

# Comparative efficacy and acceptability of bibliotherapy for depression and anxiety disorders in children and adolescents: a meta-analysis of randomized clinical trials

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**Background:** Depression and anxiety are the most common mental disorders in children and adolescents. Bibliotherapy is a treatment using written materials for mental health problems. Its main advantages are ease of use, low cost, low staffing demands, and greater privacy. Yet few meta-analyses have focused on the effect of bibliotherapy on depression and anxiety disorders in children and adolescents.

**Methods:** We included randomized controlled trials comparing bibliotherapy with control conditions for depression and anxiety in children and adolescents (aged  $\leq 18$  years). Five electronic databases (PubMed, Embase, Cochrane, Web of Science, and PsycINFO) were searched from inception to January 2017. Efficacy was defined as mean change scores in depression and anxiety symptoms. Acceptability was defined as the proportion of participants who discontinued the treatment. Random effects model was used. An intention-to-treat analysis was conducted.

**Results:** Eight studies with 979 participants were selected. At posttreatment, bibliotherapy was significantly more effective than the control conditions in reducing the symptoms of depression or anxiety (standardized mean difference,  $-0.52$ ; 95% confidence interval [CI],  $-0.89$  to  $-0.15$ ). Bibliotherapy did not have statistically significantly more all-cause discontinuations than controls (risk ratios, 1.66; 95% CI, 0.93 to 2.95). We also performed subgroup analyses for efficacy outcomes in different categories (types of disorder, mean age, control conditions, and parental involvement) of studies and found that bibliotherapy has been more effective in depressive adolescents.

**Limitations:** Limited studies were eligible in this review and hence there was potential publication bias.

**Conclusion:** According to the findings in this review, bibliotherapy may be more beneficial in treating depression in adolescents, but shows less robust effects for anxiety in children. Further well-defined clinical studies should be performed to confirm these outcomes.

**Keywords:** mental disorders, bibliotherapy, young, meta-analysis, self help, psychotherapy

## Introduction

Psychological problems represent a challenge to modern societies. Up to 20% of children and adolescents are affected by mental disorders each year.<sup>1</sup> The prevalence of depression was found to be  $\sim 2\%$  in children (6–12 years) and  $2\%–8\%$  in adolescents (13–18 years).<sup>2,3</sup> The rates rise steeply in adolescence, with the peak morbidity around puberty.<sup>4</sup> The prevalence of anxiety disorders was found to be  $3\%–5\%$  in children (6–12 years) and  $10\%–19\%$  in adolescents (13–18 years), and it tends to increase in

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this population over time.<sup>5,6</sup> Therefore, the depression and anxiety disorders are the two most common psychological disorders in children and adolescents and often co-occur.<sup>7,8</sup> Depression and anxiety disorders in children and adolescents are associated with poor academic performance, poor vocational attainment and achievement, difficulties with interpersonal relationships, substance abuse, attempted and completed suicide, substantial burdens, and increased risk for other mental disorders,<sup>3,9–11</sup> and they often tend to persist into adulthood.<sup>12,13</sup>

Psychotherapy is commonly used to treat depression and anxiety in children and adolescents.<sup>14</sup> Currently, several clinical guidelines recommend that psychological treatments are still considered the mainstay of treatments for depression and anxiety disorders in children and adolescents.<sup>10,15</sup> Cognitive behavioral therapy (CBT) is generally regarded as the treatment of choice for depression and anxiety in children and adolescents.<sup>11,16</sup> Despite strong evidence base for CBT, the availability or accessibility of the therapy is low,<sup>17</sup> especially in low- and middle-income countries. This may be because of lack of identification, stigma, or difficulty in accessing services.<sup>18,19</sup> These limitations have led to an increased focus on self-help approaches to widen the access to mental health interventions. Self-help interventions depend on the individual bringing about self-change through the use of health technologies including written materials (books, booklets, and leaflets), CD-ROMs, DVDs, and websites.<sup>20</sup> A number of reviews demonstrate that self-help interventions are effective for depression and anxiety in adults.<sup>21,22</sup> However, the potential negative effect could be that self-help treatments could lead to a delayed help-seeking, which could result in further deterioration of symptoms, if the initial self-help treatment should be not sufficient.<sup>23</sup>

Bibliotherapy based on psychological treatments of proven efficacy may provide a more accessible source of psychological help.<sup>24,25</sup> It uses a self-help book to guide and encourage the patients to challenge unhelpful thoughts and behaviors, resulting in improved self-management, rather than just providing information. Bibliotherapy reduces both the impact of stigma (as it is possible to access it without the knowledge of others) and the time burden associated with visiting a clinic. In addition, the main advantages are its ease of use, low cost, low staffing demands, and greater privacy.<sup>26,27</sup>

Bibliotherapy has been found to be efficacious by several systematic reviews or meta-analyses in the treatment of emotional, physical, and mental health problems among adults.<sup>22,28–32</sup> Gould and Clum<sup>32</sup> reviewed self-help treatments and reported an effect size of 0.74 for three depression bibliotherapy studies. Cuijpers<sup>31</sup> reported an effect size of 0.83 in

his meta-analysis of seven depression bibliotherapy studies. Newman et al<sup>30</sup> reviewed bibliotherapy for anxiety disorders and concluded that bibliotherapy demonstrated efficacy for the greatest variety of anxiety diagnoses.

Bibliotherapy incorporates the foundational principles of CBT and provides exercises designed to help the readers overcome negative feelings. CBT is most commonly provided face-to-face by a therapist and has demonstrated efficacy on children and adolescents with depression and (or) anxiety problems.<sup>11,16</sup> The UK National Institute for Clinical Excellence has recommended bibliotherapy as a treatment for unrelenting subthreshold depressive symptoms or mild-to-moderate depression.<sup>59</sup> Rapee et al<sup>33</sup> conducted the first study evaluating bibliotherapy with anxiety-disordered children and demonstrated the bibliotherapy benefit for anxiety in children. All this inferred that bibliotherapy may be effective in children and adolescents with depression and (or) anxiety problems. Nonetheless, few meta-analyses have focused on the effect of bibliotherapy alone on depression and anxiety disorders in children and adolescents. Hence, we conducted a conventional meta-analysis to compare the effectiveness and acceptability of bibliotherapy alone for depression and anxiety disorders in children and adolescents.

## Methods

### Data sources and searches

This meta-analysis is reported using PRISMA guidelines. Five relevant electronic databases (PubMed, Embase, Cochrane, Web of Science, and PsycINFO) were searched until January 2017. No restrictions were placed on language, publication year, or publication type. We searched these databases using the standard search strategy with text words and subject headings. Table S1 details the systematic search terms and strategy. In addition, [ClinicalTrials.gov](http://ClinicalTrials.gov) and the World Health Organization's trial portal were reviewed. Additional randomized controlled trials (RCTs) were obtained by scanning the reference lists of initial search results and relevant review articles. Authors were contacted to supplement incomplete information as needed.

### Study selection

RCTs that compared bibliotherapy alone with control conditions in the treatment of children and adolescents with depression and (or) anxiety were selected for inclusion. We also excluded studies in which the bibliotherapy is used as an adjunct to psychotherapy. Bibliotherapy was defined as a treatment 1) that used a self-help book to guide and encourage the patients to make changes, resulting in improved self-management, and 2) the patients worked

through these procedures with or without the help of their parents, while 3) the therapist gave support in working through the procedures with limited contact, 4) or without therapist support. Limited contacts could be delivered during brief personal contacts, through telephone or email. In terms of control conditions, wait-list control (WL), non-treatment control (NT), treatment as usual (TAU), and psychological placebo (PBO) were included. Two independent reviewers (SY and YQZ) selected studies for inclusion, with divergences resolved by consensus. They scanned citations at the title/abstract level and then retrieved a short list of potentially relevant studies in full text. Any disagreements were solved through discussion with another member of the reviewing team (XYZ). Potentially relevant articles were reviewed in full to ensure that they satisfied all of the inclusion criteria, as follows: 1) RCTs, including crossover and cluster RCTs; 2) children or adolescent patients (aged 6–18 years when initially enrolled in the primary study); 3) participants selected either had a diagnosis of depression or anxiety or exceeded a predefined threshold according to the original authors' definition of depressive or anxiety symptoms; and 4) comparison of bibliotherapy against a control condition, including WL, PBO, TAU, or no treatment.

To reduce inconsistency among trials, we excluded studies that focused on maintenance treatment or relapse prevention or in which bibliotherapy was not specifically aimed to treat depression or anxiety. Studies were deemed eligible if they included patients with comorbid psychiatric disorders.

## Outcome measures

The outcome of efficacy was the mean change scores in depressive and anxiety symptoms from baseline to posttreatment in related rating scales. Given that youth depression and anxiety symptoms highly correlate<sup>8</sup> and can be treated by combined interventions, we examined the overall effects of all interventions on symptoms of anxiety and depression in a common analysis.<sup>34</sup> We also examined the overall effects of all interventions on symptoms of anxiety and depression in a common analysis. When depressive or anxiety symptoms were measured in a trial using more than one scale, we extracted data for the scale with the highest rank in a predefined hierarchy, based on psychometric properties, appropriateness for use in children and adolescents, and consistency of use across trials.<sup>35,36</sup>

In addition, acceptability of the treatment was defined as all-cause discontinuation, as a proxy measured by the proportion of patients who discontinued treatment for any reason during the acute-phase treatment.

## Data extraction and quality assessment

Two independent researchers (SY and YZ) extracted the data and assessed the risk of bias. The researchers independently extracted the key study parameters using a standardized data abstraction form, which included study characteristics (eg, first author, publication year, journal, country, institution, sponsor), patient characteristics (eg, diagnostic criteria for depression or anxiety, the number of patients), intervention details (eg, treatment sessions, duration of treatment), and outcome measures (posttreatment outcomes). The researchers also assessed the risk of bias in trials using the risk of bias tool from the Cochrane Handbook.<sup>37</sup> Any disagreements were resolved by a third researcher (XZ).

## Statistical analysis

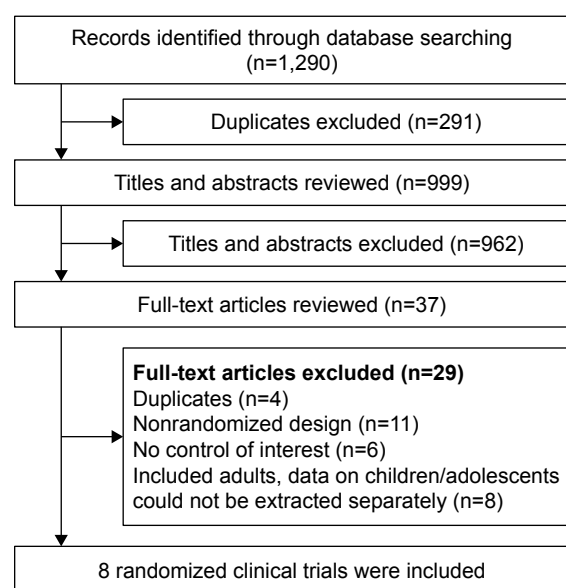
We performed a pairwise meta-analysis using Review Manager, version 5.3 (Cochrane Information Management System). Because of the different clinical conditions and settings represented in the studies, we expected that data sets on efficacy would be heterogeneous. We calculated the pooled estimates of standardized mean difference (SMD) in continuous measure and risk ratios (RRs) in dichotomous measure outcomes, as well as 95% confidence intervals (CIs). Considering the underlying heterogeneity and our assumption that the true treatment effect may vary among studies, we used DerSimonian and Laird<sup>38</sup> random-effects model for our meta-analyses.<sup>39</sup> Heterogeneity was evaluated with the  $Q$  statistic and the  $I^2$  statistic, a transformation of  $Q$  that estimates the percentage of the variation in effect sizes due to heterogeneity.<sup>37</sup> Publication bias was examined with the funnel plot method and the Egger regression asymmetry test.<sup>40</sup>

We performed subgroup analyses to test for significant differences between efficacy outcomes in different categories of studies. Subgroups were defined based on types of disorder (depression, anxiety), mean age (<13 years, ≥13 years), control conditions (WL, PBO, NT), and parental involvement (yes, no). Moreover, we performed sensitivity analyses, omitting studies that involved small sample sizes (≤50 patients). Also, we used the intention-to-treat population for analyses.

## Results

### Study selection and characteristics

A total of 1,290 records were identified through the initial database search. Table S2 shows the results of the electronic database search. After excluding 291 duplicate records, we retrieved 999 potentially relevant studies. Of these, 832 articles were excluded because of irrelevant titles and abstracts. Then, 37 studies were read independently by two



**Figure 1** Flowchart of study selection.

reviewers (SY and YZ). We excluded 29 studies for the following reasons: duplicate (n=4), nonrandomized design (n=11), and no control of interest (n=6), and we included studies on adults but data on children/adolescents could not be extracted separately (n=8). Finally, eight studies<sup>33,41–47</sup> including 979 patients met all our inclusion criteria and were included in this meta-analysis. Figure 1 presents a flowchart describing the inclusion process.

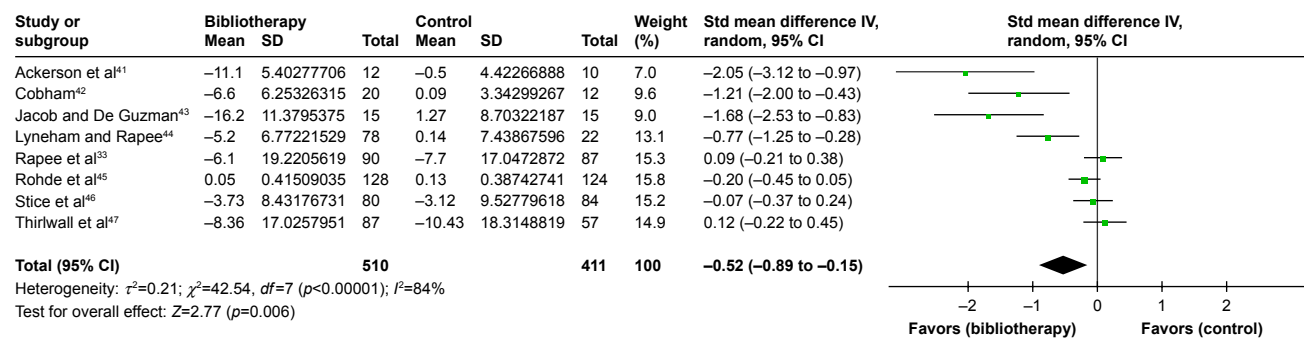
Potential participants were invited for initial assessment which consisted of Hamilton Rating Scale for Depression, Children's Depression Inventory, Beck Depression Inventory, Center for Epidemiologic Study Depression Scale, or Anxiety Disorders Interview Schedule for *DSM-IV*, Parent and Child Versions. Appropriate participants meeting inclusion criteria were assigned on a random basis to either bibliotherapy or controls. Parents of participants allocated to bibliotherapy were informed that their children were to conduct treatment using self-help materials. During the bibliotherapy intervention phase, weekly telephone calls or email was made to participants by the experimenter. During these contacts, information was collected on the number of pages read and the number of exercises completed in the provided workbook. Counseling was not provided during these brief contacts. All the participants were assessed at pretreatment and posttreatment.

Table 1 summarizes the characteristics and outcomes of each trial. The RCTs were published between 1998 and 2016. The sample sizes ranged from 30 to 252 patients, with a mean sample size of 101 per trial, the mean age of participants was 12.81 years (range 6–18 years), and more than half of the participants (58.98%) were girls. The mean number of sessions was 8.71 (range, 6–12 sessions). The total treatment duration averaged 8.25 weeks (range, 4–12 weeks). Four studies were directed at treating depression and four at anxiety disorders. Half of the studies (n=4) included only participants

**Table 1** Characteristics of included studies

| Study                             | Conditions | Inclusion                         | Age (range, years) | Interventions (N)         | Treatment duration (weeks) | Number of sessions | Parental involvement | Efficacy at posttreatment, SMD (95% CI) | Acceptability at posttreatment, RR (95% CI) |
|-----------------------------------|------------|-----------------------------------|--------------------|---------------------------|----------------------------|--------------------|----------------------|---|---|
| Ackerson et al <sup>41</sup>      | Depression | CDI $\geq 10$ ,<br>HAMD $\geq 10$ | 7–12 grades        | BIBLI =15 vs<br>WL =15    | 4                          | NA                 | No                   | BIBLI vs WL<br>–2.05 (–3.12, –0.97)     | BIBLI vs WL<br>0.60 (0.17, 2.07)            |
| Jacob and De Guzman <sup>43</sup> | Depression | BDI-II >14                        | 13–16              | BIBLI =15 vs<br>NT =15    | 6                          | 8                  | No                   | BIBLI vs NT<br>–1.68 (–2.53, –0.83)     | NA  |
| Rohde et al <sup>45</sup>         | Depression | CES-D $\geq 20$                   | 13–19              | BIBLI =128 vs<br>PBO =124 | 6                          | 6                  | No                   | BIBLI vs PBO<br>–0.20 (–0.45, 0.05)     | BIBLI vs PBO<br>0.73 (0.26, 2.03)           |
| Stice et al <sup>46</sup>         | Depression | CES-D $\geq 20$                   | 14–19              | BIBLI =80 vs<br>PBO =84   | 6                          | 6                  | No                   | BIBLI vs PBO<br>–0.07 (–0.37, 0.24)     | BIBLI vs PBO<br>4.20 (0.48, 36.78)          |
| Cobham <sup>42</sup>              | Anxiety    | ADIS-IV-C/P                       | 7–14               | BIBLI =20 vs<br>WL =12    | 12                         | 12                 | Yes                  | BIBLI vs WL<br>–1.21 (–2.00, –0.43)     | NA  |
| Lyneham and Rapee <sup>44</sup>   | Anxiety    | ADIS-IV-C/P                       | 7–14               | BIBLI =78 vs<br>WL =22    | 12                         | 12                 | No                   | BIBLI vs WL<br>–0.77 (–1.25, 0.28)      | BIBLI vs WL<br>2.54 (0.34, 18.97)           |
| Rapee et al <sup>33</sup>         | Anxiety    | ADIS-IV-C/P                       | 6–12               | BIBLI =90 vs<br>WL =87    | 12                         | 9                  | Yes                  | BIBLI vs WL<br>0.09 (–0.21, 0.38)       | BIBLI vs WL<br>2.34 (1.28, 4.28)            |
| Thirlwall et al <sup>47</sup>     | Anxiety    | ADIS-IV-C/P                       | 7–12               | BIBLI =125 vs<br>WL =69   | 8                          | 8                  | Yes                  | BIBLI vs WL<br>0.12 (–0.88, 0.17)       | BIBLI vs WL<br>2.67 (1.17, 6.11)            |

**Abbreviations:** ADIS-IV-C/P, Anxiety Disorders Interview Schedule for *DSM-IV*, Parent and Child Versions; BDI, Beck Depression Inventory; BIBLI, bibliotherapy; CDI, Children's Depression Inventory; CES-D, Center for Epidemiologic Study Depression Scale; HAMD, Hamilton Rating Scale for Depression; NA, not applicable; NT, no-treatment control; PBO, psychological placebo; RR, risk ratio; SMD, standardized mean difference; WL, waitlist.



**Figure 2** Comparison of bibliotherapy and control conditions for efficacy: change scores in related rating scales.

**Abbreviation:** CI, confidence interval.

with a diagnosis, confirmed by an established diagnostic interview. Two studies were aimed at children (<13 years), four studies at adolescents ( $\geq 13$  years), and two studies had a mixed sample. Four studies included a follow-up assessment. In Rapee et al<sup>33</sup> and Cobham<sup>42</sup> studies, participants assigned to bibliotherapy condition were reassessed at 3- and 6-month follow-up. However, only two studies were reassessed at 6-, 12-, and 24-month follow-up in both the bibliotherapy and the control groups.<sup>45,46</sup> Enough data are not available to draw a reliable conclusion. Hence, we were not able to examine the long-term effects of the treatments.

## Quality assessment and publication bias

The risk of bias was rated as low concerning randomized generation of the allocation sequence in four RCTs, allocation concealment in one RCT, masking of outcome assessors to treatment allocation in five RCTs, incomplete outcome data in seven RCTs, and selective reporting in eight RCTs (Figure S1). For the efficacy outcome, funnel plot asymmetry was seen, showing a potential publication bias that was likely to be caused by the overrepresentation of positive trials (Figure S2), and the Egger test indicated publication bias ( $t=-4.89$ ,  $p=0.0014$ ).

## Efficacy outcomes

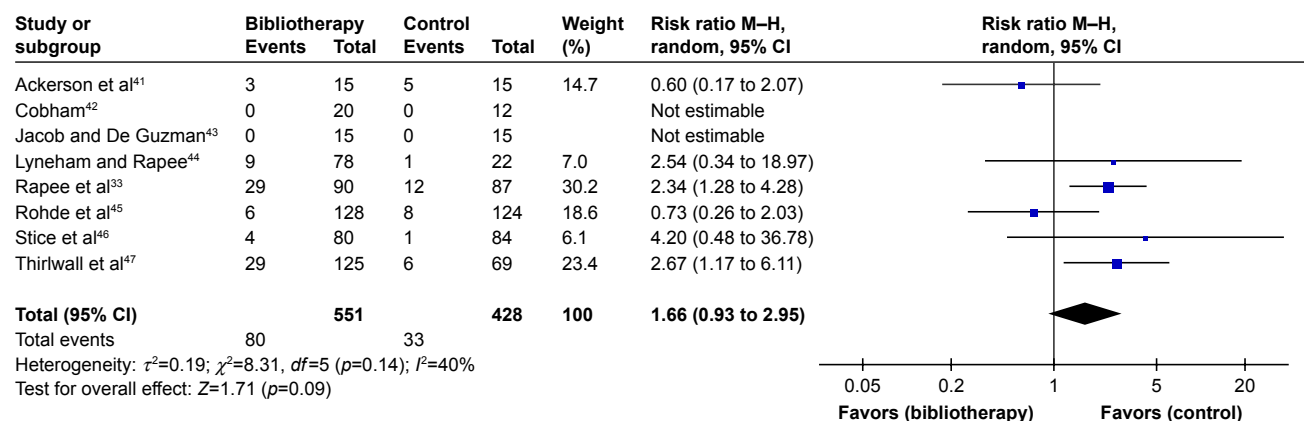
We compared the efficacy of bibliotherapy with control groups in eight comparisons from eight trials. Results of the primary efficacy outcomes are shown in Figure 2. The overall pooled effect size indicated a significant advantage over bibliotherapy at posttreatment, with an SMD of  $-0.52$  (95% CI,  $-0.89$  to  $-0.15$ ;  $p=0.006$ ). Heterogeneity in effect sizes was high ( $I^2=84\%$ ,  $p<0.00001$ ).

## Acceptability outcomes

In terms of the acceptability outcomes, there was no statistical difference between the bibliotherapy intervention group and control group at posttreatment (Figure 3). The RR value was 1.66 (95% CI, 0.93 to 2.95;  $p=0.09$ ) with moderate heterogeneity ( $I^2=40\%$ ,  $p=0.14$ ).

## Subgroup analysis

We examined whether there were significant differences between bibliotherapy and controls in specific subgroups of studies. The results of these subgroup analyses are presented in Figure 4.



**Figure 3** Comparison of bibliotherapy and control conditions for acceptability: all-cause discontinuation from the trials for any reason.

**Abbreviation:** CI, confidence interval.



## Types of disorders

We failed to find a significant difference between studies including different disorder conditions ( $p=0.31$ ). Bibliotherapy was significantly more beneficial than control in studies including depressive patients (SMD = -0.78, 95% CI -1.42 to -0.14;  $p=0.02$ ) and showed less robust effects in studies including anxiety patients (SMD = -0.36, 95% CI -0.88 to 0.17;  $p=0.18$ ).

## Mean age, control conditions, and parental involvement

We found that the effect size was significantly associated with the control conditions ( $p<0.01$ ). More specifically, we

found that bibliotherapy was more efficacious than WL (SMD = -0.61, 95% CI -1.21 to -0.02;  $p=0.04$ ). Furthermore, bibliotherapy was significantly more beneficial than control in studies including adolescent patients (SMD = -0.78, 95% CI -1.42 to -0.14;  $p=0.02$ ) and showed less robust effects in studies including children (SMD = -0.36, 95% CI -0.88 to 0.17;  $p=0.18$ ). In studies with parental involvement, bibliotherapy failed to show a higher effect size than control conditions (SMD = -0.20, 95% CI -0.74 to 0.34;  $p=0.47$ ). However, in studies without parental involvement, bibliotherapy was significantly more beneficial than control conditions (SMD = -0.76, 95% CI -1.29 to -0.15;  $p=0.005$ ).

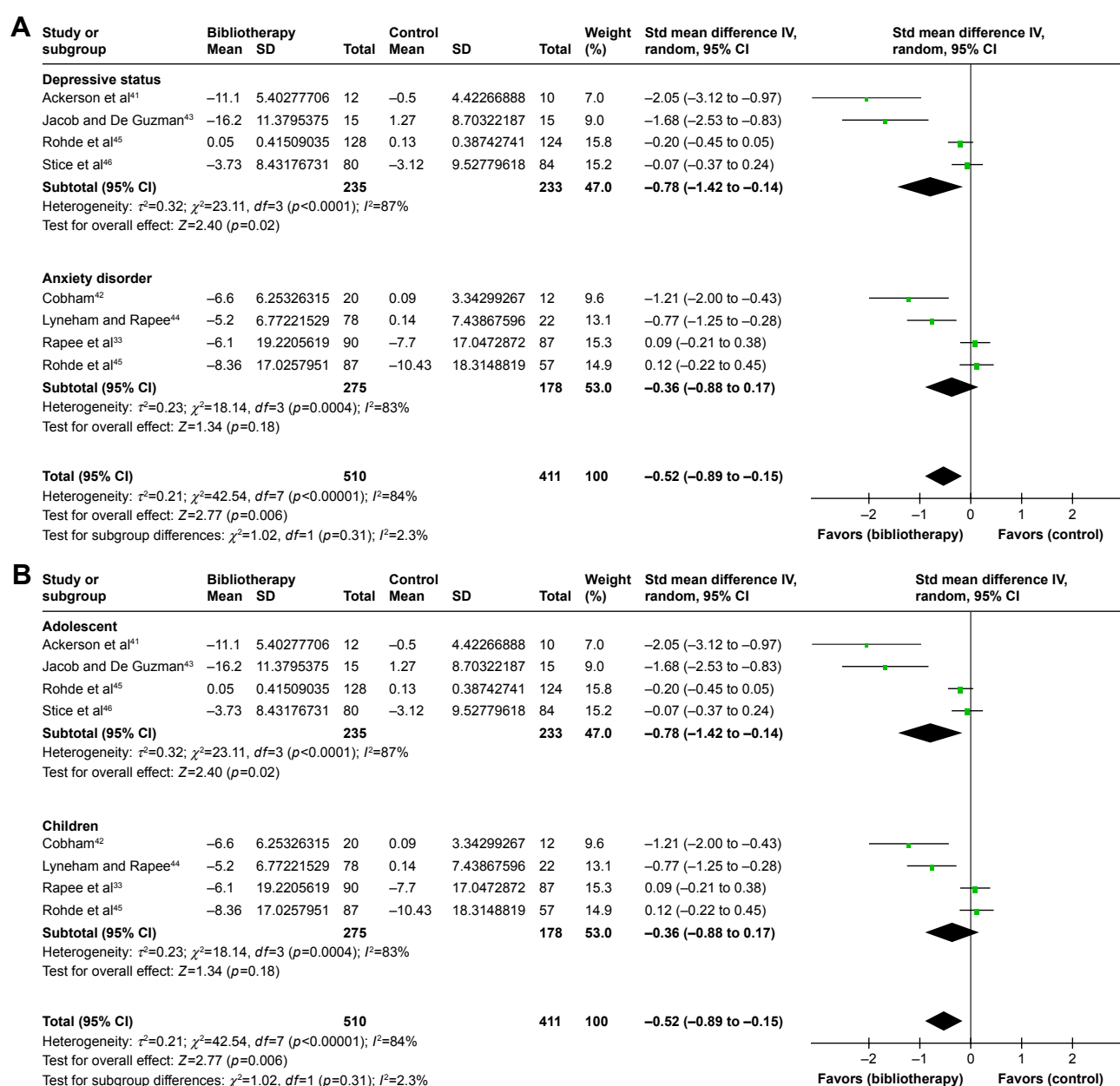
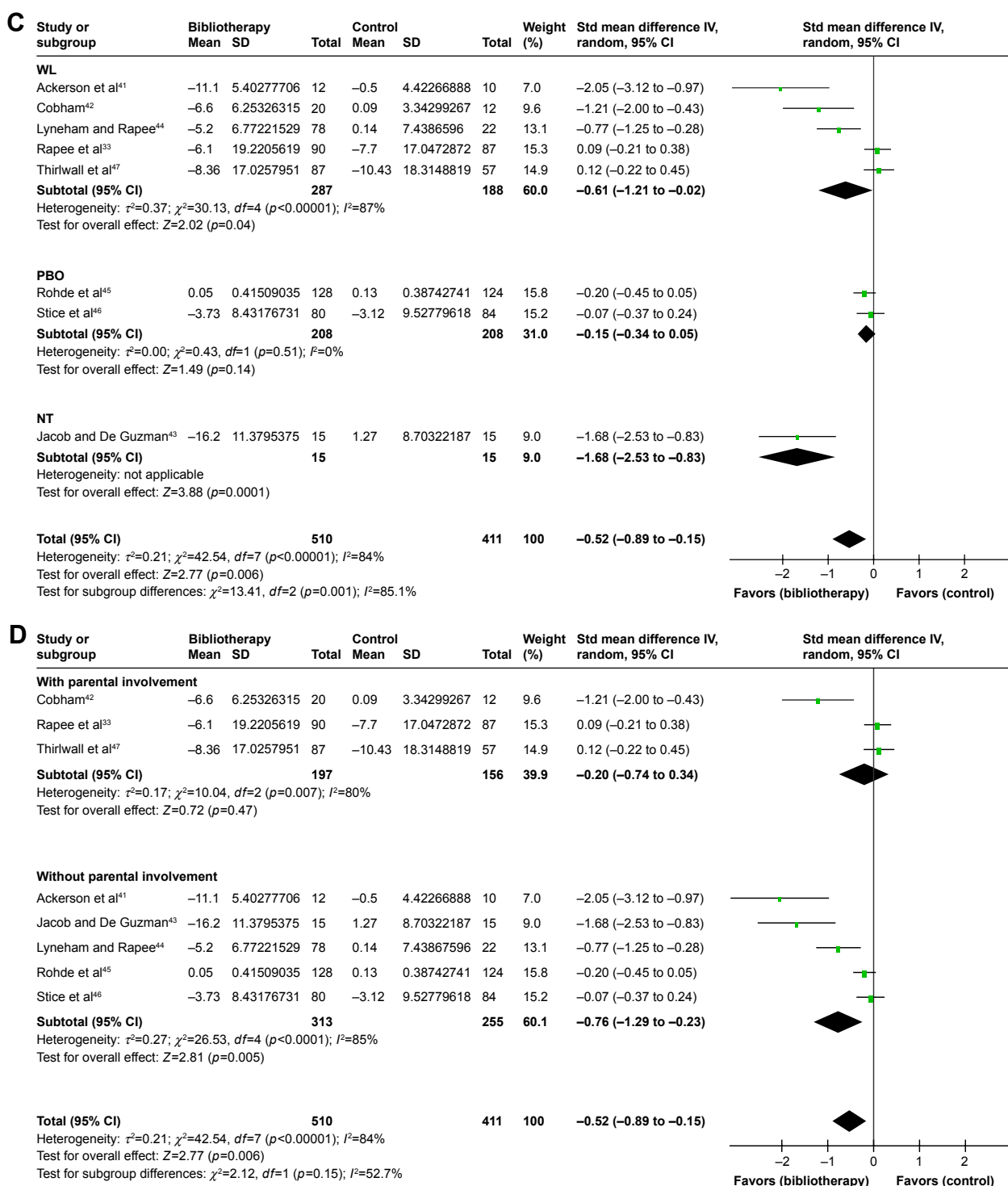


Figure 4 (Continued)



**Figure 4** Subgroup analyses of efficacy. (A) Forest plot of SMD for change scores in rating scales for type of disorder. (B) Forest plot of SMD for change scores in rating scales for age. (C) Forest plot of SMD for change scores in rating scales for control conditions. (D) Forest plot of SMD for change scores in depression rating scales for parental involvement.

**Abbreviations:** CI, confidence interval; NT, no-treatment control; PBO, psychological placebo; SMD, standardized mean difference; WL, waitlist.

## Sensitivity analysis

We performed a sensitivity analysis by excluding the studies that involved small sample sizes ( $\leq 50$  patients). This led to a substantive change in the effect size (SMD = -0.13, 95% CI -0.36 to 0.11;  $p=0.30$ ; Figure S3).

## Discussion

Our meta-analysis found that, compared with control conditions, bibliotherapy is an effective treatment for reducing depressive symptoms in adolescents. For acceptability outcomes, we found that bibliotherapy had no statistical more

all-cause discontinuation than controls. Since the sensitivity analysis suggested that the efficacy outcomes were not robust and there was potential bias due to publication, there is a need for further research. This study expanded our previous work<sup>16,36,48</sup> and also assessed bibliotherapy for children with anxiety because of the differences in inclusion and exclusion criteria. We found that bibliotherapy showed less robust effects for children with anxiety.

For anxiety in children, bibliotherapy seemed better than control, but not significantly different from zero. The probable reason is that bibliotherapy resulted in greater discontinuation from participation than did control conditions. Two reasons were commonly given by patients who did not complete the program. First, some participants stopped when children resisted being involved or learning the skills was difficult. Second, some participants did not start the program because of difficulty finding “time.” These experiences were consistent with the findings from bibliotherapy studies of anxiety disorders in other populations, where predictors of positive treatment outcome have included participants’ motivation for treatment, compliance with program materials, and less complex/severe initial presentations.<sup>27,30,44</sup> This finding highlights an important caveat to the use of bibliotherapy. High rates of attrition have long been noted as a difficulty with self-help programs. Researchers have suggested that minimal phone contact with a therapist is vital in encouraging higher rates of program completion.<sup>30</sup> Children live under the care and guidance of an adult, making them especially amenable to bibliotherapy led by an adult, most commonly a parent.<sup>33</sup> The potential advantages of targeting parents in bibliotherapy are that 1) children usually have established trust and rapport with their parents and 2) parents are more broadly present and available in their children’s life. In this situation, bibliotherapy programs for children can make use of a possible motivating factor that exists in the children’s daily environment by using the parents’ desire for their children to change.<sup>33,49</sup> A family-focused intervention may be optimal in addressing the interpersonal problems and symptoms frequently evident among depressed children during this developmental phase.<sup>50</sup> A pilot study explored a home-focused bibliotherapy intervention for children with anxiety disorder and demonstrated a significant improvement in anxiety symptoms over time.<sup>51</sup> Hence, family-focused bibliotherapy for children through their parents may be more acceptable and effective.

For acceptability outcomes, we found that bibliotherapy had no statistical more all-cause discontinuations than controls. However, the all-cause discontinuation of bibliotherapy

groups remained high. In fact, in psychotherapy trials, acceptability may be more connected with treatment efficacy than tolerability, because few adverse effects are reported in these psychotherapy trials; in addition, acceptability may also be influenced by the views and concerns of the youths and/or their parents.<sup>36</sup> These findings highlight an important caveat to the use of bibliotherapy that bibliotherapy is not suitable for some people who lack cognitive capacity and self-discipline.<sup>33</sup> Patients using psychotherapy often expect guidance and advice from experts who assume some degree of responsibility and control, which reduces the pressure on the patients,<sup>52</sup> whereas patients with such expectations who are confronted with an independent and active model of therapeutic change may be discouraged. A possible interpretation is that a protocol emphasizing on cognitive changes is more difficult for young people to engage in, especially children.<sup>16</sup>

The sensitivity analysis indicated that bibliotherapy was not significantly more effective in trials with large samples; however, a possible explanation is that trials with smaller sample sizes might result in an exaggerated treatment effect.<sup>53</sup>

In the other subgroup analyses, we did not observe a robust treatment effect by different patient characteristics and intervention settings. Among the three control conditions, bibliotherapy was significantly more beneficial than WL and NT, whereas it was not better than PBO. Two studies regarded Educational Brochure Control Condition as PBO.<sup>45,46</sup> They have some common limitations. First, all the outcomes relied on youth self-report. Greater confidence could be placed on the findings if multiple informants had been used.<sup>54</sup> Second, some patients ( $n=19$ ) did not participate in posttreatment assessments. Although there was no indication of differential attrition across intervention conditions or as a function of demographic variables, it is possible that incidence of depressive episodes might have been higher with a complete sample. The subgroup analysis of parental involvement showed that bibliotherapy was not significantly more effective in studies with parental involvement. Some previous research has shown that parents are more likely to support their children when they display negative emotions or mood disorders.<sup>55</sup> However, our included studies with parental involvement are all for anxious children. Thus, our findings need confirmation. The clinical interpretation of these findings is limited not only by the uncertainty around these estimates but also by the potential bias due to publication and the small number of trials in each group. Moreover, poor methodology, risk of bias within individual



studies, and potential selective reporting are important factors to be considered when interpreting the results from this meta-analysis.

The most common books used were *Feeling Good*<sup>56</sup> and *Helping Your Anxious Child: A Step by Step Guide*.<sup>57</sup> *Feeling Good* presents a self-administered version of cognitive therapy for depression. Clinically and statistically significant improvements in depression were evidenced.<sup>58</sup> Our results were in agreement. *Helping Your Anxious Child: A Step-by-Step Guide* describes anxiety management skills and ways of introducing them to and implementing them with children; it was used in two included studies.<sup>33,44</sup> Rapee et al<sup>33</sup> conducted the first study evaluating *Helping Your Anxious Child: A Step-by-Step Guide* with anxiety-disordered children. The self-help books for the treatment of depression and anxiety are readily available, but little direct evidence for effectiveness between different reading material. More works are required to investigate the most suitable format and presentation of materials. However, guidance toward appropriate books from a trained clinician is not widely available.<sup>25</sup> It is urgent to establish useful guidelines.

There were some limitations in the current study. First, while the broad nature of our inclusion criteria aimed to draw together literature from across child and adolescent studies, this was also a limitation as it created significant heterogeneity. In addition, the overall quality of the studies was low; therefore, results of moderator analyses should be interpreted with caution. Second, selected study included only adolescents with depressive symptoms or child with anxiety symptoms, so further research on adolescents with anxiety and children with depression is needed. Third, the funnel plot indicated a certain publication bias, so caution is required in interpreting our findings; we could not include data on adverse effects or cost-effectiveness because of lacking data, although these variables are important for clinical decisions. Fourth, six of eight studies reviewed reported no follow-up assessment with bibliotherapy versus control comparison. Hence, we could not examine long-term effects of treatments. This shortcoming points to the need for future studies with follow-up assessments.

## Conclusion

Our review supports the notion that bibliotherapy may be an effective and acceptable psychological treatment for depression in adolescents and show less robust effects for anxiety in children. Future studies with follow-up (3 months, 6 months, 1 year, etc) assessments to get long-term effects of treatment are needed and should perform an individual

patient data meta-analysis to explore study variability (level of support, treatment adherence, and setting) and participant characteristics as moderators of treatment outcomes.

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## Disclosure

The authors report no conflicts of interest in this work.

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## Supplementary materials

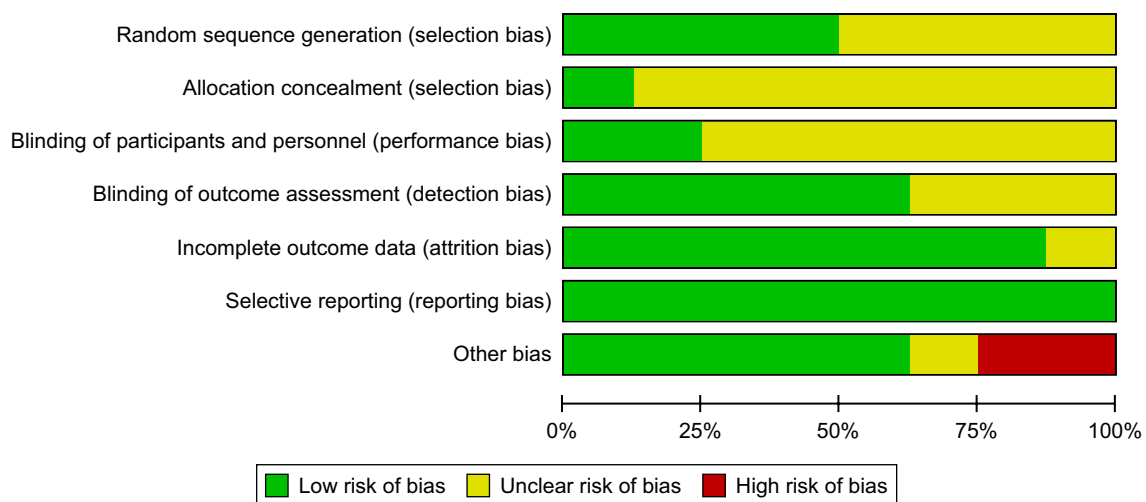
**Table S1** Key terms for electronic database search

**Key terms**

1. Title/abstract = (depress\* OR dysthymi\* OR "mood disorder\*" OR "affective disorder\*" OR anxiety OR anxious OR phobic OR fear OR fears OR phobia OR phobias OR "panic disorder\*" OR "overanxious disorder\*" OR "avoidant disorder\*" OR agoraphobia OR "selective mutism" OR "panic attack specifier" OR "combat disorder\*" OR "mixed disorder\*" OR neurosis OR neuroses OR neurotic OR "school refusal")
2. Title/abstract = (adolesc\* OR child\* OR boy\* OR girl\* OR juvenil\* OR minors OR paediatric\* OR pediatri\* OR pubescen\* OR school\* OR student\* OR teen\* OR young OR youth\*)
3. Title/abstract = (bibliother\* OR manual\* OR book\* OR self-help OR "self help" OR "minimal contact" OR "minimal guidance" OR self-monitoring OR "self-administered treatment\*")
4. 1 AND 2 AND 3

**Table S2** Results of the electronic database search

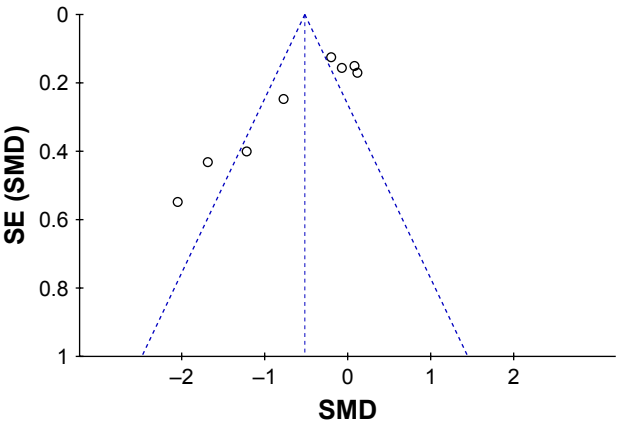
| Database       | No of citations |
|----------------|-----------------|
| PubMed         | 290             |
| Cochrane       | 398             |
| EMBASE         | 144             |
| Web of Science | 298             |
| PsycINFO       | 160             |
| Total          | 1,290           |



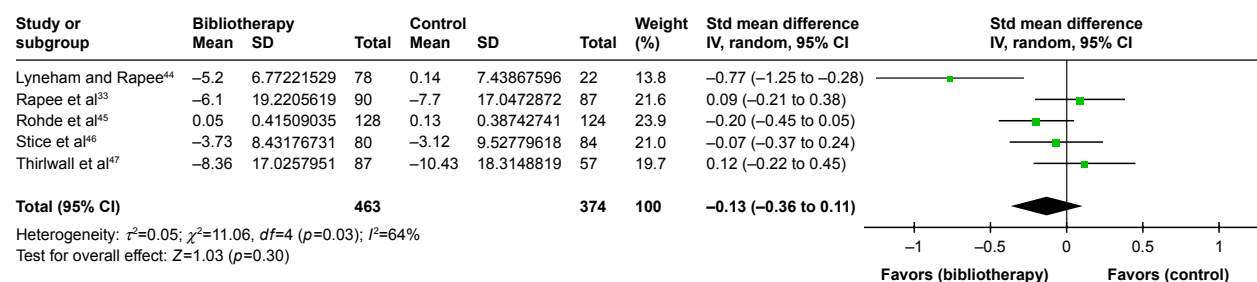
**Figure S1** (Continued)

|                                   | Random sequence generation (selection bias) | Allocation concealment (selection bias) | Blinding of participants and personnel (performance bias) | Blinding of outcome assessment (detection bias) | Incomplete outcome data (attrition bias) | Selective reporting (reporting bias) | Other bias |
|-----------------------------------|---|---|---|---|--|--------------------------------------|------------|
| Ackerson et al <sup>41</sup>      | ?   | ?                                       | ?   | ?   | +  | +                                    | +          |
| Cobham <sup>42</sup>              | ?   | ?                                       | ?   | +   | +  | +                                    | -          |
| Jacob and De Guzman <sup>43</sup> | ?   | ?                                       | ?   | ?   | +  | +                                    | -          |
| Lyneham and Rapee <sup>44</sup>   | ?   | ?                                       | ?   | ?   | ?  | +                                    | +          |
| Rohde et al <sup>45</sup>         | +   | ?                                       | ?   | +   | +  | +                                    | +          |
| Rapee et al <sup>33</sup>         | +   | ?                                       | +   | +   | +  | +                                    | +          |
| Stice et al <sup>46</sup>         | +   | ?                                       | +   | +   | +  | +                                    | +          |
| Thirlwall et al <sup>47</sup>     | +   | +                                       | ?   | +   | +  | +                                    | ?          |

**Figure S1** Percentages for assessments of each risk of bias item across all included studies and individual assessments of each risk of bias item for each included study.



**Figure S2** Funnel plot for the efficacy outcome.  
**Abbreviation:** SMD, standardized mean difference.



**Figure S3** Sensitivity analysis of primary efficacy outcome, excluding a small-sized study ( $\leq 50$  patients).

**Abbreviation:** CI, confidence interval.

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