

■ Indicated Preventive Interventions for High-risk Adolescents of Emotional Disorders: A Systematic Review

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Abstract

Currently, emotional disorders such as anxiety and depression are highly prevalent among the adolescent population. There is an increasing need to focus attention on the development of preventive interventions that address this situation, especially among high-risk youth. Therefore, the aim of this study was to analyse, by means of a systematic review, the extent of the effects of indicated prevention interventions for anxiety and depression in adolescents (between 12 and 18 years old). Different international databases were used, the chosen ones being PsycINFO, PubMed and Medline. After applying the eligibility criteria, 12 studies were included for review. The results revealed that all the programmes for the indicated prevention of emotional problems that were analysed focused on the prevention of depression, and they have different characteristics in terms of the number of members of the group interventions, and the number or frequency of sessions. However, most of the programmes used Cognitive Behavioural Therapy techniques, managing to reduce depressive symptomatology and the progression to disorders, with results maintained in some cases for up to two years. Research based on Interpersonal Psychotherapy was only maintained for six months. In conclusion, indicated prevention programmes for depression have been found to be effective at reducing the progression to a depressive disorder. Further work is required in this area to determine if Cognitive Behavioural Therapy could yield better results than other approaches.

Keywords: Indicated Prevention; Anxiety; Depression; Emotional; Review.

Resumen

Intervenciones de Prevención Indicada para Adolescentes de Alto Riesgo con Trastornos Emocionales: Una Revisión Sistemática. En la actualidad, los trastornos emocionales como la ansiedad y la depresión son muy prevalentes en la población adolescente, y cada vez es más necesario centrar la atención en el desarrollo de intervenciones preventivas que reviertan esta situación, especialmente entre los jóvenes de alto riesgo. En este sentido, el objetivo de este estudio fue analizar, mediante una revisión sistemática, el alcance de los efectos de las intervenciones de prevención indicada para la ansiedad y la depresión en adolescentes (entre 12 y 18 años), así como sus características metodológicas. Se utilizaron diversas bases de datos internacionales, siendo PsycINFO, PubMed y Medline las elegidas. Después de aplicar los criterios de elegibilidad, se incluyeron 12 estudios para su revisión. Los resultados revelaron que todos los programas de prevención indicada de problemas emocionales analizados se centraron en la prevención de la depresión y cuentan con características variadas en cuanto al número de integrantes de las intervenciones grupales, el número de sesiones o frecuencia de éstas. Si bien, la mayoría de los programas utilizaron técnicas de Terapia Cognitivo-Conductual, logrando reducir la sintomatología depresiva y la progresión a trastornos, con resultados mantenidos en algunos casos hasta por dos años, en contraste con la investigación basada en la Terapia Interpersonal, que solo se mantuvo durante seis meses. En conclusión, los programas de prevención indicada para la depresión son efectivos en la reducción de la progresión hacia un trastorno depresivo. Se requieren más investigaciones en esta área para determinar si la Terapia Cognitivo-Conductual podría generar mejores resultados que otros enfoques.

Palabras clave: Prevención indicada; Ansiedad; Depresión; Emocional; Revisión.

Emotional disorders, such as anxiety and depression, represent a serious public health problem, as pointed out by the World Health Organisation (WHO, 2021), with a worldwide prevalence of 6.5% (95% CI 4.7-9.1) for all anxiety disorders in child and adolescent

populations, as well as 2.6% (95% CI 1.7-3.9) for depressive disorders (Polanczyk et al., 2015). Despite this, young people are undertreated (Colizzi et al., 2020; Dvorsky et al., 2014; Rocha et al., 2015). This situation has also been seriously affected by the COVID-19 pandemic,

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further increasing the global prevalence of anxiety and depression and its consequences, raising the global prevalence of anxiety and depression by 25% (COVID-19 Mental Disorders Collaborators, 2021; Racine et al., 2021; Werling et al. 2022).

The presence of these clinical disorders of anxiety and/or depression, as well as subclinical levels of such symptomatology, impact the physical and mental health of young people, and are associated with a deterioration in social and family functioning, leading to low levels of academic achievement and, ultimately, restricting the possibilities of leading a fulfilling life, sometimes even leading to suicide (Ahlen et al., 2015; Jovanović et al., 2022; Soriano, 2022; Twenge et al., 2019, Verboom, 2014).

In view of the high prevalence rates of clinical and subclinical levels of anxiety and/or depression, the early onset of their symptomatology, the detrimental consequences and the chronicity if untreated (Canals-Sans et al., 2018, 2019; Robberegt et al. 2023), it is crucial to invest in multidisciplinary early prevention interventions for high-risk young people (Garcia-Lopez, 2023). This is decisive for improving their well-being and the prevention of future clinical disorders (Beardslee et al., 2013; Solmi et al., 2022) due to the potential links between mental and physical conditions in adolescents (Arrondo et al., 2022).

Following the classification of Mrazek & Haggerty (1994) regarding classifying preventive interventions, these can be universal, selective or indicated. Specifically, indicated interventions are those focused on the segment of the population already showing incipient and detectable signs or symptoms that predict the onset of a mental disorder, although at that moment they do not meet the diagnostic criteria for it.

Some approaches to the study of prevention in young people have shown to date that interventions delivered to those at risk or when subclinical symptoms are present can produce small short-term effects on the prevention of depression (Brown et al., 2018; Caezar & Christensen, 2010; Horowitz & Garber, 2006; Stockings et al., 2016; Werner-Seidler et al., 2017, 2021). Similarly, positive results have been found for indicated prevention interventions for anxiety (Fisak et al., 2011; Stoll et al., 2020), with moderate effects (Lawrence et al. 2017; Neil & Christensen, 2009; Stockings et al., 2016; Werner-Seidler et al., 2017; 2021). Likewise, the indicated preventive programmes are more positively rated by both the leaders who deliver such programmes and the participants themselves (Rapee et al., 2006).

Taking into account this contextualization and the fact that adolescence represents a unique stage in the development of individuals and an important time for laying the foundations of good health (WHO, 2022), the purpose of this research is to identify, through a systematic review, the magnitude of the effects of indicated preventive interventions for anxiety and depression in adolescents. Specifically, considering the high levels of comorbidity between both sets of symptoms, we will analyse the methodological characteristics and psychological techniques used within the general context of adolescents aged between 12 and 18 years, coinciding with the onset of significant pubertal changes.

Method

Procedure

This review was not pre-registered. To conduct this systematic review, we followed the guidelines proposed in the updated PRISMA systematic review reporting guidelines (Page et al., 2021). A search

was conducted in different scientific databases. Specifically, the databases used were PsycINFO, Pubmed and Medline. The keywords used for the search were: "Indicated", "Prevention", "Anxiety", "Depression", "Depressive", "Emotional", "Adolescence", "Adolescent" and "Youth". The resulting search command used was: Indicated AND Prevention AND (Anxiety OR Depression OR Depressive OR Emotional) AND (Adolescence OR Adolescent OR Youth). In all three databases, the search was generally limited to title and abstract fields.

For the PsycINFO search, filters were applied for empirical studies, School Age (6-12yrs), Adolescence (13-17) and research in English or Spanish. For Pubmed and Medline, the filters Clinical Trial, Randomised Controlled Trial, Child 6-12 years, adolescent 13-18 years and articles in English and Spanish were applied.

Nevertheless, the search was not time-limited, and a review of all papers published up to April 2022 was conducted. Once the potentially eligible articles were selected based on the title and abstract, we proceeded to read the full research of the research to verify compliance with the inclusion and exclusion criteria.

Eligibility criteria

Bearing in mind the general objective of this systematic review, the selection of studies had to meet the following criteria: 1) Research written in English or Spanish; 2) Studies with the presence of the keywords in the title and/or abstract of the article; 3) Papers on preventive interventions targeting or including discrete groups of adolescents with subclinical levels of anxiety and/or depression (indicated prevention), which have to be the primary, not the secondary, problem; 4) Papers assessing the effects of indicated preventive interventions on anxiety and/or depression as the primary outcome; 5) Research with a study population age within the range of 12 to 18 years old; 6) Non-duplicated research.

Exclusion criteria were: 1) Research published in a language other than English or Spanish; 2) Non-experimental research: theoretical, observational or correlational studies; 3) Prevention study related to other topics such as substance use, eating problems, suicide or populations exposed to additional risk factors such as low economic status or community violence, among others.

Study Selection and Data Extraction.

Two researchers (DJV and MVF) independently reviewed the titles and abstracts of the identified records. They obtained and read the full text of the preselected records independently. Information from records that met eligibility criteria was extracted into a database for information analysis: 1) Author and year of publication, 2) Language, 3) Study purpose, 4) Sample (Age and Country) 5) Type of intervention 6) Variables assessed, 7) Risk of bias, 8) Group assignment, 9) Description of the intervention, 10) Depression/anxiety instruments, 11) Follow-up, and 12) Results.

Risk of bias

The Cochrane Collaboration's risk of bias tool (Higgins et al, 2011) was used to assess the risk of bias in the research contained in this review. Two of the authors independently assessed the methodological quality of the research in relation to: (a) selection bias, i.e., analysing whether they describe in detail the randomisation-based allocation sequence and allocation concealment; (b) performance bias, referring to the blinding of participants and staff regarding conditions; (c) detection bias, referring to the blinding of assessors; (d) attrition bias, referring to the description of systematic differences between groups due to dropouts; and (e) reporting bias, referring to

the selective reporting of results. Each of the five domains described was assessed as: low risk of bias, where there was bias with a little likelihood of significantly altering the results; unclear bias, where there was some doubt about the results; and high risk of bias, where existing bias seriously undermined confidence in the results.

Disagreements over the presence of bias were resolved by consensus in a meeting between the two researchers. Papers with low risk of bias in three or more of the five domains were classified as high quality studies, while those with high or unclear risk of bias in three of them were classified as low quality studies.

Results

The total number of studies found in each of the databases was $n = 318$ in PsycINFO, $n = 53$ in PubMed and $n = 71$ in Medline, totalling $N = 442$ papers. After independently applying the established selection criteria and assessing the level of agreement between the two researchers, 12 studies were selected for review (Figure 1). The main objective of all the included studies was to assess the effectiveness of the indicated preventive programmes in adolescents aged 12 to 18 years old suffering from anxiety and/or depressive symptoms. For this reason, after a thorough reading of the articles, studies were excluded for not being indicated prevention studies, not including a population aged between 12 and 18 years old, being only protocol design studies, or not focusing on the prevention of anxiety or depression as the main subject. This includes studies that involved adolescent population with other risk factors such as alcohol or substance consumers, or behavioural problems, among others. This was the most common

reason for exclusion.

In terms of the language of the analysed research, all of them were written and published in English, except for one of them, which was

Figure 1. Flow diagram studies included in the systematic review

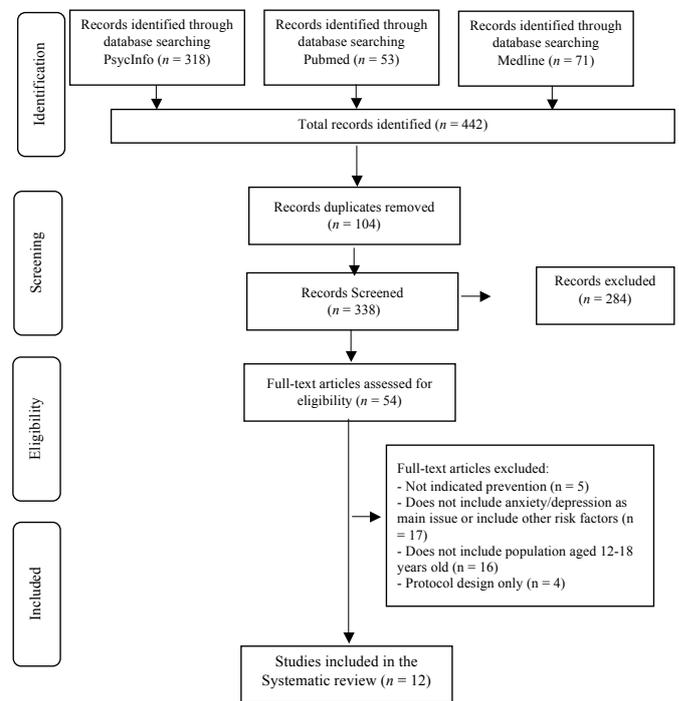


Table 1. General description of the study characteristics

Author and year of publication	Language	Study purpose	Sample (N) M. age, SD and Country	Type of intervention	Variables assessed	Risk of bias				
						a	b	c	d	e
Arnarson & Craighead (2009)	English	To test the efficacy of a programme (Thoughts and Feelings) to prevent the onset of depressive disorders in an adolescent population with symptoms. 6-month follow-up results	$N = 171$ (52 % girls) 14 -15 years old $M =$ not indicated (Iceland)	CBT	Depression	+	-	+	+	+
Arnarson & Craighead (2011)	English	To test the efficacy of a programme (Thoughts and Feelings) to prevent the onset of depressive disorders in an adolescent population with symptoms. 12-month follow-up results	$N = 171$ (52 % girls) 14 -15 years old $M =$ not indicated (Iceland)	CBT	Depression	+	-	+	+	+
Beardslee et al. (2013)	English	To assess the efficacy of a cognitive-behavioural group programme for the prevention of depression in adolescents with subclinical symptoms and a family history of depressive disorder.	$N = 316$ (58.54% girls) 13 - 17 years old $M = 14.8$; $SD = 1.4$ (USA)	CBT	Depression	+	-	+	+	+
Blossom et al. (2020)	English	To test The High School Transition Program (HSTP) based on skills training for indicated prevention of depression in the transition from school to high school.	$N = 497$ (61.5% girls) 8th Grade (13-14 years old) $M =$ not indicated. (USA)	Coping skills training	Depression	+	-	?	+	+

Author and year of publication	Language	Study purpose	Sample (N) M. age, SD and Country	Type of intervention	Variables assessed	Risk of bias				
						a	b	c	d	e
Brière et al. (2019)	English	To test the effectiveness of the "Blue Programme" a brief cognitive behavioural (CB) programme for indicated prevention of depression at a 6-month follow-up.	<i>N</i> = 74 (66% girls) 4-18 years old <i>M</i> = 15.5; <i>SD</i> = 1.12 (Canada)	CBT	Depression (and Anxiety side effects)	+	?	+	+	+
Cova et al. (2011)	Spanish	To test the effectiveness of a depression prevention programme for Chilean adolescent girls with threshold depression symptoms (indicated prevention) and a universal prevention group.	<i>N</i> = 209 (100% girls) 13-14 years old; <i>M</i> = not indicated (Chile)	CBT	Depression (and Anxiety side effects)	-	?	?	-	+
Duong et al. (2016)	English	To examine the outcomes of a cognitive behavioural programme for the indicated prevention of depression in adolescents versus a brief individual support intervention.	<i>N</i> = 120 (60.83% girls) 7th and 8th (12-14 years old) G1 <i>M</i> = 12.7 (0.77) G2 <i>M</i> = 12.8 (0.69) (EE.UU)	CBT	Depression	+	?	+	+	+
Makover et al. (2019)	English	To test the impact of an indicated prevention programme for depression, The High School Transition Program (HSTP), on symptoms of depression and anxiety.	<i>N</i> = 497 (63.17% girls) Adolescents 8th Grade, 13-14 years old <i>M</i> = not indicated (USA)	Coping skills training	Depression and Anxiety	+	?	?	-	+
Matos et al. (2019)	English	To test a Cognitive Behavioural Programme based on Arnarson and Craighead's (2009, 2011) "Thoughts and Feelings" programme for indicated prevention of depression in Portuguese adolescents.	<i>N</i> = 168 (72.6% girls) De 13-16 years old <i>M</i> = 14.11; <i>SD</i> = 0.87 (Portugal)	CBT	Depression (and effects of initial anxiety as a predictor of onset of disorders).	-	-	?	-	+
Sheffield et al. (2006)	English	To compare the effects of preventive interventions for depression from a cognitive behavioural approach in an indicated, universal and a combined universal/indicated population group.	<i>N</i> = 521 (69% girls) indicated population of 9th (15 years old) <i>M</i> = 14.34; <i>SD</i> = .46 (Australia)	CBT	Depression (it assesses side effects on Anxiety)	+	-	-	+	+
Young et al. (2010)	English	To test the efficacy of the IPT-AST programme for the indicated prevention of depression based on Interpersonal Psychotherapy and Skills Training for Adolescents in comparison with a control group of individual school counselling.	<i>N</i> = 186 (59.7% girls) 13-17 years old <i>M</i> = 14.51; <i>SD</i> = .71 (USA New Jersey)	Interpersonal Psychotherapy - Adolescent Skills Training	Depression	+	-	+	+	+
Young et al. (2016)	English	To test the effectiveness of the IPT-AST programme based on Interpersonal Psychotherapy and Skills Training for Adolescents in comparison with a school counselling control group.	<i>N</i> = 57 (66.7% girls) 7th-10th (12-16) <i>M</i> = 14.01; <i>SD</i> = 1.22 (USA New Jersey)	Interpersonal Psychotherapy - Adolescent Skills Training	Depression	+	-	+	+	+

Note: CBT (Cognitive Behavioural Therapy). a = selection bias; b = performance bias; c = detection bias; d = attrition bias; e = reporting bias; + = low risk of bias; - = high risk of bias; ? = unclear risk of bias.

written in Spanish, namely the study by Cova et al. (2010). Regarding the location where the research was performed, six of them were carried out in the United States (Beardslee et al., 2013; Blossom et al., 2020; Duong et al., 2016; Makover et al., 2019; Young et al., 2010; Young et al., 2016); two in Iceland (Arnarson & Craighead, 2009; 2011) and the remaining research came from Canada (Brière et al., 2019), Chile (Cova et al., 2011), Portugal (Matos et al., 2019) and Australia (Sheffield et al., 2006).

Concerning the study population, all studies were conducted with adolescents aged between 12 and 18 years old in school settings, except for two of them, which do not specify where the interventions were provided, namely the study by Beardslee et al. (2013) and Duong et al. (2016). On the other hand, the sample size in the indicated population ranged from 57 young people (Young et al., 2016) to 497 in the study by Makover et al. (2019). In terms of gender, the percentage of girls in the studies ranged from 52% to 72.6%.

In terms of the studies' objectives, all of the selected studies dealt with indicated prevention programmes aimed at preventing depression, although four of them also assessed additional effects on anxiety symptoms (Brière et al., 2019; Cova et al., 2011; Makover et al., 2019; Sheffield et al., 2006), as can be seen in Table 1. No indicated prevention studies

for anxiety were found involving the population aged 12-18 years.

As for the instruments used for the assessment of depressive symptomatology in the different studies, although they were very varied, the most frequently used were: the Centre for Epidemiological Studies Depression Scale, CES-D (Radloff, 1977), a 20-item measure of the frequency of depressive symptoms in the last week, and the Child Depression Inventory, CDI (Kovacs, 1992), a 27-item self-report measure for children and adolescents. In addition, studies also included structured clinical interviews such as The Schedule for Affective Disorders and Schizophrenia for School-Aged, K-SADS-PL (Kaufman et al., 1997) and Longitudinal Interval Follow-up Evaluation, Life (Keller, 1993) for the diagnosis of depressive disorders. With regard to the assessment of anxiety symptoms, the Spence Anxiety Scale, SCAS (Spence, 1998) is used.

As regards the procedures and techniques employed for the indicated prevention of depression, most of the studies, 8 to be more specific, used Cognitive Behavioural Therapy (CBT) techniques, emphasising cognitive restructuring and problem solving, among others; two of them used coping skills training exclusively (Blossom et al., 2020; Makover et al., 2019) and two others applied Interpersonal Psychotherapy (IP) techniques and skills training to adolescents (Young

Table 2. Summary of study findings

Author (year)	Group assignment	Intervention	Depression/anxiety instruments	Follow-up	Results
Arnarson & Craighead. (2009)	Random EG (n = 81) CG (n = 90)	EG (CC): in a school setting (groups of 6-8 members) 14 sessions (twice a week at first and then once a week). Intervention includes: adaptive coping strategies and resilience enhancement; problem solving, cognitive and behavioural techniques. CG: Treatment as usual (TAU). Assessment only and it is allowed to seek treatment elsewhere.	Depression Interview: CAS; Hodges and Craighead, 1990 or A-Life Keller, 1993 or K-SADS-PL Kaufman et al., 1997. CDI; Kovacs, 1992	Pre, post, 6 months	EG significantly lower risk (87.7% lower) of developing a first episode of depressive disorder (DD). $\chi^2 = 4.03, p = .0448; OR = .122$
Arnarson & Craighead. (2011)	Random EG (n = 81) CG (n = 90)	EG (CC): in a school setting (groups of 6-8 members) 14 sessions (twice a week at first and then once a week). Intervention includes: adaptive coping strategies and resilience enhancement; problem solving, cognitive and behavioural techniques. CG: Treatment as usual (TAU). Assessment only and it is allowed to seek treatment elsewhere.	Depression Interview: CAS; Hodges and Craighead, 1990 or A-Life Keller, 1993 or K-SADS-PL Kaufman et al., 1997. CDI; Kovacs, 1992	Pre, post, follow-up 6 and 12 months	EG significantly lower risk (81.8% lower) of developing a first episode of DD after 12 months ($\chi^2 = 5.02, p = .025; HR = .182$). Symptom level in the group with usual treatment was predictive of DD onset. (CDI: estimate = .1170, SE = 0.0441, Wald $\chi^2 = 7.05, p = .0079$)
Beardslee et al. (2013)	Random EG (n = 159) CG (n = 157)	EG (CC): 8 weekly group sessions (groups of 3-10 participants) of 90 minutes + 6 monthly continuation sessions (modification of Clarke et al., 1990, 1995, 2001). The intervention emphasises cognitive restructuring and problem solving. CG: Treatment as usual.	Depression Interview: K-SADS-PL; Kaufman et al., 1997 and LIFE; Keller, 1987 CES-D; Radloff, 1977 CDRS-R; Poznanski et al., 1984	Pre, post 2 months. Post continuation 9, 21 and 33 months (2 years old end of continuation)	The EG had fewer DD onsets at follow-up (33 months) ($\beta = -0.63 (SE = 0.31), t(309) = -2.04, p = .04$) Parental Depression moderates the effects of the intervention.
Blossom et al. (2020)	Random EG (n = 247) CG (n = 233)	EG: HSTP: in a school setting (groups of 6-8), 12 sessions/6 weeks duration + 4 individual booster sessions + parent component (4 sessions during transition years 8 and 9). Intervention includes: developing coping skills, support resources and improving participation; and motivating parents to support transition. CG: brief telephone follow-up by a clinician after assessment	Depression SMFQ; Angold et al., 1995	Screening, 3-, 9-, 12- and 18-months post screening	Improvements in school attachment after the intervention, predicted improvements in self-esteem and at the same time improvements in depressive symptomatology (18 months later). Serial Mediation Model (IC 95%: -0.04, -0.003)

Author (year)	Group assignment	Intervention	Depression/anxiety instruments	Follow-up	Results
Brière et al. (2019)	Random EG ($n = 37$) CG ($n = 37$)	EG: in a school setting (5-9 members), 30 sessions/6 per week. It includes website for online homework. Intervention includes: identification of negative thoughts and cognitive restructuring; enjoyable activities. CG: information brochure	Depression Interview: SCID-IV; First et al., 2002 CES-D; Radloff, 1977 Anxiety SCAS; Spence, 1998	Pre, post, 6 months	The CG is 6 times more likely to develop Severe Major Depression ($OR\ 6.0$, 95% $CI\ 1.1-33.0$, $p < .05$, large effect size). At post the EG improves on depressive symptoms (average effect sizes), but this outcome is not maintained at follow-up. Additional effects on pleasant activities, negative thoughts and interaction with parents. But not for anxiety symptoms.
Cova et al. (2011)	Random EG ($n = 101$) CG ($n = 108$)	EG: in a school setting (15-23 participants) 11 sessions of 1.5h duration. The intervention includes: psychoeducation, coping with problems, communication, management of negative thoughts and emotions. CG: (the characteristics of the control group are unknown)	Depression BDI-II; Beck et al., 1996; Interview: DISC-IV; Bravo et al., 2001) Anxiety: BAI; Beck & Steer, 1993	Pre and post 7 months	There are no differences between EG and CG in depressive or anxiety symptoms after the intervention (7 months later). Nor for the universal modality.
Duong et al. (2016)	Random G PTA ($n = 58$) G IPS ($n = 62$)	PTA (Positive Thoughts and Actions) Group: 12 group sessions of 50 min / once a week. Parental involvement is encouraged (2 home visits adolescent + parents). Intervention includes: training in coping skills, cognitive styles, problem solving and others. ISP (Individual Support Program) Group. Support interview (45 to 90 min) on stressors, student's Depression and anxiety, personal control/ hopelessness, coping strategies and support resources. A brief action plan is established.	Depression MFQ; Costello & Angold, 1988	Pre, post, 6 and 12 months	Participants in the PTA group had a greater improvement in depressive symptomatology over 12 months (medium-low effect sizes). Cohen's $d = .36$ [-0.02, .73]; d (12 months) = .21 [-0.18, .61] There was no difference in the occurrence of DD between groups.
Makover et al. (2019)	Random EG HSTP ($n = 241$) CG ($n = 256$)	EG HSTP: (6-8 members) in a school setting, 12 sessions/6 weeks duration + 4 sessions of individual booster + parent component (4 sessions during transition years 8 and 9). Intervention includes: developing coping skills, support resources and improving participation; and motivating parents to support transition. CG: Telephone follow-up by a clinician after each assessment (advice and feedback only)	Depression MFQ; Angold et al., 1995 Anxiety: HSQ anxiety subscale; Eggert et al. 1994	Pre base (post screening), 3, 9, 12, 18 (months post screening)	The HSTP group progressed less to DD and reduced depressive ($B = -0.30$, $IC = -0.58, -0.02$; $d = 0.23$) and anxiety ($B = -0.07$, $IC = -0.13, -0.01$; $d = 0.25$) symptoms more rapidly than the control condition (low effect sizes on both measures). Baseline anxiety severity, race and gender did not affect symptom improvement.
Matos et al. (2019)	Not Random EG ($n = 70$) CG ($n = 98$)	EG: based on Thoughts and Feelings (Arnarson & Craighead, 2009; 2011) in a school setting of 14 sessions. The intervention includes: relaxation training, cognitive restructuring, coping strategies. CG: (assessments only)	Depression CDI; Kovacs, 1985 Interview: KSADS-PL; Kaufman et al., 1997 and A- LIFE; Keller, 1993. Anxiety: MASC; March et al., 1997	baseline, 6, 12, 18 and 24 months	The EG has 79.3% lower risk of progression to DD (over 24 months) ($\chi^2(1) = 4.261$, $p = .039$; $HR = .207$). No differences found in progression to other (non-emotional) disorders. Paternal Depression at baseline did not influence the results. Baseline anxiety level did not predict the occurrence of disorders either.

Author (year)	Group assignment	Intervention	Depression/anxiety instruments	Follow-up	Results
Sheffield et al. (2006)	Randomised EG1 (n =134) EG2 (n = 621 of which 126 indicated) RG3 (n=112) CG (n = 605 of which 149 reported)	EG1: Indicated Group. Group intervention (The ACE Program) in a school setting, small groups (8-10 members). 8 weekly sessions (90 min). The intervention includes cognitive restructuring, problem solving. EG2: Grupo universal. Intervention in the class group (45-50 min) by teachers. 8 weekly sessions. Intervention includes cognitive restructuring, problem solving. Combined Group. The two interventions are delivered, first the universal one (in class), then the indicated one (only those with indicated scores). Control Group: Only evaluation at the 4 time points	Depression CDI; Kovacs, 1992 y CES-D; Radloff, 1977 Diagnostic interview ADIS-C; Silverman and Albano, 1996; LIFE; Shapiro & Keller, 1979 Anxiety: SCAS; Spence, 1998	Pre, post (3 months, 6 and 12 months)	All adolescents with indicated scores improved in depressive symptomatology, regardless of the group they were in at 12-month follow-up (also additionally in anxiety symptomatology).
Young et al. (2010)	Randomised EG IPT-AST (n=36) CG (n=21)	EG: IPT-AST Intervention: in a school setting, includes 2 individual pre-group sessions (no duration indicated) + 8 group sessions (4-6 participants) (90min) + post-group sessions (no number of sessions or duration indicated). In some groups parents participate (pre-group sessions + mid and post-group session of parents together with adolescents). Intervention includes: Emotional psychoeducation, useful interpersonal skills Control Group: individual support counselling sessions. 30-45 minute sessions.	Depression CES-D; Radloff, 1977 CDRS-R; Poznanski & Mokros 1996 Interview: K-SADS-PL; Kaufman et al., 1997	Pre, post, 6, 12 and 18 months	IPT.AST reduces short-term symptoms of depression CES-D ($t(215) = -2.56, p = .01$); $d = 0.68$, CDRS-R ($t(169) = -3.09, p < .01$; $d = 0.82$) and improves functioning in adolescents. It decreases the likelihood of developing Depression (Fisher's Exact Test, $p < .05$). Benefits do not persist 6 months later.
Young et al. (2016)	Randomised EG IPT-AST (n=95) CG (n=91)	EG: IPT-AST Group intervention: (3-7 members) in a school setting, including 2 individual pre-group sessions (30-50min) + 8 group sessions (45-90min) + 1 individual half session (30-50min). Parents are encouraged to participate in the individual sessions. 4 booster sessions (in 6 months). The intervention includes: Emotional psychoeducation, interpersonal skills. CG: school group counselling sessions without specific instructions (mostly based on the cognitive approach)	Depression CES-D; Radloff, 1977 Interview: K-SADS-PL; Kaufman et al., 1997	Screening, mid- treatment, post and 6 months follow up	Significant improvements in depressive symptoms ($t(181) = 2.03, p = .04, d = 0.31$) and general functioning from onset to 6 months for EG and CG. EG IPT-AST generates significantly greater improvements than in CG with small to medium effect sizes.

Note. EG= Experimental Group; CG= Control Group; M = Mean; SD = Standard Deviation; Pre = Pretest; Post = Posttest. A- LIFE (Longitudinal Interval Follow-up Evaluation, developed for use with adolescents); ADIS-C (Anxiety Disorders Interview Schedule for Children); BAI (Beck Anxiety Inventory); BDI-II (Beck Depression Inventory-Second Edition); CAS (Child Assessment Scale); CDI (Children's Depression Inventory); CDRS-R (Children's Depression Rating Scale-Revised); CES-D (Centre for Epidemiological Studies Depression Scale); DISC-IV (Diagnostic Interview Schedule for Children); HSQ (the High School Questionnaire); KSADS (The Schedule for Affective Disorders and Schizophrenia for School-Aged Children); KSADS-PL (The Schedule for Affective Disorders and Schizophrenia for School-Aged Children, Present and Lifetime Version); LIFE (Longitudinal Interval Follow-up Evaluation); MASC (Multidimensional Anxiety Scale for Children); MFQ (The Mood and Feelings Questionnaire); SCAS (Children Anxiety Scale); SCID-IV (Structured Clinical Interview for DSM-IV Disorder); SMFQ (Short Mood and Feelings Questionnaire).

et al., 2010; 2016) as can be seen in Table 2.

Based on the characteristics of the indicated preventive programmes described in the included studies, all the programmes in the experimental group were implemented in groups of adolescents of varied sizes, ranging, for example, from 3-10 participants in the study by Beardslee et al. (2013) to 15-23 participants in the study by Cova et al. (2011). Similarly, the number of sessions and frequency also varied depending on the studies analysed, although the most common range was between 8 and 14 sessions, conducted once or twice a week. However, Brière et al. (2019) followed a slightly different structure, with 30 sessions and a frequency of six times a week.

All the reviewed papers included follow-ups of outcomes lasting

from six months in the Brière et al. (2019) study to two years post-intervention, as seen in the studies by Beardslee et al. (2013) and Matos et al. (2019). The results from research on depression prevention indicate that CBT-based interventions reduce the risk of progression to a disorder when compared to experimental conditions based on usual treatments (assessment only, and seeking treatment is allowed) (Amarson and Craighead, 2009; 2011; Beardslee et al., 2013) or to a condition based on the delivery of an information brochure (Brière et al., 2019) or to a control group based only on follow-up assessments (Matos et al. (2019). Nonetheless, in the study by Duong et al. (2019), no differences in the progression of depressive symptomatology towards a disorder were found between those who received

CBT-based group treatment and those who participated in an individual support programme consisting of a single support interview, although a reduction in symptomatology could be observed in the experimental group. The study by Cova et al. (2011) found no differences in depressive symptomatology between the experimental group and the control group. In addition to the research results concerning the progression of depressive symptomatology to depressive disorder, two studies analysed the role of parental depression in this progression and it was found that in the research by Beardslee et al. (2013), parental depression moderates the effects of the cognitive behavioural intervention, while in the research by Matos et al. (2019) parental depression at baseline does not influence the results.

On the other hand, in terms of research studies using coping skills training for the prevention of depression, it can be observed that the paper by Blossom et al. (2020) does not report direct effects of the intervention on depressive symptomatology, but that this is mediated through improvements in school attachment and, subsequently, in self-esteem. However, Makover et al. (2019) did find improvements in terms of reduced progression towards depressive disorders and depressive symptomatology. Research by Young et al. (2016, 2010), who implemented indicated prevention programmes based on Interpersonal Therapy, demonstrated that these interventions reduce depressive symptoms and the likelihood of developing depression, although the effects do not persist after a six-month follow-up.

Finally, regarding the quality of the analysed research and the assessment of the risk of bias, we found that most of them were rated as high quality due to low risk of bias in three or more of the five evaluated domains. In this regard, the most commonly detected bias risk among all the research was the performance bias, related to the blinding of participants and staff regarding conditions. Specifically, three of the studies (Cova et al., 2011; Makover et al., 2019; Matos et al., 2019) presented unclear or even high risk of bias in three or more of the evaluated domains.

Discussion

The results obtained and analysed in the different research studies have partially achieved the objective of the present study. Through a systematic review, we were able to identify the effects of indicated preventive interventions for depression in adolescents aged between 12 and 18 years old. This analysis encompassed the methodological characteristics and the psychological techniques employed. However, no indicated preventive interventions for anxiety were found within this population.

Solmi et al. (2022) have emphasized that the promotion of good health, prevention and early intervention, prior to the onset of mental disorders, can enhance mental health outcomes. Considering the high prevalence of emotional disorders in this population (Canals-Sans et al., 2018, 2019; Polanczyk et al., 2015) along with the increases attributed to the Covid-19 pandemic and its aftermath, it becomes justifiable to focus attention on research related to preventive programs for high-risk youth. Despite this rationale, upon analysing the results, although a slight increase in interest in the study of indicated preventive interventions was observed, with four studies conducted between 2019 and 2020, there are still limited approaches to exploring indicated prevention interventions for emotional problems in adolescents with incipient or subclinical symptomatology. Additionally, the pandemic situation experienced in 2020 likely slowed down the momentum for conducting research in this area.

Along the same lines, if one also differentiates between research

on the indicated prevention of depression and of anxiety in this population, it can be observed that all the research is about programmes designed for the prevention of incipient symptoms of depression. This contrasts with the prevalence data available, which suggests that anxiety disorders can be up to three times more prevalent than depressive disorders (Polanczyk et al., 2015). In other words, while anxiety problems are more frequent, the effectiveness of depression prevention programmes is mostly studied. This is in line with other studies where the majority of preventive research for anxiety is directed at the general population, that is, they are investigations of universal prevention (Stockings et al., 2016). One possible explanation, following the contributions of Lawrence et al. (2017), may be the methodological challenges in assessing symptoms and excluding cases that already meet diagnostic criteria, i.e., the clinical population.

Likewise, despite the evidence concerning the strong comorbidity between both types of problems (Canals et al., 2018; 2019), this aspect has also not been the main focus. Only 4 studies have focused on the effect of preventive interventions for depression on both symptomatology, namely, that of Brière et al. (2019), Cova et al. (2011), Makover et al. (2019) and Sheffield et al. (2006); and in an additional study by Matos et al. (2019), the mediating effects of anxiety are examined. In any case, as already indicated by Colozzi et al. (2020), Dvorsky et al. (2014) or Rocha et al. (2015), young population does not always receive the attention they deserve in terms of mental health, nor in terms of prevention, as is the case here.

Regarding the characteristics of the indicated preventive interventions, CBT interventions are the most frequently implemented. These therapies consider that cognitions and interpretations of present events are assessed from the perspective of people's schemas, based on their own experience, attitudes and assumptions (Beck et al., 1979). This model of therapy has been proven effective for the treatment of depression in the clinical population (Reinecke et al., 1998; Stark et al., 2011). Based on the results of this research, it can be suggested that it yields positive outcomes for the prevention of the onset of depressive disorders in the indicated adolescent population. Evidence was found regarding the maintenance of results at follow-ups up to 24 months after the interventions, although effect sizes remain moderate, which is in line with previous meta-analytic studies (Stockings et al., 2016). Furthermore, it should be noted that the results of such research papers should be regarded cautiously, as in some cases the quality of the research could be questionable due to the potential risk of bias. For instance, the study by Matos et al. (2019) showed a 79.3% reduction in the progression towards depressive disorders up to 24 months after the intervention, while in the case of the study by Cova et al. (2011), no significant differences were found between the experimental group of the indicated population and the control group.

Furthermore, considering the results, it could be said that those programmes based on CBT and including several different types of techniques and procedures (such as to identify negative thoughts, cognitive restructuring, and problem solving, combined with engaging in enjoyable activities for the teenager and enhancing adaptive coping strategies) could be more effective than other indicated preventive programmes based only on coping skills competencies, to increase social support from peers and parents, or improvement in engagement in positive social activities; or more effective than another programmes based on Interpersonal Psychotherapy (psychoeducation about the symptoms of depression and improvement of interpersonal relationships) where, for example, the preventive results were only maintained for 6 months (Young et al., 2010, 2016). Findings suggest CBT seem to be superior to coping skills and ITP, but the limited number of studies rises some caution until a larger number of publications are published.

This study is not without limitations. On the one hand, one of them could be found in the databases used and in the possibility that research published in other electronic resources have been unintentionally omitted. On the other hand, the characteristics of the data analysis design included in the different articles in this review have prevented us from carrying out a meta-analytical study to accompany the conclusions obtained.

As a future lines of research, it would be interesting for new studies to incorporate continuation or booster sessions of the contents worked on in their preventive programmes. Only four of the studies analysed include these sessions in the design of their programmes; one of interpersonal psychotherapy, which, however, does not seem to help to maintain the results at six-month follow-ups (Young et al., 2010); the two using only coping skills training, which in these cases did favour the maintenance of results at 18 and 24 months (Blossom et al., 2020; Makover et al., 2019) and only one CBT which also manages to consolidate positive results up to 2 years after the maintenance sessions (Beardslee et al., 2013). Therefore, new approaches in this direction are needed in order to conclude the need for these sessions within the design of preventive programmes.

Another issue to be considered for future approaches to the study of this type of indicated prevention programmes for depression is assessing the side effects on anxiety, as studied in four of the research reviewed. So far it is not possible to conclude whether or not these types of preventive interventions for depression produce additional side effects on anxiety symptoms. While Brère et al. (2019) and Cova et al. (2011), based on CBT, did not find positive results, Makover et al. (2019), based on coping skills training, obtained secondary results on the reduction of anxiety.

Meanwhile, in a similar vein, it would be interesting to consider the high comorbidity between the two disorders and to address the indicated prevention of these problems from a transdiagnostic approach. This approach focuses on emotion regulation to reduce the emotional symptomatology shared by anxiety and depression problems (Bullis et al., 2019; Ehrenreich-May et al., 2018; Ehrenreich-May & Kennedy, 2021; Norton et al., 2021; Sandín et al., 2012). So far, they have demonstrated efficacy, with greater, longer-lasting effects (Cano-Vindel et al., 2021; Roberge et al., 2022) and are more cost-effective compared to sequential interventions for both disorders (Barlow et al., 2017, 2020; Ehrenreich-May et al., 2018). Furthermore, it has also been implemented in the selective prevention of emotional disorders (Vivas-Fernandez et al., 2023) and could be taken into consideration in new research proposals for the study of indicated prevention.

Conclusions

This systematic review has revealed that the indicated preventive interventions can yield positive results in reducing depressive symptoms and preventing progression to depressive disorders. Based on the analysed studies, interventions focused on the application of different techniques of CBT seem to achieve good and lasting results. Nevertheless, further work is required in this area of investigation to develop preventive interventions that are as effective and efficient as possible, as well as to determine if CBT yields better results than other approaches based on coping skills training or Interpersonal Psychotherapy.

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Author contributions

The original idea for the review was proposed by LJGL and DJV. DJV, LJGL and MV conducted the systematic review, including the literature search and analysis. DJV wrote the draft of the paper. DJV and MV participated in analysis of the study. LJGL added clinical and critical insight to the overall paper structure. All authors participated in the overall study, discussion of the results, and approved the final manuscript.

Conflicts of interest

The authors declare that they have no conflict of interest.

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