	48.6%	51.4%	Child Psychosocial Distress Screener (CPDS) to identify students experiencing psychosocial distress.

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Kalantari et al. (2012)	Islamic Republic of Iran	Prevent stress disorders	RCT	64	14.82, 1.78; (n=61)	52.5% (n=61)	47.5% (n=61)	Highest score of those screened on the Traumatic Grief Inventory for Children (TGIC)
Kangaslampi et al. (2016); Oouta et al. (2012); Diab et al. (2015)	occupied Palestinian territory, including east Jerusalem	Prevent PTSD, and PTSD traumatic cognitions, and promote mental well-being and prosociality	cRCT	482	11.29, 0.68	50.2%	49.8%	Attending schools in Gaza

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Lange-Nielsen et al. (2012)	occupied Palestinian territory, including east Jerusalem	Prevent PTSD, anxiety and depression	RCT	139	14.54, 1.47 (n=124)	50.0% (n=124)	50.0% (n=124)	Attending schools in a refugee camp in Gaza
McMullen et al. (2013)	Democratic Republic of the Congo	Prevent stress disorders, psychosocial distress, depression, anxiety, and conduct problems, and promote prosocial behaviour	RCT	50	15.8, 1.4	n/a	100.0%	Identified war-affected young people, screened and ranked using the war experiences checklist, UCLA-PTSD Reaction Index
Mhaidat et al. (2016)	Jordan	Prevent depression and insecurities	RCT	20	Grade 7	100.0%	n/a	Female refugee students

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
O'Callaghan et al. (2013)	Democratic Republic of the Congo	Prevent PTSD, depression, anxiety and conduct problems, and promote prosocial behaviour	RCT	52	16.02, 0.80	100.0%	n/a	Reporting experiencing or witnessing rape or sexual abuse based on the UCLA-PTSD Reaction Index
O'Callaghan et al. (2014)	Democratic Republic of the Congo	Prevent PTSD, depression, anxiety and conduct problems	RCT	159	13.42, 2.81	45.0%	55.0%	Villages were chosen due to high levels of Lord's Resistance Army violence in the past and the current threat they faced
Panter-Brück et al. (2018)	Jordan	Prevent stress disorders, PTSD, depression and anxiety, and promote prosocial behaviour	RCT	603	12-18	n/s	n/s	Determined by Mercy Corps staff through screening for children's mental health difficulties and poor access to basic services
Pfeiffer et al. (2018)	Germany	Prevent PTSD, PTSD cognitions, depression and anxiety	RCT	99	16.96, 0.95	7.1%	92.9%	Refugee, history of exposure to one or more traumatic event(s) assessed CATS Event Checklist, at least moderate severity of PTSS
Ruggiero et al. (2015)	USA	Prevent PTSD, depression, alcohol use, binge drinking, and tobacco use	RCT	2000 (n=987)	14.5, 1.7	51.0%	49.0%	Address-based sampling in the aftermath of destructive and deadly tornadoes in the region
Slone et al. (2013)	Israel	Prevent psychological distress and emotional symptoms, and promote self-efficacy and social competencies	eRCT	208	16.3, 1.1	45.8% (n=179)	54.2% (n=179)	Selected into intervention based on school in conflict-affected area
Tol et al. (2012)	Sri Lanka	To increase coping and decrease mental health symptoms in children exposed to armed conflict	eRCT	399	11.03, 1.05	38.6%	52.0%	Screened using Child Psychosocial Distress Screener, for children exposed to armed conflict

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Toi et al. (2014)	Burundi	Prevent PTSD, depression, anxiety, functional impairment, aggression and trauma, and promote mental well-being	cRCT	329	12.29, 1.61	48.0%	52.0%	Exposed to at least one traumatic event, scoring above standard cut-off on symptoms checklists for PTSD, depression, or anxiety

ADVANCED PROOF

GRADE Evidence Profile

Certainty assessment		№ of patients				Effect		Certainty	Importance		
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	№ of psychosocial interventions			treatment as usual	Relative (95% CI)
Positive mental health											
11	randomized trials	serious ^a	very serious ^b	not serious	serious ^c	publication bias strongly suspected ^d	1751	1778	-	SMD 0.394 SD higher (better); 0.027 lower to 0.815 higher)	CRITICAL
Mental disorders (depression and anxiety)											
21	randomized trials	serious ^a	serious ^e	not serious	serious ^f	publication bias strongly suspected ^d	2375	2272	-	SMD 0.378 SD lower (better); 0.700 lower to 0.087 lower)	CRITICAL
Mental disorders (disorders specifically related to stress)											
19	randomized trials	serious ^a	serious ^e	not serious	not serious	publication bias strongly suspected ^d	2257	2072	-	SMD 0.446 SD lower (better); 0.711 lower to 0.181 lower)	CRITICAL
Self-harm and suicide											
1	randomized trials	not serious	not serious	serious ^g	very serious ^h	none	50	28	-	SMD 0.06 SD lower (better); 0.39 lower to 0.28 higher)	CRITICAL
Substance use											
1	randomized trials	not serious	not serious	serious ^g	not serious	none	730	257	-	SMD 0.77 SD lower (better); 0.89 lower to 0.65 lower)	CRITICAL
Aggressive, disruptive, and oppositional behaviours											
8	randomized trials	not serious	serious ^e	not serious	very serious ^h	none	903	928	-	SMD 0.156 SD lower (better); 0.625 lower to 0.313 higher)	CRITICAL

Risky sexual and reproductive health behaviours – not reported

Certainty assessment												
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients		Effect		Certainty	Importance
							psychosocial interventions	treatment as usual	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

School attendance – not reported

-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
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CI: Confidence interval; **SMD**: Standardized mean difference.

Explanations

Note: Results from de novo review and meta-analysis.

- a. Downgrade by one for risk of bias: over 30% of studies show evidence of high risk of bias in some domains.
- b. Downgrade by two for inconsistency: highly significant p-value for heterogeneity, over 90%.
- c. Downgrade by one: 95% confidence interval spanning important benefit and unimportant harm.
- d. Publication bias suspected asymmetrical funnel plot.
- e. Downgrade by one for inconsistency: heterogeneity is significant and high.
- f. Downgrade by one for imprecision: 95% CI spans important benefit to unimportant benefit.
- g. Downgrade by one for indirectness: only one study.
- h. Downgrade by two for imprecision: 95% CI spans important benefit and important harm.



Summary of Findings Table

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect** (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments†
	Risk with treatment as usual	Risk with psychosocial interventions				
Positive mental health	-	SMD 0.394 SD higher (better; 0.027 lower to 0.815 higher)	Approximate OR = 2.04 (0.95 to 4.37)	3529 (11 RCTs)	⊕○○○ VERY LOW a,b,c,d	It is not known whether psychosocial interventions promote positive mental health for adolescents exposed to humanitarian emergencies when compared to treatment as usual.
Mental disorders (depression and anxiety)	-	SMD 0.398 SD lower (better; 0.700 lower to 0.087 lower)	Approximate OR = 0.49 (0.28 to 0.85)	4647 (21 RCTs)	⊕○○○ VERY LOW a,e,f	It is not known whether psychosocial interventions prevent mental disorders (depression and anxiety) for adolescents exposed to humanitarian emergencies when compared to treatment as usual.
Mental disorders (disorders specifically related to stress)	-	SMD 0.446 SD lower (better; 0.711 lower to 0.181 lower)	Approximate OR = 0.45 (0.28 to 0.72)	4329 (19 RCTs)	⊕○○○ LOW a,e	Psychosocial interventions may prevent mental disorders (disorders specifically related to stress) for adolescents exposed to humanitarian emergencies when compared to treatment as usual.
Self-harm and suicide	-	SMD 0.06 SD lower (better; 0.39 lower to 0.28 higher)	Approximate OR = 0.90 (0.49 to 1.66)	78 (1 RCT)	⊕○○○ VERY LOW a,h	It is not known whether psychosocial interventions prevent self-harm and suicide for adolescents exposed to humanitarian emergencies when compared to treatment as usual.
Substance use	-	SMD 0.77 SD lower (better; 0.89 lower to 0.65 lower)	Approximate OR = 0.25 (0.20 to 0.31)	987 (1 RCT)	⊕⊕⊕○ MODERATE g	Psychosocial interventions probably prevent substance use for adolescents exposed to humanitarian emergencies when compared to treatment as usual.
Aggressive, disruptive, and oppositional behaviours	-	SMD 0.156 SD lower (better; 0.625 lower to 0.313 higher)	Approximate OR = 0.75 (0.32 to 1.76)	1831 (8 RCTs)	⊕○○○ VERY LOW a,h	It is not known whether psychosocial interventions prevent aggressive, disruptive and oppositional behaviours for adolescents exposed to humanitarian emergencies when compared to treatment as usual.
Risky sexual and reproductive health behaviours – not reported	-	-	-	-	-	-
School attendance – not reported	-	-	-	-	-	-

*The risk in the **intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hasselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.

† Glenton, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study. *Medical Decision Making*. DOI:10.1177/0272989X10375853

CI: Confidence interval; **SMD**: Standardized mean difference; **MD**: Mean difference; **RR**: Risk ratio; **OR**: Odds ratio.

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

Explanations

Note: Results from *de novo* review and meta-analysis.

- a. Downgrade by one for risk of bias: over 30% of studies show evidence of high risk of bias in some domains.
- b. Downgrade by two for inconsistency: highly significant p-value for heterogeneity, over 90%.
- c. Downgrade by one: 95% confidence interval spanning important benefit and unimportant harm.
- d. Publication bias suspected asymmetrical funnel plot.
- e. Downgrade by one for inconsistency: heterogeneity is significant and high.
- f. Downgrade by one for imprecision: 95% CI spans important benefit to unimportant benefit.
- g. Downgrade by one for indirectness: only one study.
- h. Downgrade by two for imprecision: 95% CI spans important benefit and important harm.

ADVANCED PROOF

PICO 3: Preventive interventions for pregnant and parenting adolescents

Table of Included studies

Author and year	Country, territory and area	Programme intent	Study Design	Total sample (N)	Age (mean, sd)	Girls (%)	Boys (%)	Study population description
Aracena et al. (2009)	Chile	Prevent depression; promote family functioning	RCT	104 (n=90)	17.21, 1.38	100%	n/a	Young women pregnant for the first time, living in an extremely poor neighbourhood of Santiago
Barlow et al. (2013); Barlow et al. (2015)	USA	Prevent depression, stress, and substance use; promote parenting knowledge	RCT	322	18.12, 1.47	100%	n/a	Pregnant (≤32 weeks gestation) American Indian adolescents residing in one of four participating reservation communities
Barnet et al. (2002)	USA	Prevent depression, anxiety, and stress	RCT	232	16.0, n/s	100%	n/a	Pregnant or recently delivered (<6m) attending an alternative school specifically for childbearing adolescents; predominantly low-income and African-American
Barnet et al. (2007)	USA	Prevent depression and repeat pregnancy; promote parenting behaviours, contraceptive use, and school enrolment	RCT	84	16.9, 1.4	100%	n/a	Pregnant adolescents, predominantly low-income African American; fathers of infants were invited with mother's consent
Felder et al. (2017)	USA	Prevent depression	cRCT	1233	18.64, n/s	100%	n/a	Pregnant adolescents <24 weeks gestation
Florsheim et al. (2012)	USA	Promote parenting behaviours, relationship quality, and positive interactions	RCT	210 (105 couple)	16.5 (mothers); 18.5 (fathers)	50%	50%	Pregnant adolescents <26 weeks gestation and their co-parenting partners (biological fathers of children)
Ginsburg et al. (2012)	USA	Prevent depression; promote social support	RCT	47	18.15, n/s	100%	n/a	Pregnant adolescent Apache American Indian women <28 weeks gestation; CES-D score of 16 or higher at baseline

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, sd)	Girls (%)	Boys (%)	Study population description
Harris & Franklin (2003)	USA	Promote problem-solving and school attendance	RCT	86	17.93, n/s	100%	n/a	Adolescent women who were pregnant (<8th month) or currently parenting one or more children of whom they had custody
Koniak-Griffin et al. (2002)	USA	Promote self-efficacy	RCT	144 (n=102)	16.78, 1.12	100%	n/a	Underserved first-time pregnant mothers
Kumar et al. (2016)	Canada	Prevent depression	RCT	30	17.4, 1.2	100%	n/a	Mother-child dyads
Logsdon et al. (2005)	USA	Prevent depression; promote social support and self-esteem	Factorial RCT	109	16.0, 1.3	100%	n/a	Pregnant and parenting adolescents
Mazza (2002)	USA	Promote relationships and birth control	RCT	60	16-18	n/a	100%	First-time fathers, African-American, between 16-18
McDonnell et al. (2007)	USA	Prevent substance use and risk for STD; promote self-efficacy, social support, and problem-solving	RCT	197	17.5, n/s	n/s	n/s	Low-income pregnant and parenting teens
Phipps et al. (2013)	USA	Prevent depression	RCT	106	16.0, n/s	100%	n/a	Pregnant and parenting adolescents who conceived first pregnancy at 17 or younger
Samankasikorn et al. (2016)	USA	Prevent depression and stress; promote self-esteem and social support	RCT	186 (n=150)	17.31, n/s	100%	n/a	Pregnant teens
Stirtzinger et al. (2002)	Canada	Prevent depression; promote parental efficacy and perceived control	RCT	20	17.0, n/s	100%	n/a	Adolescents who were pregnant or parenting young children; Only including those with a score of 16 or above on Beck's Depression Inventory (akin to clinically depressed but no other diagnostic tool used)

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, sd)	Girls (%)	Boys (%)	Study population description
Walkup et al. (2009)	USA	Prevent depression, stress, and substance use; promote parenting knowledge, maternal involvement and social support	RCT	167	12-22	100%	n/a	Expectant American Indian adolescents at 28 weeks gestation or less

GRADE Evidence Profile

Certainty assessment		No of patients				Effect		Certainty	Importance			
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	psychosocial interventions			treatment as usual	Relative (95% CI)	Absolute (95% CI)
Positive mental health												
9	randomized trials	serious ^a	serious ^b	not serious	serious ^c	publication bias strongly suspected ^d	611	516	-	SMD 0.355 SD higher (better; 0.095 higher to 0.615 higher)	⊕○○○ VERY LOW	CRITICAL
Mental disorders (depression and anxiety)												
12	randomized trials	serious ^a	not serious	not serious	serious ^e	none	1326	1263	-	SMD 0.108 SD lower (better; 0.295 lower to 0.079 higher)	⊕○○○ LOW	CRITICAL
Substance use												
3	randomized trials	very serious ^f	not serious	not serious	very serious ^g	publication bias strongly suspected ^d	347	339	-	SMD 0.268 SD lower (better; 1.099 lower to 0.562 higher)	⊕○○○ VERY LOW	CRITICAL
Self-harm and suicide – not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Aggressive, disruptive and oppositional behaviours – not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Risky sexual and reproductive health behaviours												
2	randomized trials	very serious ^f	not serious	not serious	very serious ^g	none	151	130	-	SMD 0.166 SD lower (2.682 lower to 2.40 higher)	⊕○○○ VERY LOW	IMPORTANT

Certainty assessment		No of patients				Effect		Certainty	Importance			
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	psychosocial interventions			treatment as usual	Relative (95% CI)	Absolute (95% CI)
School attendance												
2	randomized trials	not serious	not serious	not serious	not serious	none	86	84	-	SMD 0.635 SD higher (0.549 higher to 0.721 higher)	⊕⊕⊕⊕ HIGH	IMPORTANT
Adherence to antenatal and postnatal care												
2	randomized trials	not serious	not serious	not serious	very serious ^g	none	74	70	-	SMD 0.312 SD higher (4.041 lower to 4.664 higher)	⊕⊕○○ LOW	IMPORTANT
Parenting skills												
8	randomized trials	very serious ^f	not serious	not serious	serious ^h	none	646	628	-	SMD 0.072 SD higher (0.160 lower to 0.305 higher)	⊕○○○ VERY LOW	IMPORTANT
Exposure to intimate partner violence – not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

CI: Confidence interval; SMD: Standardized mean difference.

Explanations

Note: Results from de novo review and meta-analysis.

- a. Downgrade by one for risk of bias: up to 30% of studies have high risk of bias for some domains.
- b. Downgrade by one for inconsistency: considerable and highly significant heterogeneity, but large component of heterogeneity explained by different outcome measurements, modes of delivery and dosage.
- c. Downgrade by one for imprecision: 95% CI spanning unimportant and important benefit.
- d. Downgrade by one for publication bias: asymmetrical funnel plot.
- e. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant harm.
- f. Downgrade by two for risk of bias: more than 30% of studies have high risk of bias for some domains.
- g. Downgrade by two for imprecision: 95% CI spanning important benefit and important harm.
- h. Downgrade by one for imprecision: 95% CI spanning unimportant harm and important benefit.

Summary of Findings Table

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI) **	No of participants (studies)	Certainty of the evidence (GRADE)	Comments†
	Risk with treatment as usual	Risk with psychosocial interventions				
Positive mental health	-	SMD 0.355 SD higher (better; 0.095 higher to 0.615 higher)	Approximate OR = 1.90 (1.19 to 3.04)	1127 (9 RCTs)	⊕○○○ VERY LOW ^{ab,c,d}	It is not known whether psychosocial interventions promote positive mental health for pregnant or parenting adolescents when compared to treatment as usual.
Mental disorders (depression and anxiety)	-	SMD 0.108 SD lower (better; 0.295 lower to 0.079 higher)	Approximate OR = 0.82 (0.59 to 1.15)	2589 (12 RCTs)	⊕⊕○○ LOW ^{a,e}	Psychosocial interventions probably make little or no difference to mental disorders for pregnant or parenting adolescents when compared to treatment as usual.
Substance use	-	SMD 0.268 SD lower (better; 1.099 lower to 0.562 higher)	Approximate OR = 0.62 (0.14 to 2.77)	686 (3 RCTs)	⊕○○○ VERY LOW ^{dl,g}	It is not known whether psychosocial interventions prevent substance use for pregnant or parenting adolescents when compared to treatment as usual.
Self-harm and suicide – not reported	-	-	-	-	-	-
Aggressive, disruptive and oppositional behaviour – not reported	-	-	-	-	-	-
Risky sexual and reproductive health behaviours	-	SMD 0.166 SD lower (better; 2.682 lower to 2.350 higher)	Approximate OR = 0.74 (0.01 to 70.34)	281 (2 RCTs)	⊕○○○ VERY LOW ^{l,g}	It is not known whether psychosocial interventions prevent risky sexual behaviour for pregnant or parenting adolescents when compared to treatment as usual.
School attendance	-	SMD 0.635 SD higher (better; 0.549 higher to 0.721 higher)	Approximate OR = 3.16 (2.70 to 3.69)	170 (2 RCTs)	⊕⊕⊕⊕ HIGH	Psychosocial interventions promote school attendance for pregnant or parenting adolescents when compared to treatment as usual.
Adherence to antenatal and postnatal care	-	SMD 0.312 SD higher (better; 4.041 lower to 4.664 higher)	Approximate OR = 1.76 (6.66 x 10 ⁻⁴ to 4.64 x 10 ³)	144 (2 RCTs)	⊕⊕○○ LOW ^g	Psychosocial interventions may promote adherence to antenatal and postnatal care slightly for pregnant or parenting adolescents when compared to treatment as usual.
Parenting skills	-	SMD 0.072 SD higher (better; 0.160 lower to 0.305 higher)	Approximate OR = 1.14 (0.75 to 1.74)	1274 (8 RCTs)	⊕○○○ VERY LOW ^{l,h}	It is not known whether psychosocial interventions promote parenting skills for pregnant or parenting adolescents when compared to treatment as usual.
Exposure to intimate partner violence – not reported	-	-	-	-	-	-

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).
 ** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hesselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.
 † Glenton, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study. *Medical Decision Making*. DOI:10.1177/0272989X10375853

CI: Confidence interval; SMD: Standardized mean difference; OR: Odds ratio.

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI) **	No of participants (studies)	Certainty of the evidence (GRADE)	Comments†
	Risk with treatment as usual	Risk with psychosocial interventions				

GRADE Working Group grades of evidence

High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

Explanations

Note: Results from de novo review and meta-analysis.

- a. Downgrade by one for risk of bias: up to 30% of studies have high risk of bias for some domains.
- b. Downgrade by one for inconsistency: considerable and highly significant heterogeneity, but large component of heterogeneity explained by different outcome measurements, modes of delivery and dosage.
- c. Downgrade by one for imprecision: 95% CI spanning unimportant and important benefit.
- d. Downgrade by one for publication bias: asymmetrical funnel plot.
- e. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant harm.
- f. Downgrade by two for risk of bias: more than 30% of studies have high risk of bias for some domains.
- g. Downgrade by two for imprecision: 95% CI spanning important benefit and important harm.
- h. Downgrade by one for imprecision: 95% CI spanning unimportant harm and important benefit.

PROOF

PICO 4: Preventive interventions for adolescents living with HIV/AIDS

Table of Included studies

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, sd)	Girls (%)	Boys (%)	Study population description
Bhana et al. (2014)	South Africa	Prevent depression and anxiety; promote communication and mental well-being	RCT	65	11.57, n/s	49.2%	50.8%	Recruited at two clinical sites in KwaZulu-Natal. Children between 10-14 years old enrolled in HIV care at the hospital and aware of their HIV status.
Webb et al. (2018)	USA	Prevent stress, aggression, and low CD4; promote mindfulness, mental functioning, life satisfaction, and adherence	RCT	72	18.71, 2.31	45.8%	52.8%	Participants were eligible if they received their medical care at one of the clinics, did not have any significant cognitive, behavioral, or psychiatric disorders, and had a current CD4 count above 200.
Willis et al. (2019)	Zimbabwe	Promote adherence, self-esteem, and quality of life	RCT	94	10-15	59.6%	40.4%	Adolescents living with HIV, receiving ART at 3 selected clinic sites.

GRADE Evidence Profile

Certainty assessment		Other considerations					Effect		Certainty	Importance		
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Neg of patients psychosocial interventions	treatment as usual	Relative (95% CI)			Absolute (95% CI)	
Positive mental health												
3	randomized trials	serious ^a	very serious ^b	not serious	very serious ^c	none	118	113	-	SMD 0.682 SD higher (better; 0.297 lower to 1.66 higher)	⊕○○○ VERY LOW	CRITICAL
Mental disorders (depression and anxiety)												
2	randomized trials	not serious	very serious ^b	not serious	very serious ^c	none	71	66	-	SMD 0.215 SD higher (worse; 6.706 lower to 7.135 higher)	⊕○○○ VERY LOW	CRITICAL
Aggressive, disruptive and oppositional behaviours												
1	randomized trials	not serious	not serious	very serious ^d	not serious	none	38	34	-	SMD 0.802 SD lower (better; 1.223 lower to 0.382 lower)	⊕○○○○ LOW	CRITICAL
Self-harm and suicide – not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Substance use – not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Adherence to antiretroviral treatment												
2	randomized trials	serious ^a	not serious	not serious	very serious ^c	none	85	81	-	SMD 3.223 SD higher (33.861 lower to 40.307 higher)	⊕○○○ VERY LOW	IMPORTANT
Risky sexual and reproductive health behaviours – not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
School attendance – not reported												

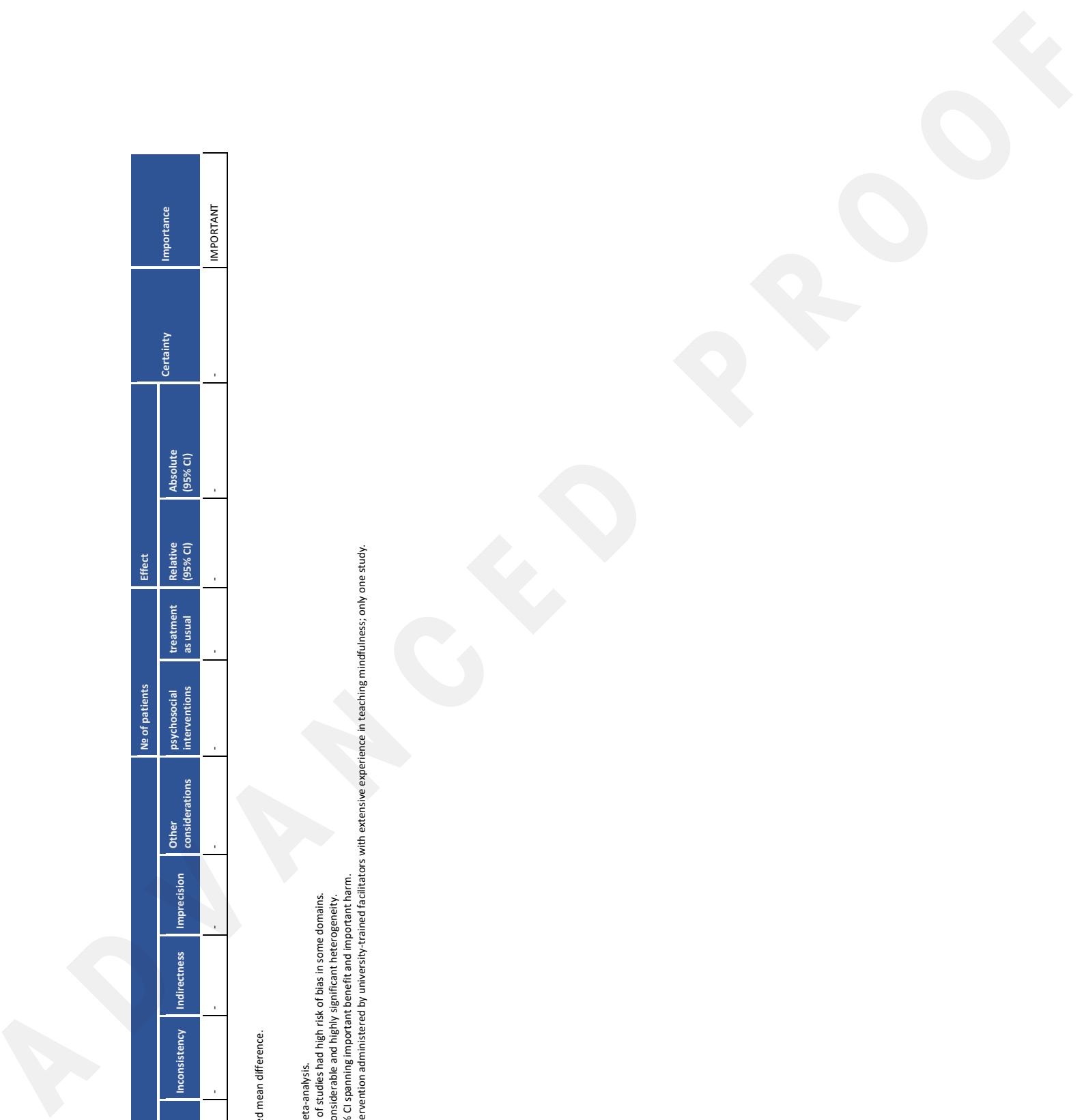
Certainty assessment		No of patients					Effect		Certainty	Importance	
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	psycho-social interventions	treatment as usual			Relative (95% CI)
-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

CI: Confidence interval; **SMD**: Standardized mean difference.

Explanations

Note: Results from *de novo* review and meta-analysis.

- a. Downgrade by one for risk of bias: 30% of studies had high risk of bias in some domains.
- b. Downgrade by two for inconsistency: considerable and highly significant heterogeneity.
- c. Downgrade by two for imprecision: 95% CI spanning important benefit and important harm.
- d. Downgrade by two for indirectness: intervention administered by university-trained facilitators with extensive experience in teaching mindfulness; only one study.



Summary of Findings Table

Outcomes	Anticipated absolute effects* (95% CI) Risk with treatment as usual	Relative effect (95% CI) **	No of participants (studies)	Certainty of the evidence (GRADE)	Comments†
Positive mental health	- SMD 0.682 SD higher (0.297 higher to 1.66 higher)	Approximate OR = 3.44 (1.71 to 20.18)	231 (3 RCTs)	⊕○○○ VERY LOW ^{abc}	It is not known whether psychosocial intervention promote positive mental health for adolescents living with HIV/AIDS when compared to treatment as usual.
Mental disorders (depression and anxiety)	- SMD 0.215 SD higher (6.706 lower to 7.135 higher)	Approximate OR = 1.47 (5.35 x 10 ⁶ to 4.06 x 10 ⁵)	137 (2 RCTs)	⊕○○○ VERY LOW ^{bc}	It is not known whether psychosocial intervention prevent mental disorders for adolescents living with HIV/AIDS when compared to treatment as usual.
Aggressive, disruptive and oppositional behaviours	- SMD 0.802 SD lower (1.223 lower to 0.382 lower)	Approximate OR = 0.23 (0.11 to 0.50)	72 (1 RCT)	⊕○○○ LOW ^d	Psychosocial interventions may prevent aggressive, disruptive and oppositional behaviours for adolescents living with HIV/AIDS when compared to treatment as usual.
Self-harm and suicide - not reported	-	-	-	-	-
Substance use – not reported	-	-	-	-	-
Adherence to antiretroviral treatment	- SMD 3.223 SD higher (33.861 lower to 40.307 higher)	Approximate OR = 341.60 (2.41 x 10 ²⁷ to 4.83 x 10 ³¹)	166 (2 RCTs)	⊕○○○ VERY LOW ^{ac}	It is not known whether psychosocial interventions promote adherence to ART for adolescents living with HIV/AIDS when compared to treatment as usual.
Risky sexual and reproductive health behaviours – not reported	-	-	-	-	-
School attendance – not reported	-	-	-	-	-

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).
 ** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hesselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.
 † Glenton, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study. *Medical Decision Making*. DOI:10.1177/0272989X10375853

CI: Confidence interval; SMD: Standardized mean difference; OR: Odds ratio.

GRADE Working Group grades of evidence

High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

Explanations

- Note: Results from de novo review and meta-analysis.
 a. Downgrade by one for risk of bias: 30% of studies had high risk of bias in some domains.
 b. Downgrade by two for inconsistency: considerable and highly significant heterogeneity.
 c. Downgrade by two for imprecision: 95% CI spanning important benefit and important harm.
 d. Downgrade by two for indirectness: intervention administered by university-trained facilitators with extensive experience in teaching mindfulness; only one study.

PICO 5: Preventive interventions for adolescents with emotional symptoms

Table of Included studies

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age	Girls (%)	Boys (%)	Screening Used
Amarson & Craighead (2009); Amarson & Craighead (2011)	Iceland	Prevent depression and anxiety	RCT	171	14 – 15	52.0%	48.0%	A score between the 75th and 90th percentile on Children's Depression Inventory or at the 75th percentile or higher on the negative composite of the Children's Attributional Style Questionnaire
Asarnow et al. (2009)	USA	Prevent depression and suicide attempt; promote quality of life	RCT	418	17.2, 2.1	78.0%	22.0%	Either a score ≥ 24 on the Center for Epidemiological Studies Depression Scale or endorsement of "stem items" for major depression or dysthymia from the 12-month Composite International Diagnostic Interview + 1 week or more of past-month depressive symptoms + a CES-D score ≥ 16 .
Balle & Tortella-Feliu (2010)	Spain	Prevent depression and anxiety	RCT	92	11-17	n/s	n/s	Scoring over 80th percentile in the Children Anxiety Sensitivity Index
Bella-Awusah et al. (2016)	Nigeria	Prevent depression and emotional and behavioural problems	RCT	40	15.6, 0.9	70.0%	30.0%	Score of 18 or above on the Beck Depression Inventory
Berry & Hunt (2009)	Australia	Prevent depression and anxiety; promote social acceptance and global self-worth	RCT	46	13.04, 0.79	n/a	100%	Anxiety score of at least one standard deviation above the population mean on any subscale of the Screen for Child and Anxiety Related Emotional Disorders and a definitely disabling and disturbing rating on the Bullying Incidence Scale
Bonieli-Nissim & Barak (2013)	Israel	Prevent social and emotional difficulties; promote self-esteem and social behaviours	Factorial RCT	161	15.50, 1.02	77.0%	23.0%	A score of 89 or less on the Index of Peer Relationship and not already blogging
Cui et al. (2016)	China	Prevent depression and anxiety; promote social adjustment	RCT	180	19.42, 1.66	81.1%	38.9%	40 \leq SDS \leq 56 cutoff score on the Zung Self-Rating Depression Scale
De Cuyper et al. (2004)	Belgium	Prevent depression and anxiety; promote self-worth	RCT	20	10, n/s	75.0%	25.0%	Scoring above 11 on the Children's Depression Inventory and/or a t-score above 63 on a parent measure of the Child Behaviour Checklist, and at least one criterion of a Major Depressive Disorder, but without other apparent axis-I problems.
Dingle & Fay (2017)	Australia	Promote emotional regulation	RCT	51	18.68, 2.08	67.0%	33.0%	Response to an ad stating "seeking participants who are experiencing symptoms of stress, anxiety or low mood", and promoted as a program aimed at helping young people learn mood improvement techniques.

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age	Girls (%)	Boys (%)	Screening Used
Dobson et al. (2010)	Canada	Prevent depression and anxiety; promote self-esteem	Factorial RCT	46	15.26, 1.1	69.5%	30.5%	Scoring 24 or above on the Center for Epidemiological Studies-Depression Scale
Fukumori et al. (2017)	Japan	Prevent self-harm and negative mood; promote emotional regulation	RCT	22	19.23, 1.21	68.2%	31.8%	Score above 0 on the Self-Harm Ideation Scale
Fung et al. (2016)	USA	Prevent depression and anxiety, and prevent aggressive, disruptive and oppositional behaviours	RCT	19	12.7, 0.81	57.9%	42.1%	A cut-off score was determined to identify students who score in the top 20% on the PHQ-9 within each school (cut-off scores at 5 and 8 for the two schools)
Fung et al. (2019)	USA	Prevent depression anxiety, stress, and aggressive, disruptive and oppositional behaviours; promote emotional regulation and coping	RCT	145	13.99, 0.36	67.6%	32.4%	Score within the top 20% of the Short Mood and Feeling Questionnaire within each school. Cut-off scores were initially set at seven, seven and nine, respectively and then at 8; then PHQ-9 to rule out severe depression
Gaesser & Karan (2017)	USA	Prevent anxiety	RCT	63	10–18	71.4%	28.6%	Score of between 61–70 (moderate) and greater or equal to 71 (high) on the Revised Children's Manifest Anxiety Scale-2
Gaete et al. (2016)	Chile	Prevent depression and anxiety	RCT	342	15.9, 0.9	50.3%	49.7%	Having a Beck Depression Inventory score ≥ 10 (among boys) and ≥ 15 (among girls).
Gau et al. (2012)	USA	Prevent depression and substance use; promote social support	RCT	173	15.5, 1.2	58.0%	42.2%	Score of 20 or above on the Center for Epidemiologic Studies-Depression scale
Gawrysiak et al. (2009)	USA	Prevent depression and anxiety; promote social support and reward observation	RCT	30	18.4, 0.81	80.0%	20.0%	Score of 14 or higher on the Beck Depression Inventory-II
Geisner et al. (2006)	USA	Prevent depression and hopelessness; promote coping	RCT	177	19.28, 1.97	70.0%	30.0%	Score of 14 or more on the Beck Depression Inventory—II
Gillham et al. (2006)	USA	Prevent depression and negative explanatory style;	RCT	271	11–12	53.1%	46.9%	Children's Depression Inventory. Cut-off score for study entry was 7 for girls and 9 for boys

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age	Girls (%)	Boys (%)	Screening Used
Herrick et al. (2017)	Australia	promote positive explanatory style	RCT	50	14.7, 1.4	82.0%	18.0%	Had experienced any level of suicidal ideation within the last 4 weeks
Hill & Pettit (2016)	USA	Prevent depression, anxiety, hopelessness, and suicidal ideation	RCT	80	16.93, 1.66	68.8%	31.2%	Endorsing a perceived burdensomeness score of 17 or greater on the Interpersonal Needs Questionnaire
Hoek et al. (2012)	Netherlands	Prevent depression and anxiety	RCT	45	16.07, 2.31	75.6%	24.4%	Could not score above cut-off on either the Centre for Epidemiologic Studies Depression scale (40), Hospital Anxiety and Depression Scale (14), or Beck's Depression Inventory suicide item (1)
Hunt et al. (2009)	Australia	Prevent depression and anxiety	cRCT	260	11-13	n/s	n/s	Score above 11 on the Revised Children's Manifest Anxiety Scale or nomination from teacher as displaying anxiety
Ip et al. (2016)	Hong Kong SAR (China)	Prevent depression, anxiety, stress, and substance use	RCT	257	14.63, 0.81	68.1%	31.9%	Score between 12 and 40 on the Center for Epidemiologic Studies Depression Scale
Jacob & De Guzman (2016)	Philippines	Prevent depression	RCT	30	13.9, n/s	100%	n/a	Beck Depression Inventory-II (>14), Asian Adolescent Depression Scale (>61) and Kutcher Adolescent Depression Scale-11 (>12).
Jolley et al. (2018)	United Kingdom	Prevent depression, anxiety, and emotional symptoms	RCT	49	11.7, 2.1	53.0%	47.0%	Referred to community health services and a score of ≥6 on the Strengths and Difficulties Questionnaire
Khanna et al. (2017)	USA	Prevent anxiety	RCT	73	12.64, 3.16	80.8%	19.2%	Having a child who has a subscale t-score ≥ 60 on the Child Behavior Checklist–Anxiety
King et al. (2015)	USA	Prevent depression, hopelessness, suicidal ideation, alcohol misuse	RCT	49	17.7, 1.7	80.0%	20.0%	A score of 26 or higher on the Reynolds Adolescent Depression Scale–2 Short Form, with comorbid substance misuse (CRAFT score greater or equal to 2) or alcohol misuse (Alcohol Use Disorders Identification Test score greater or equal to 3).
Kramer et al. (2014)	Netherlands	Prevent depression	RCT	263	19.5, 1.7	78.7%	21.3%	Score of 22 or higher on the Center for Epidemiologic Studies Depression Scale
Kwok et al. (2016)	Hong Kong SAR (China)	Prevent depression; promote life satisfaction, hope, and gratitude	RCT	68	10.4, 1.84	47.1%	52.9%	A score from 9 to 11 on the Chinese Hospital Anxiety and Depression Scale

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age	Girls (%)	Boys (%)	Screening Used
Livheim et al. (2015)	Australia	Prevent depression and negative self-evaluation	RCT	66	14.6, 1.03	87.9%	12.1%	School counsellor/welfare coordinators nominated students who were experiencing mild to moderate depressive symptoms
Livheim et al. (2015)	Sweden	Prevent depression, anxiety, and stress; promote mindfulness, life satisfaction, and mental health	RCT	32	14–15	71.9%	20.1%	Scoring above the 80th percentile on scales measuring psychological problems (Strengths and Difficulties Questionnaire, the Perceived Stress Scale, and the General Health Questionnaire).
Martinsen et al. (2019)	Norway	Prevent depression and anxiety	cRCT	795	10.1, 0.90	42.0%	58.0%	Child scoring 1 standard deviation above mean on measures of anxiety and/or depression on the Multidimensional Anxiety Scale for Children or Short Mood and Feelings Questionnaire - Child
McArthur et al. (2013)	United Kingdom	Prevent psychological distress and conduct and peer problems; promote self-esteem	RCT	32	14.12, 0.93	51.5%	48.5%	Score of 5 or more on the Emotional Symptoms subscale of the Strengths and Difficulties Questionnaire
McCarty et al. (2011)	USA	Prevent depression	RCT	67	12.98, 0.38	50.7%	49.3%	Score of higher than 14 (top 25%) on the Mood and Feelings Questionnaire
Merry et al. (2012)	New Zealand	Prevent depression, anxiety, and hopelessness; promote life-satisfaction	RCT	187	15.6, 1.6	62.8%	37.2%	Score of 10-19 on the Patient Health Questionnaire-9, Depression scale
Miller et al. (2011)	Canada	Prevent anxiety	RCT	191	10.1, 0.93	48.0%	52.0%	T-score of 56 or higher on the Multidimensional Anxiety Scale for Children
Nieto et al. (2017)	Spain	Prevent depression and anxiety	RCT	18	18-21	n/s	n/s	Significantly higher scores (total score above 21.63) on the Brief Inventory of Anxiety Situations and Responses
Noel et al. (2013)	USA	Prevent depression	RCT	34	13.76, 1.02	100%	n/a	Scored 10 or above on the Center for Epidemiological Studies Depression Scale, or endorsed questions 1 or 3 (depressed mood or anhedonia) as moderate or severe for the current month on the Kiddie-Schedule for Affective Disorders and Schizophrenia
Pearce et al. (2017)	United Kingdom	Prevent psychological distress, emotional and peer problems, and conduct behaviours; promote self-esteem and prosocial skills	RCT	64	14.2, 1.8	85.9%	14.1%	Score of 5 or more on the Emotional Symptoms subscale of the self-reported Strengths and Difficulties Questionnaire

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age	Girls (%)	Boys (%)	Screening Used
Peden et al. (2001)	USA	Prevent depression; promote self-esteem	RCT	92	19.3, 1.4	100%	n/a	A score of 9 or above on the Beck Depression Inventory and/or a score of 16 or above on the Centre for Epidemiologic Studies-Depression Scale
Poppelaars et al. (2016)	Netherlands	Prevent depression	Factorial RCT	208	13.35, 0.71	100%	n/a	Score at or above the 70th percentile on depressive symptoms within the sample (Reynolds Adolescent Depression Scale, score of 59 or more)
Puskar et al. (2003)	USA	Prevent depression; promote problem-solving	RCT	89	16.0, 0.95	82.0%	18.0%	Score in the mid-range (at least 60) on the Reynolds Adolescent Depression Scale
Pybis et al. (2015)	United Kingdom	Prevent depression and distress; promote self-esteem	RCT	42	14.5, 1.35	71.4%	28.6%	Score of five or more on the Emotional Symptoms subscale of the self-reported Strengths and Difficulties Questionnaire
Reid et al. (2011); Kauer et al. (2012)	Australia	Prevent depression, anxiety, and stress; promote emotional self-awareness	RCT	118 (n=144)	18.06, 3.2	72.0%	28.0%	Have a mild or more severe emotional or mental health issue as assessed by their GP or indicated by a score greater than 16 on the Kessler Psychological Distress Scale
Roberts et al. (2003); Roberts et al. (2004)	Australia	Prevent depression and anxiety; promote social skills	cRCT	189	11.89, 0.33	49.7%	50.2%	Participating children in each class were ranked ordered using their Child Depression Inventory scores, and 13 children with the highest scores from each class were invited to participate
Rohde et al. (2014a); Rohde et al. (2015)	USA	Prevent depression and substance use; promote social adjustment	RCT	378	15.5, 1.2	68.0%	32.0%	Students who endorsed two or more symptoms on the one-page self-administered screening measure assessing depressive symptoms based on the Center for Epidemiologic Studies-Depression Scale
Rohde et al. (2014b)	USA	Prevent depression and substance use; promote social adjustment	RCT	82	19, 0.9	69.5%	30.5%	Students who endorsed two or more symptoms on the Center for Epidemiologic Studies-Depression Scale
Saelid & Nordahl (2017)	Norway	Prevent depression	RCT	62	16-19	n/s	n/s	Between 8 and 13 on the Hospital Anxiety and Depression Scale
Sang & Tan (2018)	China	Prevent depression, anxiety, and withdrawal; promote social competence	RCT	29	9-12	n/s	n/s	n/s (adolescents suspected of internalizing behaviour disorders)
Scholten et al. (2016)	Netherlands	Prevent anxiety	RCT	138	13.27, 0.88	65.2%	34.8%	One standard deviation above the mean on at least two Spence Children's Anxiety Scale subscales or on the total SCAS score, with exclusion of the subscale Obsessive Compulsive Disorder
Sheffield et al. (2006)	Australia	Prevent depression, anxiety, and hopelessness; promote social and adaptive functioning	cRCT	521	14.34, 0.46	69.0%	31.0%	Scoring in the top 20% on the combined scores on the Children's Depression Inventory and the Center for Epidemiologic Studies-Depression Scale
Smith et al. (2015)	United Kingdom	Prevent depression and anxiety;	RCT	112	12-16	n/s	n/s	Scored 20 or greater on the Mood and Feelings Questionnaire-Child Report

Author and year	Country, territory and area	Programme intent	Study Design	Total sample (N)	Age	Girls (%)	Boys (%)	Screening Used
Spence et al. (2003)	Australia	promote school attendance rate	RCT	399	12.87, 0.54	n/s	n/s	Score greater than or equal to 13 on the Beck Depression Inventory or positive responses to specific dysthymia questions or a positive response to the suicide question on the BDI.
Stallard et al. (2013)	United Kingdom	Prevent depression, anxiety, suicidal ideation, self-harm, bullying perpetration, and substance misuse; promote self-esteem	rRCT	1064	14.18, 1.09	65.7%	34.3%	Scores of ≥ 5 on the Short Mood and Feelings Questionnaire
Stasiak et al. (2014)	New Zealand	Prevent depression; promote coping, problem-solving, and quality of life	RCT	34	15.18, 1.48	41.2%	58.8%	Raw score of 30 or more on Depression Rating Scale Revised or if they scored 76 or above on Reynolds' Adolescent Depression Scale-2nd Edition
Stice et al. (2006); Marchand et al. (2010)	USA	Prevent depression	RCT	225	18.4, 1.33	70.0%	30.0%	Scoring 20 or higher on the Center for Epidemiologic Studies-Depression scale
Stice et al. (2008); Stice et al. (2010); Marchand et al. (2010)	USA	Prevent depression and substance use; promote social adjustment	RCT	341	15.6, 1.2	56.0%	44.0%	Scoring 20 or higher on the Center for Epidemiologic Studies-Depression scale
Stice et al. (2011)	USA	Promote social support	RCT	253	15.5, 1.2	57.0%	43.0%	Scoring 20 or higher on the Center for Epidemiologic Studies-Depression scale
Takagaki et al. (2016), Takagaki et al. (2018)	Japan	Prevent depression; promote quality of life	RCT	118	18.22, 0.41	38.1%	61.9%	Beck Depression Inventory-II score greater than or equal to 10
Topper et al. (2017)	Netherlands	Prevent depression, anxiety, general distress, and alcohol use	RCT	251	17.45, n/s	83.7%	16.3%	Participants had to have a total score at or above the 75th percentile on the Penn State Worry Questionnaire or Ruminative Response Scale and a total score at or above the 66th percentile on the other
Wijnhoven et al. (2014)	Netherlands	Prevent depression	RCT	118	13.30, 0.64	100%	n/a	Children's Depressive Inventory score of 16 or more
Woods et al. (2011)	New Zealand	Prevent depression	RCT	83	14.0, n/s	n/s	n/s	Adolescents scoring over the 'above average' cut off point of 63 on the Children's Depressive Inventory
Wright et al. (2017)	United Kingdom	Prevent depression and anxiety; promote quality of life	RCT	91	15.35, 1.30	65.9%	34.1%	Referred by primary mental health workers, and then cutoff was score of 20 or more on the Mood and Feelings Questionnaire

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age	Girls (%)	Boys (%)	Screening Used
Young et al. (2006); Young et al. (2009)	USA	Prevent depression and conflict behaviour	RCT	41	13.4, 1.2	85.4%	14.6%	Score between 16 and 39 on the Centre for Epidemiological Studies - Depression scale; at least 2 subthreshold or threshold depression symptoms on the K-SADS-PL and a CGAS score of 61 or higher
Young et al. (2010)	USA	Prevent depression	RCT	57	14.51, 0.76	59.7%	40.3%	Adolescents with a CESD score between 16 and 39 were eligible to be approached, those with a score of 40 or higher were seen by the Principal Investigator (PI) to assess clinical severity and determine potential eligibility; adolescents were eligible if they had at least two subthreshold or threshold depression symptoms on the K-SADS-PL, and had a CGAS score of 61 or higher
Young et al. (2012)	USA	Prevent anxiety	RCT	98	14.04, 0.99	70.4%	29.6%	Score between 16 and 39 on the Centre for Epidemiological Studies - Depression scale; at least 2 subthreshold or threshold depression symptoms on the K-SADS-PL and a CGAS score of 61 or higher
Young et al. (2016); Young et al. (2018)	USA	Prevent depression	RCT	186	14.01, 1.22	66.7%	33.3%	Centre for Epidemiological Studies - Depression score of 16 or higher
Zandkarimi et al. (2018)	Islamic Republic of Iran	Prevent depression, anxiety, and stress	RCT	50	11 – 18	100%	n/a	Considered having a vulnerable socio-economic income and a stress cut off point of 12 on the Depression, Anxiety and Stress Scale
Zhang et al. (2018)	China	Prevent depression and stress; promote mindfulness	RCT	64	18.41, 2.01	64.1%	35.9%	2–4 symptoms of depression experienced more than half of the days or nearly every day for 2 or more weeks as defined on the Patient Health Questionnaire depression scale

GRADE Evidence Profile

Certainty assessment		No of patients					Effect		Certainty	Importance		
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	psychosocial interventions	treatment as usual			Relative (95% CI)	Absolute (95% CI)
Mental disorders (depression and anxiety)												
67	randomized trials	very serious ^a	serious ^b	serious ^c	serious ^d	none	5936	4401	-	SMD 0.306 SD lower (better; 0.422 lower to 0.19 lower)	⊕○○○ VERY LOW	CRITICAL
Self-harm and suicide												
6	randomized trials	very serious ^a	not serious	serious ^c	serious ^d	none	1086	608	-	SMD 0.105 SD lower (better; 0.289 lower to 0.078 higher)	⊕○○○ VERY LOW	CRITICAL
Positive mental health												
34	randomized trials	very serious ^a	serious ^b	serious ^c	serious ^d	none	3539	2325	-	SMD 0.194 SD higher (better; 0.097 higher to 0.292 higher)	⊕○○○ VERY LOW	IMPORTANT
Substance use												
8	randomized trials	not serious	not serious	serious ^c	very serious ^e	none	1738	857	-	SMD 0.008 SD higher (worse; 0.468 lower to 0.483 higher)	⊕○○○ VERY LOW	IMPORTANT
Aggressive, disruptive and oppositional behaviours												
9	randomized trials	very serious ^a	not serious	serious ^c	serious ^f	none	1471	879	-	SMD 0.202 SD lower (better; 0.46 higher to 0.057 higher)	⊕○○○ VERY LOW	IMPORTANT
School attendance												
1	randomized trials	very serious ^a	not serious	very serious ^g	not serious	none	55	57	-	SMD 0.865 SD higher (better; 0.474 higher to 1.256 higher)	⊕○○○ VERY LOW	IMPORTANT
Risky sexual and reproductive health behaviours – not reported												

Certainty assessment												
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	№ of patients		Effect		Certainty	Importance
							psychosocial interventions	treatment as usual	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

CI: Confidence interval; SMD: Standardized mean difference.

Explanations

Note: Results from *de novo* review and meta-analysis.

- a. Downgrade by two for risk of bias: more than 30% of studies have high risk of bias for some domains.
- b. Downgrade by one for inconsistency: unexplained and significant heterogeneity.
- c. Downgrade by one for indirectness: study populations in high-income countries and highly skilled interventionists.
- d. Downgrade by one for imprecision: 95% CI spanning important and unimportant benefit.
- e. Downgrade by two for imprecision: 95% CI spanning important benefit and harm.
- f. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant harm.
- g. Downgrade by two for indirectness: study population in high-income country; only one study.

ADVANCED PROOF

Summary of Findings Table

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)**	No of participants (studies)	Certainty of the evidence (GRADE)	Comment†
	Risk with treatment as usual	Risk with psychosocial interventions				
Mental disorders (depression and anxiety)	-	SMD 0.306 SD lower (better: 0.422 lower to 0.19 lower)	Approximate OR = 0.57 (0.47 to 0.71)	10337 (67 RCTs)	⊕○○○ VERY LOW ^{a,b,c,d}	It is not known whether psychosocial interventions prevent mental disorders (depression and anxiety) for adolescents with emotional symptoms when compared to treatment as usual.
Self-harm and suicide	-	SMD 0.105 SD lower (better: 0.289 lower to 0.078 higher)	Approximate OR = 0.83 (0.59 to 1.15)	1694 (6 RCTs)	⊕○○○ VERY LOW ^{a,c,d}	It is not known whether psychosocial interventions prevent self-harm and suicide when for adolescents with emotional symptoms compared to treatment as usual.
Positive mental health	-	SMD 0.194 SD higher (better: 0.097 higher to 0.292 higher)	Approximate OR = 1.42 (1.19 to 1.70)	5864 (34 RCTs)	⊕○○○ VERY LOW ^{a,b,c,d}	It is not known whether psychosocial interventions promote positive mental health for adolescents with emotional symptoms when compared to treatment as usual.
Substance use	-	SMD 0.008 SD higher (worse: 0.468 lower to 0.483 higher)	Approximate OR = 1.01 (0.43 to 2.40)	2595 (8 RCTs)	⊕○○○ VERY LOW ^{c,e}	It is not known whether psychosocial interventions prevent substance use for adolescents with emotional symptoms when compared to treatment as usual.
Aggressive, disruptive and oppositional behaviours	-	SMD 0.202 SD lower (better: 0.46 lower to 0.057 higher)	Approximate OR = 0.69 (0.43 to 1.11)	2316 (8 RCTs)	⊕○○○ VERY LOW ^{a,c,f}	It is not known whether psychosocial interventions prevent aggressive, disruptive and oppositional behaviours for adolescents with emotional symptoms when compared to treatment as usual.
School attendance	-	SMD 0.865 SD higher (better: 0.474 higher to 1.256 higher)	Approximate OR = 4.79 (2.36 to 9.71)	112 (1 RCT)	⊕○○○ VERY LOW ^{a,g}	It is not known whether psychosocial interventions promote school attendance for adolescents with emotional symptoms when compared to treatment as usual.
Risky sexual and reproductive health behaviours – not reported	-	-	-	-	-	-

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).
 ** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hasselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.
 † Glenton, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study. *Medical Decision Making*. DOI:10.1177/0272989X10375863

CI: Confidence interval; SMD: Standardized mean difference; OR: Odds ratio.

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

Explanations

Note: Results from *de novo* review and meta-analysis.

- a. Downgrade by two for risk of bias: more than 30% of studies have high risk of bias for some domains.
- b. Downgrade by one for inconsistency: unexplained and significant heterogeneity.
- c. Downgrade by one for indirectness: study populations in high-income countries and highly skilled interventionists.
- d. Downgrade by one for imprecision: 95% CI spanning important and unimportant benefit.
- e. Downgrade by two for imprecision: 95% CI spanning important benefit and harm.
- f. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant harm.
- g. Downgrade by two for indirectness: study population in high-income country; only one study.

ADVANCED PROOF

PICO 6: Preventive interventions for adolescents with disruptive/oppositional behaviours

Table of Included studies

Author and year	Country, territory and area	Programme Intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Abdulmalik et al. (2016)	Nigeria	To prevent aggression and aggressive behaviours; emotional problems, conduct disorder, peer problems, and to promote prosocial behaviour	cRCT	40	12.0, 1.27	n/a	100.0%	Teacher ratings of aggressive behaviour
Asscher et al. (2013); Asscher et al. (2014)	Netherlands	To prevent externalizing and violent behaviours, the development of ODD and CD, and arrests, and to promote self-esteem and relationship quality between parent and child	RCT	256	16.02, 1.31	26.6%	73.4%	Referral, behaviour severe enough to require treatment
Avci & Kelleci (2016)	Turkey	To prevent anger, aggression, depression and anxiety, and to promote anger control	RCT	62	14-16	61.3%	38.7%	Aggression Scale, State-Trait Anger Expression Inventory, teacher description as 'easily angered'
Berry et al. (2009)	USA	To prevent bullying, anxiety and depression, and to promote social acceptance and global self-worth	RCT	63	15-18	n/s	n/s	Referral
Borowsky et al. (2004)	USA	To prevent aggressive, and delinquent behaviour, internalizing problems, bullying, and physical fighting	RCT	224	11.05, 2.3	42.4%	57.6%	Pediatric Symptom Checklist (PSC-17)
Currie & Startup (2012)	Australia	To prevent anger and depression, and to promote self-esteem	RCT	54	13.8, 0.89	n/a	100.0%	School record of aggressive in-school misbehaviour, trait anger score
Currie & Startup (2012)	Australia	To prevent anger and depression, and to promote self-esteem	RCT	65	13.8, 0.86	n/a	100.0%	School record of aggressive in-school misbehaviour, trait anger score
de Vries et al. (2017)	Netherlands	To prevent delinquent and externalizing behaviours, overt and covert aggression, substance use, anxiety and depression, and to promote self-esteem	RCT	160	15.58, 1.53 (n=101)	32.7% (n=101)	67.3% (n=101)	Referral, meet criteria of problems in multiple life domains and being at risk for development and progression of deviant lifestyle

Author and year	Country, territory and area	Programme intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Down et al. (2011)	United Kingdom	To prevent anger, and promote self-esteem	RCT	33	13.48, n/s	36.0% (n=25)	64.0% (n=25)	n/s
Jalling et al. (2016)	Sweden	To prevent antisocial and problem behaviours, externalizing problems, delinquency, substance use, externalizing, and psychosocial distress	RCT	271	14.6, n/s (n=237)	47.3% (n=237)	52.7% (n=237)	Parent report of antisocial risk behaviour
Kannappan & Bai (2008)	India	To prevent antisocial behaviour and maladjustment	RCT	120	n/s	100.0%	n/a	Deviant Behaviour Checklist
Leijten et al. (2012)	Netherlands	To prevent problem behaviour and negative affect, and to promote positive affect, communication skills, and problem-solving skills	RCT	78	13.09, 1.75	55.1%	44.9%	Parents experiencing difficulties due to child's problem behaviour
Multisite Violence Prevention Project (2014)	USA	To prevent physical and non-physical aggression, and promote problem-solving skills	cRCT	1244	Grade 6	35.3%	64.7%	Teacher rating on a 4-point behaviour scale
Obsuth et al. (2017)	United Kingdom	To prevent antisocial behaviour, bullying perpetration and delinquency, and to promote communication skills, prosocial skills	cRCT	738	14.03, n/s (n=606)	29.0% (n=606)	71.0% (n=606)	School nomination
Perrino et al. (2016)	USA	To prevent depression and anxiety	RCT	242	14.7, 1.38	35.5%	64.5%	Referral due to history of delinquency
Ranney et al. (2017)	USA	To prevent depression	RCT	726	16.8, 1.3 (n=659)	56.8% (n=659)	43.2% (n=659)	Adolescent reporting any past-year physical aggression or alcohol use
Scheckner & Rollin (2003)	USA	To prevent aggression, and promote self-esteem and prosocial behaviour	RCT	44	Grade 5	36.4%	63.6%	Teacher submitted list of most aggressive students
Shechtman (2000)	Israel	To prevent withdrawal, anxiety and depression, social and thought problems, delinquent and aggressive behaviour, withdrawal	RCT	70	10-15	21.4%	78.6%	Teacher nominated, based on 10-item questionnaire
Shechtman (2006)	Israel	To prevent aggression and promote empathy	RCT	61	12.07, 1.69	n/a	100.0%	Teacher rated evaluation of aggression

Author and year	Country, territory and area	Programme intent	Study Design	Total sample (N)	Age (mean, SD)	Girls (%)	Boys (%)	Screening Used
Shechtman & Ifargan (2009)	Israel	To prevent internalizing and externalizing problems, as well as aggression	cRCT	166	Grades 5-8	19.0%	81.0%	Teacher nomination based on the Peer Nomination Instrument
Simonsen et al. (2011)	USA	To prevent disruptive behaviour and promote social skills	RCT	42	10-14	23.8%	76.2%	Teacher nomination based on office discipline referrals, students demonstrated consistent problem behaviours across settings
Teeter et al. (2000)	USA	To prevent internalizing and externalizing problems, and emotional problems, and promote adaptive skills, social competence, problem-solving, and personal adjustment	RCT	n/s	n/s	n/s	n/s	Teacher nomination of students based on deficits in impulse control

Certainty assessment		No of patients					Effect		Certainty	Importance	
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	psychosocial interventions	treatment as usual			Relative (95% CI)
-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Risky sexual and reproductive health behaviours – not reported											
School attendance – not reported											
-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

CI: Confidence interval; **SMD**: Standardized mean difference

Explanations

- Note: Results from de novo review and meta-analysis.
- a. Downgrade by one for risk of bias: up to 30% of studies have high risk of bias for some domains.
 - b. Downgrade by two for inconsistency: considerable and highly significant heterogeneity.
 - c. Downgrade by one for indirectness (population and intervention implementation).
 - d. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant benefit.
 - e. Downgrade by one for publication bias: asymmetrical funnel.
 - f. Downgrade by one for imprecision: 95% CI spans important harm and unimportant harm.



Summary of Findings Table

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)**	No. of participants (studies)	Certainty of the evidence (GRADE)	Comment†
	Risk with treatment as usual	Risk with psychosocial interventions				
Aggressive, disruptive and oppositional behaviours	-	SMD 0.482 SD lower (0.386 lower to 0.077 lower)	Approximate OR = 0.42 (0.20 to 0.87)	3211 (20 RCTs)	⊕○○○ VERY LOW a,b,c,d,e	It is not known whether psychosocial interventions prevent aggressive, disruptive, and oppositional behaviours for adolescents with disruptive/oppositional behaviours when compared to treatment as usual.
Substance use	-	SMD 0.212 SD higher (0.188 higher to 0.235 higher)	Approximate OR = 1.47 (1.41 to 1.53)	431 (2 RCTs)	⊕○○○ LOW c,g	Psychosocial interventions for adolescents with disruptive/oppositional behaviours may promote substance use when compared to treatment as usual.
Conduct disorder- not reported	-	-	-	-	-	-
Oppositional defiant disorder – not reported	-	-	-	-	-	-
Positive mental health	-	SMD 0.289 SD higher (0.013 higher to 0.565 higher)	Approximate OR = 1.69 (1.02 to 2.78)	2298 (14 RCTs)	⊕○○○ VERY LOW a,b,c,d,e	It is not known whether psychosocial interventions promote positive mental health for adolescents with disruptive/oppositional behaviours when compared to treatment as usual.
Mental disorders (depression and anxiety)	-	SMD 0.442 SD lower (0.75 lower to 0.133 lower)	Approximate OR = 0.45 (0.26 to 0.79)	2361 (15 RCTs)	⊕○○○ VERY LOW a,b,c,d,e	It is not known whether psychosocial interventions prevent mental disorders (depression and anxiety) for adolescents with disruptive/oppositional behaviours when compared to treatment as usual.
Self-harm and suicide – not reported	-	-	-	-	-	-
Risky sexual and reproductive health behaviours – not reported	-	-	-	-	-	-
School attendance – not reported	-	-	-	-	-	-

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).
 ** Approximate OR obtained through logarithmic transformation of SMD according to the method by Hasselblad and Hedges (1995). Where SMD is lower in the intervention group the reciprocal value of the approximation was determined.
 † Glenton, C., et al. (2010). Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study. *Medical Decision Making*. DOI:10.1177/0272989X10375853

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Explanations

Note: Results from de novo review and meta-analysis.

- a. Downgrade by one for risk of bias: up to 30% of studies have high risk of bias for some domains.
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- d. Downgrade by one for imprecision: 95% CI spanning unimportant harm and important benefit.
- e. Downgrade by one for publication bias: asymmetrical funnel.
- f. Downgrade by one for imprecision: 95% CI spanning important benefit and unimportant benefit.
- g. Downgrade by one for imprecision: 95% CI spans important harm and unimportant harm.

Included studies

PICO question 1

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PICO question 2A

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PICO question 2B

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PICO question 2C

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PICO question 3

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