Mental Health Impacts of Self-Help Interventions for the Treatment and Prevention of Eating Disorders. A Meta-Analysis

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ABSTRACT

Objective: Self-help programs are recommended as a first step in the management of eating disorders. Yet, whether self-help interventions have broader mental health benefits beyond symptom and risk reduction remains unclear. As randomized controlled trials (RCTs) also assess general mental health secondary to eating disorder symptoms, we conducted a meta-analysis to investigate whether and to what extent pure self-help interventions for eating disorders produce improvements in these secondary outcomes.

Method: Twenty-seven RCTs of pure self-help interventions for the prevention or treatment of eating disorders were included. Mean age ranged from 16 to 46 years. Most self-help interventions were based on cognitive-behavioral therapy. Most interventions were delivered via digital means (Internet, apps, etc.). Random effects meta-analyses were conducted on six outcomes: depression, anxiety, general distress, quality of life, self-esteem, and psychosocial impairment. Analyses were stratified based on pre-selected (at risk/symptomatic) and clinical samples.

Results: For pre-selected samples ($k = 18$), significant pooled effects favoring self-help over controls were observed for depression ($g = 0.24$), anxiety ($g = 0.23$), distress ($g = 0.23$) and self-esteem ($g = 0.18$). Effects remained robust when adjusting for risk of bias. Non-significant effects were observed for quality of life and impairment. Crucially, > 80% of trials on pre-selected samples delivered a waitlist control. For clinical samples ($k = 9$), significant pooled effects favoring self-help were found for distress ($g = 0.39$), impairment ($g = 0.39$), and quality of life ($g = 0.29$), although these results should be interpreted with caution as the number of studies was low.

Conclusion: Self-help interventions produce small improvements in those mental health symptoms that are typically comorbid with eating disorders.

1 | Introduction

Remarkable progress has been made toward developing effective prevention and treatment programs for eating disorders (Cuijpers et al. 2024; Hilbert et al. 2019). However, the reality remains that up to 80% of people with or at risk of an eating disorder do not have access to these evidence-based interventions (Weissman and Rosselli 2017). Well-cited impediments to help-seeking include high costs of treatment, geographical isolation from available services, perceived stigma associated with

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Summary

- A meta-analysis examining the effects of self-help eating disorder interventions on general mental health and well-being was conducted from 27 trials.

- Self-help interventions offer small benefits to depression, anxiety, general distress, and self-esteem among pre-selected samples, but results are uncertain for clinical samples due to the limited number of trials.

- The ease at which such self-help interventions can be disseminated at scale indicates that even small effects may have a substantial public health impact.

help-seeking, and an insufficient number of adequately trained professionals (Ali et al. 2017).

Self-help interventions are well placed to address these help-seeking barriers and broaden the accessibility of evidence-based prevention and treatment approaches. Self-help interventions consist of a structured program or set of therapeutic techniques grounded in a specific psychological framework (Yim and Schmidt 2019). The material is derived from conventional therapist-led manuals and is simplified for delivery through formats such as books, brochures, or digital platforms. Self-help approaches can adopt a prevention, early intervention, or treatment lens and may be delivered with or without support from someone specifically trained to deliver the intervention. Guided self-help involves offering professional support that is mainly focused on facilitation, helping the user overcome challenges, clarify information, foster motivation, and track progress. Conversely, pure self-help requires the user to work through the program independently, without professional input (Wilson and Zandberg 2012).

Although guided self-help is slightly more effective than pure self-help (Baumeister et al. 2014), the latter approach offers many distinct benefits, including flexibility, autonomy, and the ability to engage in intervention at a preferred pace. In addition, since pure self-help programs do not require any professional involvement, they are not limited by the availability of healthcare providers, which allows many users to follow the same program at once. Thus, pure self-help programs are considerably more accessible, scalable, and potentially cost-effective.

There is a strong body of evidence showing that pure self-help programs can effectively target key eating disorder risk factors and symptoms. Research has traditionally tested self-help programs based on cognitive-behavioral therapy (CBT) manuals, with multiple randomized controlled trials (RCT) demonstrating their effectiveness among individuals at risk of an eating disorder (Franko et al. 2005) and among individuals with clinically significant eating disorders, including bulimia nervosa (Treasure et al. 1994) and binge-eating disorder (Carter and Fairburn 1998). More recently, research has begun to explore the utility of self-help programs that draw from different theoretical orientations and models of change, including dialectical behavior therapy (Carter et al. 2020), acceptance and commitment therapy (Karekla et al. 2022), and dissonance-based approaches

(Stice et al. 2017), with evidence of efficacy on risk and symptom reduction also emerging.

What is less clear, however, is whether pure self-help programs have broader mental health benefits beyond reducing risk factors and symptoms. This question has direct clinical relevance. For example, many individuals who seek treatment report wanting to change because of the debilitating effects their symptoms have on their overall quality of life, general well-being, and ability to perform day-to-day tasks (Jenkins et al. 2011). While there is robust evidence showing that therapist-led CBT improves quality of life and functional impairment in eating disorders (Linardon and Brennan 2017; Linardon et al. 2019), whether these benefits generalize to self-help interventions remains unknown. If self-help approaches are to be recommended and integrated into healthcare systems, then it is necessary to know whether they can effectively improve those areas of functioning that this client population considers most important.

Furthermore, more than half of the people with an eating disorder have a comorbid depressive or anxiety condition (Hambleton et al. 2022; Swinbourne et al. 2012). These comorbidities are not only debilitating in and of themselves, but they can also obstruct therapeutic change, predict relapse, and exacerbate symptoms (Linardon 2024; McClure et al. 2023, 2022; Sala et al. 2023; Vall and Wade 2015). There is reason to suspect that existing eating disorder self-help interventions could have a positive effect on mood and anxiety problems, as many of the skills taught in these programs (e.g., cognitive restructuring, problem solving, mindfulness meditation) are also considered essential components of empirically supported treatments for depressive and anxiety disorders (Cuijpers et al. 2021, 2023). Confirming whether current self-help programs for eating disorders produce concomitant reductions in these secondary symptoms is important, helping to ensure that clients presenting with multiple symptom complaints can be recommended an intervention format that has transdiagnostic benefits.

There has been a considerable number of RCTs that have tested the effects of pure self-help programs for eating disorders, with many of these also assessing different mental health (e.g., depression, anxiety, distress) and wellbeing (e.g., quality of life) constructs as secondary outcomes. Therefore, we aimed to synthesize this literature and conduct the first meta-analysis to test whether and to what extent pure self-help prevention, early intervention, and treatment programs for eating disorders are effective in improving these secondary mental health and well-being outcomes.

2 | Method

2.1 | Study Selection

This review (preregistered at PROSPERO; CRD42024611623) was conducted according to the latest Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al. 2021). We searched the Medline, PsycINFO, Web of Science, and ProQuest Dissertations online

databases (September 25th 2024) by combining the following key terms:

1. Random* OR RCT

2. "eating disorder*" OR "bulimia nervosa" OR "anorexia nervosa" OR binge eat* OR "disordered eat*" OR "eating pathology" OR purg* OR "weight concern*" OR "shape concern*" OR "body dissatisfaction" OR "dietary restraint" OR "compulsive exercise" OR "disordered eat"

3. self*help OR self*guide* OR self*taught OR self*learn* OR self*led OR self*administer* OR self*manage* OR self*direct* OR intervention OR phone* OR smart*phone* OR telephone* OR cell*phone* OR mobile*phone* OR computer* OR multi-media OR web-based OR internet OR "online intervention" OR e-health OR unguided OR bibliotherapy.

Prior reviews were also hand-searched to identify any study that might not have been captured through the four online databases.

We included RCTs that tested the effects of a self-guided prevention, early intervention, or treatment program for eating disorders against a control group and reported secondary outcomes related to general mental health or well-being. We only included samples that either received a clinical diagnosis or were screened for being symptomatic or "at risk" during the enrollment stage (i.e., unselected samples where no selection criteria were applied were excluded). Self-guided interventions were defined as a structured program or a prescribed set of therapeutic tasks that participants engaged in independently without any professional, researcher, or peer guidance. Trials that offered technical (e.g., troubleshooting technical problems) or automated support (e.g., standardized reminder emails) were eligible. Intervention resources could be delivered via a book, manual, the web, an app, a computer, or audio recordings. Stand-alone body image enhancement programs, cognitive training interventions, and one-off experimental manipulations were excluded. Control groups could comprise waitlists, care as usual, information resources, or placebos, per the typology proposed by Goldberg et al. (2023). We did not include trials that compared self-help to an active intervention intended to be therapeutic (e.g., guided self-help, face-to-face psychotherapy, pharmacotherapy) given the limited available trials that have performed this comparison. One non-English language study was excluded (Raith et al. 2021)—details of this can be seen in the Supporting Information. Published and unpublished trials were deemed eligible. If a study did not include data for effect size calculation, the authors were contacted, and the study was excluded if they were unable to provide the necessary data.

2.2 | Risk of Bias and Data Extraction

Risk of bias ratings were assessed using four criteria from the Cochrane Collaboration Risk of Bias tool (Higgins and Green 2011), namely random sequence generation, allocation concealment, blinding of outcome assessment, and incomplete outcome data. The four domains received either a high risk, low risk, or unclear rating for each eligible study. Selection bias was rated as low risk if there was a random component in the

allocation sequence generation. Allocation concealment was considered a low risk when a clear method was described that prevented knowledge of group assignment before or during enrollment. Blinding of outcome assessors was rated as low risk if proper measures were taken to conceal participants' group membership, or if the outcome measures were self-reported, which do not involve direct participant-researcher contact. Incomplete outcome data was rated as low risk if all randomized participants were included in the analyses (i.e., the intention-to-treat principle was adhered to).

We also extracted various characteristics related to the participants, intervention, control group, follow-up period, sample size, and outcome measures. Two researchers extracted these data from the included trials. Minor discrepancies were resolved through consensus.

2.3 | Outcomes

Given the reporting of available outcomes among the 27 trials, we were able to conduct meta-analyses on six outcomes that represented general mental health and well-being: depression, anxiety, general distress, psychosocial impairment (all assessed by the Clinical Impairment Assessment; Bohn et al. 2008), quality of life, and self-esteem. Our approach for selecting outcomes was based on the following: after locating trials comparing a self-help intervention to a control group, we extracted all secondary outcomes reported in the paper. Then we made a decision to include outcomes that were reported in at least five trials, as we deemed this sufficient to conduct a meaningful meta-analysis. This meant that trials that reported only those outcomes assessed in fewer than five trials were excluded (examples included social support, interpersonal problems, and perfectionism). This left us with six outcomes subject to meta-analysis.

2.4 | Data Analysis

As all six outcomes were continuous, the effect size was calculated by dividing the difference between the group means at post-test by the pooled standard deviation. Sometimes trials reported standard errors, which were then converted to standard deviations (Lipsey and Wilson 2001). Effect sizes were then reported as Hedges' g to correct for small sample bias (Hedges and Olkin 1985). To calculate a pooled effect size, each study's effect size was weighted by its inverse variance. Effect sizes of 0.8 were interpreted as large, while effect sizes of 0.5 were interpreted as moderate, and effect sizes of 0.2 were interpreted as small (Cohen 1992). For all outcomes, effect sizes were coded such that a positive g indicates that the intervention group fared better than the control group (i.e., reported lower depression, anxiety, distress and impairment, and better quality of life and self-esteem). We also reported the number needed-to-treat (NNT), which indicates the number of additional participants in the intervention group who would need to be treated in order to observe one participant who shows positive symptom change relative to the control group (Cook and Sackett 1995).

Several sensitivity analyses were performed to assess whether the main findings were robust. We recalculated the pooled

effects when restricting the analyses to lower risk of bias trials (meeting all four risk of bias criteria) and the smallest and largest effect in each study, if multiple conditions were used (to maintain statistical independence). We also pooled effects while excluding outliers using the non-overlapping confidence interval (CI) approach, in which a study is defined as an outlier when the 95% CI of the effect size does not overlap with the 95% CI of the pooled effect size (Harrer et al. 2021). The trim-and-fill procedure was also applied to assess for small-study bias (Duval and Tweedie 2000).

Analyses were conducted separately on clinical and pre-selected samples. Per prior reviews (Linardon et al. 2020; McClure et al. 2023), clinical samples were defined as those who received a formal diagnosis by trained assessors who delivered a semi-structured interview. In contrast, pre-selected samples encompassed those who were included on the basis of screening positive for the presence of established risk factors (e.g., elevated weight concerns) or symptoms (e.g., binge eating), typically by self-report scales. We refrained from combining clinical and pre-selected samples because the two are highly heterogeneous in terms of symptom profiles and severity (e.g., one sample who screened positive for elevated weight concerns is markedly different to one sample of patients with bulimia nervosa); thus, combining them in the analyses would introduce substantial variability and limit the interpretability of the findings.

Given the large number of waitlist control conditions delivered, we also calculated pre-post effect sizes to assess whether any differences found in the between-group analyses were explained by deterioration in the waitlisted participants. We calculated the standardized mean gain by dividing the difference between the post-treatment and pre-treatment outcome measure by the pooled standard deviation for waitlist participants, and then converting this to Hedges' g. The pre-post correlation for the relevant measure is required for these within-groups analyses, but is never reported. Therefore, we used a conservative $r = 0.70$ estimate, per prior meta-analyses in the field (Linardon et al. 2017; Linardon, Gleeson, et al. 2019). For all outcomes, positive within-group effects indicate improvements in symptoms, while the reverse is true for negative effects.

Random effects models were used for all analyses. We also examined heterogeneity by reporting the I^2 statistic, which quantifies heterogeneity revealed by the Q statistic and reports how much overall variance (0%–100%) is attributed to between-study variance (Higgins and Thompson 2002). All analyses were conducted using Comprehensive Meta-Analysis Version 3.0 (Borenstein et al. 2009).

In the protocol, we had planned to conduct several subgroup analyses based on various interventions, participant, and trial characteristics. However, given the rule of at least 10 studies per characteristic modeled (Borenstein et al. 2009), no subgroup analyses were performed because none of the outcome variables satisfied this threshold. However, to test for the robustness of results, we conducted several other sensitivity analyses on outcomes with ≥ 10 effect sizes (in this case, depression and anxiety among the pre-selected samples), which involved restricting the analyses to studies that (i) delivered a control group other than a waitlist (such as information resources, placebos, or information resources, which were amalgamated given how few studies delivered something other than a waitlist), (ii) administered a CBT intervention, (iii) delivered the intervention via digital technology, and (iv) employed both shorter (1–4 weeks) and longer follow-ups (5+ weeks).

3 | Results

3.1 | Study Characteristics

Twenty-seven trials met full inclusion criteria (see Figure 1). Nine of these recruited a clinical sample, comprised of binge-eating disorder ($k = 5$), bulimia nervosa ($k = 2$), or transdiagnostic presentations ($k = 2$). The other 18 trials pre-selected participants on the basis of risk or symptomatic status, although the definitions varied among the studies. A number of studies required participants to either self-identify the presence of body image problems ($k = 2$), score above a cut-off on the Weight Concern Scale ($k = 4$), or report elevated perfectionism ($k = 2$). One study required participants to exceed a cut-off on the Eating Disorder Examination Questionnaire global score, four required participants to exhibit the presence of objective binge eating, and the rest required participants to exhibit a combination of elevated cognitive and behavioral symptoms. The self-help interventions also varied, with most conditions consisting of a CBT program ($N_{conditions} = 18$). Other types of interventions included dissonance-based programs ($N_{conditions} = 5$), third-wave behavioral approaches (i.e., dialectical behavior therapy, compassion-focused therapy, acceptance and commitment therapy; $N_{conditions} = 4$), imagery rescripting ($N_{conditions} = 1$), and psychoeducation ($N_{conditions} = 3$). Interventions were mostly delivered digitally, such as via the web ($N_{conditions} = 17$), an app ($N_{conditions} = 3$), a chat-bot ($N_{conditions} = 1$) or a computer ($N_{conditions} = 2$), while four interventions were delivered via a book and one via handouts. The most common control condition was a waitlist ($N = 23$ of 32 conditions), and the length of follow-up ranged from 1 to 24 weeks. Twelve trials sampled a younger population, defined as a mean age of 25 years or younger, while the remaining sampled participants older than a mean age of 25 years. Mean ages ranged from 16 to 46 years. Sixteen trials met all four quality criteria. Table 1 presents the characteristics of all 27 included studies.

3.2 | Main Analyses

3.2.1 | Pre-Selected Samples

Table 2 presents the results from the meta-analyses comparing self-help interventions to control conditions on the 18 trials that recruited a pre-selected sample. Significant pooled effect sizes favoring self-help over control conditions were observed for reduced depression ($g = 0.24$; 95% CI = 0.15, 0.34), anxiety ($g = 0.23$; 95% CI = 0.15, 0.32), and general distress ($g = 0.23$; 95% CI = 0.14, 0.33), and improved self-esteem ($g = 0.18$; 95% CI = 0.01, 0.34). Heterogeneity was low for these analyses, ranging from 0% to 26%. Non-significant pooled effect sizes were observed for psychosocial impairment and quality of life, although the number of studies contributing to these analyses was low.
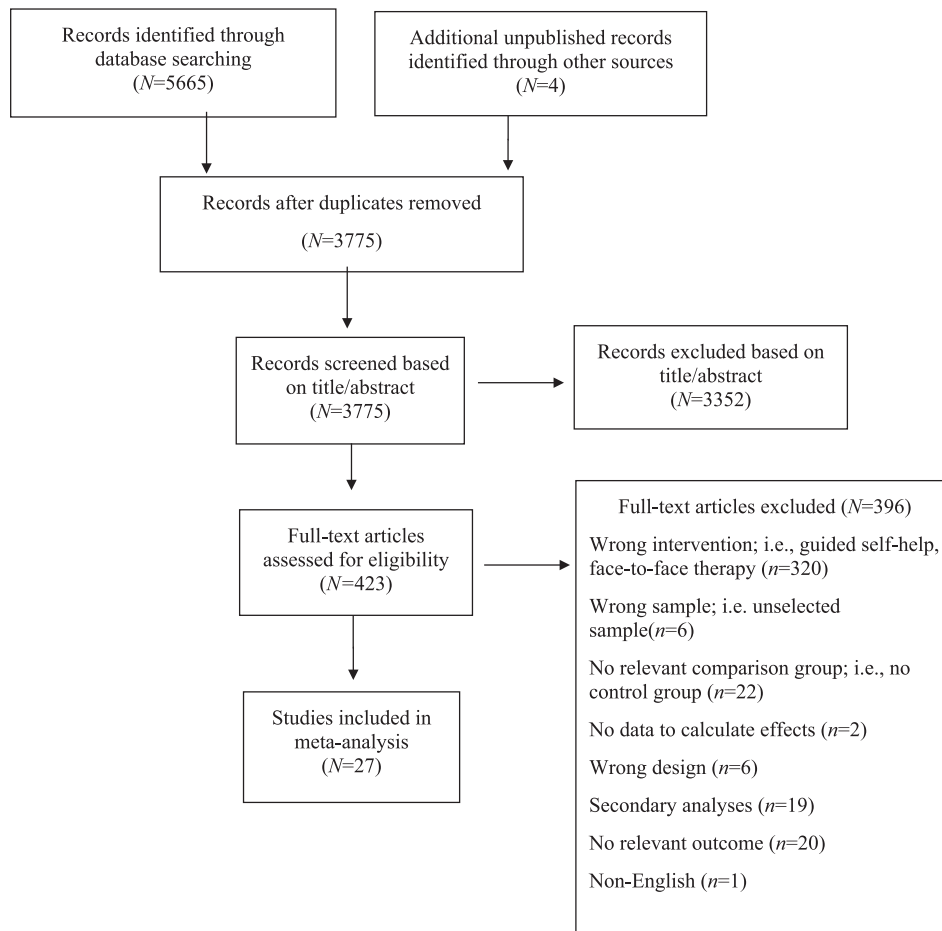
FIGURE 1 | Flow-chart of literature search.

Sensitivity analyses are also reported in Table 2. Effect sizes for depression, anxiety, distress, and self-esteem remained largely robust and similar in magnitude when restricting the analyses to one effect per study (N comparisons = 13, 11, 7, and 4, respectively), low risk of bias trials (N comparisons = 14, 12, 9, and 2, respectively), and trials that were not considered outliers (N comparisons = 16, 14, 9, and 4, respectively). There was also no evidence of small study bias according to the trim-and-fill procedure (Table 2). Furthermore, effect sizes for depression and anxiety remained significant when limiting the analyses to studies that delivered a CBT (N comparisons = 13 and 11 respectively) or a digital intervention (N comparisons = 18 and 14 respectively), and to studies that administered both a short (N comparisons = 13 and 11 respectively) and longer follow-up (N comparisons = 5 and 2 respectively). However, when excluding studies that used a waitlist control, no effect sizes were available for analyses for anxiety symptoms, and the effects for depression become non-significant (N comparisons = 3).

3.2.2 | Clinical Samples

Table 3 presents the meta-analyses on the nine trials that sampled clinical populations. Significant pooled effects favoring self-help over control conditions were observed for reduced distress ($g = 0.39$; 95% CI = 0.09, 0.68) and impairment ($g = 0.39$; 95% CI = 0.14, 0.63) and improved quality of life ($g = 0.29$; 95%

CI = 0.01, 0.57). However, these results should be interpreted with a high degree of caution given the limited number of trials contributing to these analyses. Non-significant effects were observed for depression, anxiety, and self-esteem.

3.3 | Sensitivity Analyses

Table 1 in the Supporting Information presents the results for the within-group effect sizes for waitlisted participants. Negligible, non-significant pre-post effects were found for depression, anxiety, distress, and impairment across samples. A small, positive, significant effect was found for self-esteem ($g = 0.21$) among pre-selected samples and quality of life among clinical samples ($g = 0.15$), indicating improvements in these constructs from pre to post intervention among waitlisted participants. Overall, results suggest that findings related to the efficacy of self-help interventions are not explained by deterioration in waitlist groups.

4 | Discussion

This meta-analysis examined the broader mental health impacts of self-help interventions for eating disorders. Twenty-seven trials met full inclusion criteria; nine of these recruited a clinically diagnosed sample, while 18 recruited a pre-selected sample considered at risk or symptomatic (with no formal

TABLE 1 | Characteristics of included studies.

Study	Sample inclusion	Demographics	Intervention Name (n)	Intervention Type	Format	Comparison (n)	Outcomes	Follow-up (weeks)	Risk of bias
Aardoom et al. (2016)	Pre-selected (≥ 52 WCS; or BMI ≤ 18.5, ≥ 1 weekly binge/compensatory behavior in past month)	Mean age = 24 years 98% female Race = NR Education: low (7%); intermediate (22%); high (71%) Employment: school (54%); employed (32%); unemployed (5%); disabled (9%)	Featback (87)	Psychoed + monitoring	Web	Waitlist (90)	Qol (ED-QOL) Distress (PHQ-4)	8	+ + sr + (4)
(Barakat et al. 2023)	Clinical (BN, OSFED)	Mean age = 31 years 96% female Race = NR Education: > 12 year school (86%) Employed (83%)	BEet (38)	CBT	Web	Waitlist (39)	QOL (ED-QOL) Distress (K-10)	12	?? sr −(1)
(Carter and Fairburn 1998)	Clinical (BED)	Mean age = 39 years 100% female Race = 97% Caucasian Education: NR Employed 76%	Overcoming binge eating (35)	CBT	Book	Waitlist (24)	Distress (BSI)	12	+ + sr + (4)
(Carter et al. 2020)	Clinical (BED)	Mean age = 40 years 92% female 92% White, 8% "other" Education: high school (8%); college (39%); Bachelor's (37%); Graduate (15%) Income NR	DBT solution for emotional eating (24)	DBT	Book	Placebo (23)	Distress (BSI) QOL (SF-36)	12	?? sr + (2)
(Carter et al. 2003)	Clinical (BN)	Mean age = 27 years 100% female 83% White; 2% African Caribbean; 7% Asian; 8% other Education NR Income NR	Overcoming binge eating (28)	CBT	Book	Placebo (28) Waitlist (29)	Dep (BDI) Anx (BAI) Self-esteem (RSE)	8	+ + sr + (4)

(Continues)

TABLE 1 | (Continued)

Study	Sample inclusion	Demographics	Intervention Name (n)	Intervention Type	Intervention Format	Comparison (n)	Outcomes	Follow-up (weeks)	Risk of bias
(Chithambo and Huey 2017)	Pre-selected (WCS > 34)	Mean age = 21 years 100% female 41% Asian; 33% White; 12% Latino; 6% Black; 7% mixed; 1% other Education NR Income NR	NR (90) NR (88)	DBI CBT	Web	Waitlist (93) Waitlist (93)	Dep (BDI)	4	+ + sr + (4)
(Fitzsimmons-Craft et al. 2022)	Pre-selected (WCS > 47; or overvaluation of weight, fear of weight gain, and low ED risk)	Mean age = 21 years 100% female 85% White; 4% Asian; 3% Black; 2% Pacific Islander; 0.5% Indian; 4% Mixed; 2% Other Education: college degree (71%) Income NR	Tessa (352)	CBT	Chat-bot	Waitlist (348)	Dep (PHQ-8) Anx (GAD)	12	+ + sr + (4)
(Green et al. 2018)	Pre-selected (clinical/ subthreshold ED based on Q-EDD)	Mean age = 26 years 100% female 90% White; 4% African American; 1% Asian; 2% Latina; 1% Mixed; 2% NR Education NR Income NR	eBody Project (46)	DBI	Web	Waitlist (36)	Self-esteem (RSE) Anx (STAI)	NR	?? sr + (2)
(Grilo et al. 2013)	Clinical (BED)	Mean age = 46 years 79% female 46% White; 35% African American; 6% Hispanic; 13% Other Education: college degree (49%) Income NR	Overcoming binge eating (24)	CBT	Book	Usual care (24)	Dep (BDI)	16	?? sr + (2)

(Continues)

TABLE 1 | (Continued)

Study	Sample inclusion	Demographics	Intervention Name (n)	Intervention Type	Intervention Format	Comparison (n)	Outcomes	Follow-up (weeks)	Risk of bias
(Hartmann et al. 2024)	Clinical (BN)	Mean age = 29 years; 97% female; Race NR; Education: University degree (51%); professional qualification (17%); high school (27%); secondary school (2%); in school (3%); Income NR	Selfapy (77)	CBT	Web	Waitlist (77)	Impairment (CIA), QOL (WHO-QOL), Dep (PHQ-9), Anx (GAD), Self-esteem (RSE)	12	+ + sr + (4)
(Hay et al. 2007)	Clinical (binge spectrum EDs)	Mean age = 28 years; 100% female; Race NR; Education: high school (37%); Income: in paid work (67%)	NR(61)	Psychoed	Handouts	Information resources (61)	QOL (SF-36)	24	+ + sr + (4)
(Heron 2012)	Pre-selected (EDE-Q > 2.30 and/or BSQ > 110)	Mean age = 19 years; 100% female; 71% White; 18% Asian; 4% Hispanic; 3% Black; 3% Native American; 1% Pacific Islander; Education NR; Income NR	Food, mood and attitude + EMI (44), Food, mood and attitude (44)	CBT	CD-ROM	Placebo (43)	QOL (BIQOL)	8	?? sr + (2)
(Karekla et al. 2022)	Pre-selected (> 52 WCS)	Mean age = 17 years; 100% female; Race NR; Education NR; Income NR	AcceptME (62)	ACT	Web	Waitlist (30)	QOL (YQOL-SF)	4	?? sr − (1)
(Kelly and Carter 2015)	Clinical (BED)	Mean age = 45 years; 83% female; 76% White; Education NR; Income NR	NR (15), NR (13)	CFT, CBT	Computer	Waitlist (13), Waitlist (13)	Dep (CES-D)	3	+? sr + (3)

(Continues)

TABLE 1 | (Continued)

Study	Sample inclusion	Demographics	Intervention Name (n)	Type	Format	Comparison (n)	Outcomes	Follow-up (weeks)	Risk of bias
(Linardon et al. 2023)	Pre-selected (>1 OBE episode per fortnight over past 3 months)	Mean age = 39 years 92% female 87% White; 1% Black; 3% Hispanic; 4% Asian; <1% Pacific Islander; 2% Mixed 3% Other Education NR Income NR	Breaking the diet cycle (199) Break Binge Eating (199)	CBT CBT	Web App	Waitlist (202) Waitlist (202)	Dep (PHQ-2) Anx (GAD-2) Distress (PHQ-4)	4	+ + sr + (4)
(Linardon et al. 2022)	Pre-selected (presence of at least one OBE episodes in last month)	Mean age = 29 years 93% female 76% White; 7% Mixed; 17% Other Education NR Income NR	Break Binge Eating (197)	CBT	App	Waitlist (195)	Dep (PHQ-2) Anx (GAD-2) Distress (PHQ-4) Impairment (CIA)	4	+ + sr + (4)
(Linardon et al. 2024)	Pre-selected (>1 OBE episode per fortnight over past 3 months)	Mean age = 34 years 94% female White 87%; Asian 4%; Black 3%l mixed 2%; other 5% Education NR Income NR	Resilience (287)	DBT	App	Waitlist (289)	Dep (PHQ-2) Anx (GAD-2) Distress (PHQ-4)	6	+ + sr + (4)
(Luo et al. 2021)	Pre-selected ("yes" to are you currently dissatisfied with your body)	Mean age = 17 years 100% female Race NR Education NR Income NR	eBody Project (191)	DBI	Web	Information resources (181)	Dep (CES-D) Self-esteem (RSE)	6	?? sr + (2)
(Messer et al. 2024)	Pre-selected (>1 OBE episode per fortnight over past 3 months)	Mean age = 33 years 96% female 78% White; 6% mixed, 12% Asian, 3% Black, 1% Hispanic Education NR Income NR	Mind2Body (99)	CBT	Web	Waitlist (102)	Dep (PHQ-2) Anx (GAD-2) Distress (PHQ-4)	4	+ + sr + (4)

(Continues)

TABLE 1 | (Continued)

Study	Sample inclusion	Demographics	Intervention Name (n)	Intervention Type	Intervention Format	Comparison (n)	Outcomes	Follow-up (weeks)	Risk of bias
(O'Brien et al. 2024)	Pre-selected (> 1.50 EDE-Q)	Mean age = 16 years 100% female Race NR Education NR Income NR	Overcoming Perfectionism (27)	CBT	Web	Waitlist (25)	Dep (RCADS) Anx (RCADS)	4	?? sr − (1)
(Pennesi and Wade 2018)	Pre-selected (WCS > 47)	Mean age = 20 years 100% female 70% White; 22% Asian; 3% African; 3% Indian; 2% Middle Eastern Education NR Income NR	NR (38) NR (39)	Imagery rescripting Cognitive dissonance	Web	Mind wandering (38)	Distress (DASS) Impairment (CIA)	1	+ + sr + (4)
(Pruessner et al. 2024)	Clinical (BED)	Mean age = 36 years 96% female Race NR Education: high school (84%); secondary school (15%); other (1%) Income NR	Selfapy (77)	CBT	Web	Waitlist (77)	Impairment (CIA) QOL (WHO-QOL) Dep (PHQ-9) Anx (GAD) Self-esteem (RSE)	12	+ + sr + (4)
(Redden et al. 2022)	Pre-selected (> 29 concerns over mistakes subscale of the FMPS)	Mean age = 19 years 95% Female 5% Black; 70% White; 18% Hispanic; 5% Asian or Pacific Islander Education NR Income NR	NR (39)	Exposure (CBT)	Web	Waitlist (37)	Dep (CES-D) Anx (STICSA)	2	+? sr + (3)
(Robinson et al. 2024)	Pre-selected (> 46 WCS)	Mean age = 22 years 51% female 48% White; 12% African; 13% Asian; 2% Black; 14% Hispanic; 11% Other Education NR Income NR	Focused Minds (57) Reducing my Perfectionist Behavior (54)	CBT	Web	Waitlist (61)	Dep (DASS) Anx (DASS) QOL (WEMWBS)	4	+ + sr + (4)

(Continues)

TABLE 1 | (Continued)

Study	Sample inclusion	Demographics	Intervention Name (n)	Intervention Type	Intervention Format	Comparison (n)	Outcomes	Follow-up (weeks)	Risk of bias
(Rohrbach et al. 2022)	Pre-selected (>52 WCS or BMI <18.5, or at least weekly OBE/compensatory behavior episodes in the past 4 weeks)	Mean age = 28 years 97% female Race NR Education: low (13%); middle (37%); high (49%). Income NR	Featback (88)	Psychoed + symptom monitoring	Web	Waitlist (90)	Dep (PHQ-2) Anx (GAD-2) Distress (PHQ-4)	8	+ + sr + (4)
(Shu et al. 2019)	Pre-selected ("yes" to three self-report items endorsing perfectionism)	Mean age = 16 years 100% female Race NR Education NR Income NR	ICBT-P (36) ICBT-S (34)	CBT	Web	Waitlist (24)	Dep (RCADS) Anx (RCADS) Self-esteem (RSE)	4	+ + sr + (4)
(Stice et al. 2012)	Pre-selected (self-identified body image concerns)	Mean age = 22 years 100% female 7% American Indian; 12% Asian; 1% African American; 2% Pacific Islander, and 78% European American. Education NR Income NR	eBody Project (19)	DBI	Web	Information videos (29) Information brochure (20)	Dep (BDI)	6	?? sr + (2)

Note: Risk of bias + = low risk, − = high risk; ? = unclear; SR = self-report outcome assessment. In order, the criteria represents adequate sequence generation, allocation concealment, blinding of outcome or use of self-report (sr) and use of intention to treat analysis. Number in parenthesis next to risk of bias indicates how many of the four criteria were met.

Abbreviations: act = acceptance and commitment therapy; BAI = beck anxiety inventory; BDI = beck depression inventory; BIQOL = Body Image Quality of Life Scale; BSI = brief symptom inventory; CBT = cognitive-behavioral therapy; CES-D = Centre for Epidemiological Studies-Depression; cft = compassion-focused therapy; CIA = clinical impairment assessment; cognitive-behavior therapy; DASS = Depression Anxiety Stress Scale; dbi = dissonance based intervention; dbt = dialectical behavior therapy; EDQOL = Eating Disorder Quality of Life Scale; GAD = Generalized Anxiety Disorder Scale; K-10 = Kessler Psychological Distress Scale; Nr = not reported; PHQ = Patient Health Questionnaire; RCADS = Revised Child Anxiety and Depression Scales; RSE = Rosenberg Self-Esteem Scale; STAI = State Trait Anxiety Scale; STICSA = state–trait inventory for cognitive and somatic anxiety; WEMWBS = Warwick-Edinburgh Mental Wellbeing Scale; YQOL-SF = youth quality of life instrument-short form.

TABLE 2 | Effects of self-guided interventions versus controls for pre-selected samples.

Analysis	Depression				Anxiety				General distress			
	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT
Self-guided versus control												
Total effect	18	0.24 (0.15, 0.34)*	26%	13.5	14	0.23 (0.15, 0.32)*	0%	14.2	9	0.23 (0.14, 0.33)*	0%	14.2
Sensitivity analyses												
One effect per trial (smallest)	13	0.21 (0.11, 0.30)*	17%	15.6	11	0.20 (0.11, 0.30)*	0%	16.5	7	0.23 (0.12, 0.35)*	13%	14.2
One effect per trial (largest)	13	0.25 (0.14, 0.35)*	30%	12.9	11	0.25 (0.15, 0.34)*	0%	12.9	7	0.27 (0.16, 0.37)*	0%	11.9
Outliers excluded	16	0.20 (0.12, 0.28)*	0%	16.5	14	0.23 (0.15, 0.32)*	0%	14.2	9	0.23 (0.14, 0.33)*	0%	14.2
Low risk of bias trials	14	0.25 (0.15, 0.35)*	30%	12.9	12	0.24 (0.15, 0.32)*	0%	13.5	9	0.23 (0.14, 0.33)*	0%	14.2
Trim-and-fill estimate		0.20 (0.09, 0.30)*	—	16.5	—	0.23 (0.14, 0.31)*	—	14.2	—	0.23 (0.14, 0.33)*	—	14.2
Waitlist controls excluded	3	0.29 (−0.06, 0.64)	47%	11.0	0	—	—	—	—	—	—	—
CBT intervention only	13	0.24 (0.12, 0.36)*	37%	13.5	11	0.25 (0.15, 0.35)*	0%	12.9	—	—	—	—
Digital programs only	18	0.24 (0.15, 0.34)*	26%	13.5	14	0.23 (0.15, 0.32)*	0%	14.2	—	—	—	—
Shorter follow-up (1–4 weeks)	13	0.29 (0.17, 0.40)*	23%	11.0	11	0.28 (0.18, 0.39)*	0%	11.4	—	—	—	—
Longer follow-up (5+ weeks)	5	0.15 (0.03, 0.27)*	3%	22.4	2	0.16 (0.01, 0.30)*	0%	20.9	—	—	—	—

Analysis	Quality of life				Self-esteem				Psychosocial impairment			
	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT
Total effect	6	0.15 (−0.02, 0.33)	17%	22.4	4	0.18 (0.01, 0.34)*	0%	18.4	3	0.26 (−0.11, 0.65)	66%	12.4
Sensitivity analyses												
One effect per trial (smallest)	5	0.11 (−0.08, 0.31)	19%	31.0	4	0.19 (0.01, 0.36)*	0%	17.4	2	0.24 (−0.39, 0.87)	82%	13.5
One effect per trial (largest)	5	0.19 (−0.00, 0.39)	17%	17.4	4	0.20 (0.02, 0.37)*	0%	16.5	2	0.46 (0.23, 0.70)*	5%	6.6
Outliers excluded	6	0.15 (−0.02, 0.33)	17%	22.4	4	0.18 (0.01, 0.34)*	0%	18.4	3	0.26 (−0.11, 0.65)	66%	12.4
Low risk of bias trials	3	0.16 (−0.04, 0.37)	0%	20.9	2	0.01 (−0.39, 0.42)	0%	355.7	3	0.26 (−0.11, 0.65)	66%	12.4
Trim-and-fill estimate		0.15 (−0.02, 0.33)	—	22.4		0.23 (0.08, 0.39)*	—	14.2		0.54 (0.15, 0.92)	—	5.5

Abbreviations: N_{comp} = number of comparisons; NNT = number-needed-to-treat.

*$p < 0.05$.

TABLE 3 | Effects of self-guided interventions versus controls for clinical samples.

Analysis	Depression				Anxiety				General distress			
	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT
Self-guided versus control												
Total effect	6	0.27 (−0.05, 0.60)	59%	11.9	3	0.04 (−0.26, 0.35)	46%	87.8	3	0.39 (0.09, 0.68)*	1%	7.9
One effect per trial (smallest)	5	0.19 (−0.13, 0.51)	56%	17.4	3	0.04 (−0.26, 0.35)	46%	87.8	3	0.39 (0.09, 0.68)*	1%	7.9
One effect per trial (largest)	5	0.23 (−0.13, 0.60)	65%	14.2	3	0.04 (−0.26, 0.35)	46%	87.8	3	0.39 (0.09, 0.68)*	1%	7.9
Outliers excluded	6	0.27 (−0.05, 0.60)	59%	11.9	3	0.04 (−0.26, 0.35)	46%	87.8	3	0.39 (0.09, 0.68)*	1%	7.9
Low risk of bias trials	2	−0.10 (−0.86, 0.64)	82%	—	3	0.04 (−0.26, 0.35)	46%	87.8	1	0.61 (0.09, 1.13)*	0%	4.8
Trim-and-fill estimate		0.13 (−0.19, 0.46)		26.0		0.15 (−0.17, 0.47)		22.4		0.39 (0.09, 0.68)*		7.9

Analysis	Quality of life				Self-esteem				Psychosocial impairment			
	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT	N_{comp}	g (95% CI)	I^2	NNT
Total effect	5	0.29 (0.01, 0.57)*	59%	11.04	3	0.05 (−0.34, 0.44)	65%	69.9	2	0.39 (0.14, 0.63)*	0%	7.9
Low risk of bias trials	3	0.16 (−0.07, 0.40)	31%	20.9	3	0.05 (−0.34, 0.44)	65%	69.9	2	0.39 (0.14, 0.63)*	0%	7.9
Trim-and-fill estimate	3	0.44 (0.14, 0.75)*		6.9	3	0.05 (−0.34, 0.44)	65%	69.9		0.39 (0.14, 0.63)*		7.9

Abbreviations: N_{comp} = number of comparisons; NNT = number-needed-to-treat.
*$p < 0.05$.

diagnosis). More than 80% of trials delivered their intervention digitally, reflecting high interest in using modern information technology to deliver programs that have global reach (Torous et al. 2021). Nearly two-thirds of the self-help interventions were based on CBT, but there have also been concerted efforts to explore new approaches in self-help formats that have garnered robust evidence in traditional in-person settings (e.g., DBT; Brown et al. 2020).

Our findings suggest that self-help interventions may have broader—albeit small—effects on mental health constructs among pre-selected samples. We identified small but significant effects favoring self-help interventions over controls on depression ($g = 0.24$), anxiety ($g = 0.23$), distress ($g = 0.23$), and self-esteem ($g = 0.18$) outcomes. Critically, these effects remained robust in most sensitivity analyses that adjusted for risk of bias ratings, small sample trials, and the influence of outliers. Effects on depression and anxiety also remained stable across different follow-up lengths and for specific intervention formats (e.g., digital) and orientations (e.g., CBT), which corroborates the findings of recent meta-analyses on self-help interventions administered to different mental disorders (Tong et al. 2024).

Findings must be interpreted in the context of design features implemented in available trials. Most trials on pre-selected samples delivered a waitlist control, possibly because many people with or at risk of eating disorders do not receive any form of help (Weissman and Rosselli 2017). As such, a waitlist control may be considered representative of the real-world scenario where access to treatment is often delayed or unavailable. While research shows that waitlists can act as a nocebo in psychotherapy trials (Furukawa et al. 2014), it is encouraging to see that the within-group effects observed among waitlisted participants were negligible and non-significant, indicating no signs of deterioration in this group. Thus, it is likely that much of the effects reported here are due to improvements in participants allocated to self-help interventions. Despite this, it is important for future research to consider more rigorous control groups that account for participant expectations and attention and mirror what is available in naturalistic settings to people with eating disorders, such as generic self-help books, general wellbeing apps, or placebo devices (i.e., programs that do not contain active therapeutic ingredients but mimic content delivery formats).

Findings were less clear for clinically diagnosed samples. While significant pooled effects favoring self-help over control conditions were observed for distress, quality of life, and psychosocial impairment, confidence intervals were wide, and the largest number of comparisons available for these analyses was only five. Furthermore, it was not possible to stratify analyses according to different diagnostic presentations. Therefore, it remains largely unclear whether self-help approaches can effectively target general wellbeing outcomes in individuals with a confirmed eating disorder.

The growing reliance on technological platforms in clinical trials may help explain the scarcity of research on clinically diagnosed samples. Self-help interventions are increasingly delivered through digital platforms (rather than traditional book formats), which are supported by automated online systems capable of handling randomization, participant screening, and delivery of outcome assessments remotely, without the need for continuous input from researchers. This approach facilitates rapid recruitment of large samples at low cost and aligns with how self-help interventions are typically accessed in real-world settings—directly by individuals, without requiring formal diagnostic interviews or clinical gatekeeping. While this design choice enhances ecological validity, it may limit the ability to assess the effectiveness of these interventions for individuals with more severe or complex eating disorder presentations who are likely to engage with self-help within a broader treatment context. Recognizing the balance between scalability and clinical rigor will be important for future research aiming to bridge the gap between research settings and real-world applications.

It is important to acknowledge the limitations to this meta-analysis. First, the number of studies included in some of the meta-analyses was limited, and the number of studies with low risk of bias was even smaller in these same analyses. This means that the results of this meta-analysis on these outcomes are uncertain overall, especially in clinical samples. Second, there was considerable heterogeneity in the measures used to assess the outcomes analyzed in this research (see Table 1 for all measures). For instance, depression and quality of life were evaluated using five different measures, while anxiety was assessed using six measures. Although all measures have demonstrated acceptable psychometric properties, their sensitivity and specificity to change may vary, particularly in populations with or at risk for eating disorders. Third, we were not able to conduct any subgroup analyses given the low number of studies available. It is likely that effect sizes differ across various characteristics related to the intervention, participants, and trials. As more trials become available in the future, so too will the ability for meta-analysts to understand for whom and under what circumstances self-help approaches are most effective. Fourth, included samples mostly consisted of White adult women, suggesting that results cannot be generalized to people of different racial, age, and gender groups. A fifth limitation was the inability to present clinically meaningful effects, such as remission and recovery rates, for secondary constructs due to inconsistent reporting and the use of heterogeneous measures across trials. To address this gap, future trials should prioritize sharing individual participant data, enabling researchers to compute clinically meaningful effects and incorporate these metrics into future reporting to enhance the practical relevance of findings.

On the basis of these data, we can conclude that self-help prevention and treatment programs for eating disorders are probably effective in producing small improvements in certain secondary mental health outcomes. Not only are more adequately powered trials with diverse samples and active control groups needed, but efforts to understand how these improvements come about would also be useful. Improvements in these mental health outcomes could be a by-product of eating disorder symptom reduction or the result of individuals generalizing the skills acquired in these self-help programs to other contexts where comorbid symptoms typically emerge. Whatever the reason, the ease with which such self-help interventions can be

disseminated at scale means that even small effects may have a substantial public health impact.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data are available upon request.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.