Screening for Eating Disorders in Adolescents and Adults
Evidence Report and Systematic Review for the US Preventive Services Task Force

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IMPORTANCE Eating disorders are associated with adverse health and social outcomes.

OBJECTIVE To review the evidence on screening for eating disorders in adolescents and adults to inform the US Preventive Services Task Force.

DATA SOURCES MEDLINE, Cochrane Library, PsycINFO, and trial registries through December 19, 2020; surveillance through January 1, 2022.

STUDY SELECTION English-language studies of screening test accuracy, randomized clinical trials (RCTs) of screening or interventions for eating disorders in populations with screen-detected or previously untreated eating disorders (trials limited to populations who are underweight were ineligible).

DATA EXTRACTION AND SYNTHESIS Dual review of abstracts, full-text articles, and study quality. Meta-analysis of test accuracy studies and intervention trials.

MAIN OUTCOMES AND MEASURES Test accuracy, eating disorder symptom severity, quality of life, depression, and harms.

RESULTS Fifty-seven studies were included (N = 10 773); 3 (n = 1073) limited to adolescents (mean or median age, 14-15 years). No study directly evaluated the benefits and harms of screening. Seventeen studies (n = 6804) evaluated screening test accuracy. The SCOFF questionnaire (cut point ≥2) had a pooled sensitivity of 84% (95% CI, 74% to 90%) and pooled specificity of 80% (95% CI, 65% to 89%) in adults (10 studies, n = 3684). Forty RCTs (n = 3969) evaluated interventions for eating disorders; none enrolled a screen-detected population. Lisdexamfetamine for binge eating disorder (4 RCTs; n = 900) was associated with larger reductions in eating disorder symptom severity on the Yale-Brown Obsessive Compulsive Scale modified for binge eating (YBOCS-BE) than placebo (pooled mean difference, −5.75 [95% CI, −8.32 to −3.17]). Two RCTs (n = 465) of topiramate for binge eating disorder found larger reductions in YBOCS-BE scores associated with topiramate than placebo, from −6.40 (95% CI, −8.16 to −4.64) to −2.55 (95% CI, −4.22 to −0.88). Nine pharmacotherapy trials (n = 2006) reported on harms. Compared with placebo, lisdexamfetamine was associated with higher rates of dry mouth, headache, and insomnia, and topiramate was associated with higher rates of paresthesia, taste perversion, confusion, and concentration difficulty. Twenty-four trials (n = 1644) assessed psychological interventions. Guided self-help for binge eating disorder improved eating disorder symptom severity more than control (pooled standardized mean difference, −0.96 [95% CI, −1.26 to −0.67]) (5 studies, n = 391). Evidence on other interventions was limited.

CONCLUSIONS AND RELEVANCE No studies directly assessed the benefits and harms of screening. The SCOFF questionnaire had adequate accuracy for detecting eating disorders among adults. No treatment trials enrolled screen-detected populations; guided self-help, lisdexamfetamine, and topiramate were effective for reducing eating disorder symptom severity among referred populations with binge eating disorder, but pharmacotherapies were also associated with harms.

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Eating disorders are conditions marked by a disturbance in eating or eating-related behaviors that impair functioning.[1] This review focused on common eating disorders that could be asymptomatic or undetected in routine primary care: anorexia nervosa, avoidant/restrictive food intake disorder, bulimia nervosa, binge eating disorder, and other specified eating or feeding disorder. Estimated lifetime prevalences for anorexia nervosa, bulimia nervosa, and binge eating disorder in adult women are 1.42%, 0.46%, and 1.25%, respectively, and are lower in adult men (anorexia nervosa, 0.12%; bulimia nervosa, 0.08%; binge eating disorder, 0.42%).[2] In adolescents aged 12 to 17 years, estimated lifetime prevalence for anorexia nervosa, bulimia nervosa, and binge eating disorder are 0.3%, 1.3%, and 2.3%, respectively, for females and 0.3%, 0.5%, and 1.3% for males.[3] Estimated prevalence for some disorders vary by race and ethnicity and age category (eTable 1 in the Supplement).

Eating disorders are associated with adverse health outcomes which vary by diagnosis, duration, and frequency of certain behaviors. For bulimia nervosa, purging behaviors (eg, self-induced vomiting) can lead to electrolyte disturbances and dental erosion.[4] Binge eating disorder can contribute to obesity,[5] and anorexia nervosa is associated with morbidity attributed to weight loss and malnutrition.[6] Eating disorders are also commonly comorbid with mood and substance abuse disorders.[7]

Measurement of weight, height, and body mass index is routine in primary care practice and may detect some eating disorders, particularly anorexia nervosa. Disorders without physical symptoms may go unrecognized, and some individuals experiencing symptoms may not seek care. Routine screening could detect eating disorders early, lead to earlier treatment, and reduce future morbidity.

The US Preventive Services Task Force (USPSTF) has not previously made a recommendation on screening for eating disorders. This review evaluated the evidence on screening adolescents and adults for eating disorders for populations and settings relevant to primary care in the US to inform a recommendation by the USPSTF.

Methods

Scope of the Review

Detailed methods are available in the full evidence report.[8] **Figure 1** shows the analytic framework and key questions (KQs) that guided the review.

Data Sources and Searches

PubMed/MEDLINE, the Cochrane Library, PsycINFO, and ClinicalTrials.gov were searched for English-language articles published through June 23, 2020 (eMethods in the Supplement). The searches were supplemented with reference lists of pertinent articles and studies suggested by peer reviewers or public comment respondents. Since June 2020, ongoing surveillance was conducted through article alerts and targeted searches of journals to identify major studies published in the interim that may affect the conclusions or understanding of the evidence and the related USPSTF recommendation through January 1, 2022. No relevant studies were identified.

Study Selection

Two investigators independently reviewed titles, abstracts, and full-text articles using prespecified eligibility criteria (eMethods in the Supplement). Disagreements were resolved by consensus. For all KQs, English-language studies of adolescents and adults 10 years or older conducted in settings generalizable to primary care, including school-based health centers, and in countries categorized as "very high" on the United Nations Human Development Index were included.[9] The scope of this review was focused on populations with eating disorders unlikely to be detected in the context of routine primary care. Studies limited to populations with physical signs of eating disorders (eg, populations who are underweight) were ineligible because eating disorders would be part of the diagnostic assessment for individuals presenting with an abnormally low body weight. For KQ1 and KQ3 (direct evidence of benefits and harms of screening), randomized clinical trials (RCTs) comparing screening with no screening in asymptomatic populations were eligible. For KQ2 (screening test accuracy), studies comparing a screening test with a diagnostic reference standard for eating disorders (structured or semistructured diagnostic interview or diagnostic questionnaire) were eligible. Eligible screening tests included those feasible for use in primary care settings (brief, easy to interpret) and designed to detect any eating disorder or specific disorders (eg, binge eating disorder); longer questionnaires (eg, the 26-item Eating Attitudes Test) were excluded.

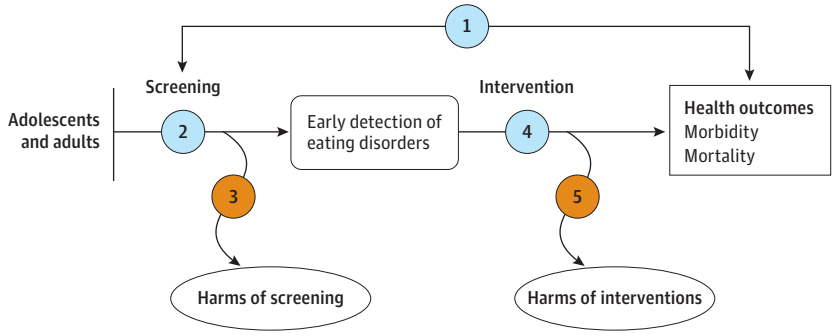
For KQs on benefits and harms of treatment (KQ5 and KQ6), RCTs enrolling populations with screen-detected eating disorders, or populations from specialty settings or via advertisements who had not been previously treated for eating disorders, were included. Eligible treatments included psychological interventions (eg, cognitive behavioral) delivered in a group, individual, or family-based format, including self-help interventions, or pharmacotherapy with US Food and Drug Administration–approved medications. Eligible RCTs had to compare treatment with an inactive control (ie, no treatment, wait-list, minimal intervention [eg, brief education about eating disorders], or placebo). RCTs evaluating combined psychological and pharmacotherapy interventions were eligible if they included an inactive control group.

Eligible outcomes for KQs on the benefits of screening or treatment included measures of eating disorder symptom severity, health-related quality of life or function, depression, and others. Intermediate outcomes such as mean change in frequency of specific behaviors (eg, change in frequency of binge eating episodes) were excluded. Eligible outcomes for KQ3 (harms of screening) included increased anxiety, labeling, and stigma associated with screening; for KQ5 (harms of interventions), outcomes included any harms attributed to interventions, such as harms associated with medications.

Data Extraction and Quality Assessment

For each study, 1 investigator extracted information about populations, tests or interventions, comparators, outcomes, settings, and designs, and a second investigator reviewed the information for completeness and accuracy. Two investigators independently assessed each study's methodological quality, using the Cochrane Risk of Bias Tool (RoB 2.0)[10] and the QUADAS-2 (Quality Assessment of Diagnostic Accuracy Studies 2) for studies of test accuracy.[11] Disagreements in quality ratings were resolved through discussion or independent assessment from a third senior investigator. Risk-of-bias assessments using these instruments were translated into an overall study quality rating of good, fair, or poor using predefined criteria developed by the USPSTF and adapted for this topic (eMethods

Figure 1. Analytic Framework: Screening for Eating Disorders in Adolescents and Adults



Key questions

1. Does screening for eating disorders in adolescents and adults improve health outcomes, including for specific subgroups of interest?
2. What is the accuracy of primary care-relevant screening tests for eating disorders in adolescents and adults, including for specific subgroups of interest?
3. What are the harms of screening for eating disorders in adolescents and adults, including for specific subgroups of interest?
4. How effective are interventions for improving health outcomes in screen-detected or previously untreated adolescents and adults with eating disorders, including for specific subgroups of interest?
5. What are the harms of interventions for eating disorders, including for specific subgroups of interest?

Evidence reviews for the US Preventive Services Task Force (USPSTF) use an analytic framework to visually display the key questions that the review will address to allow the USPSTF to evaluate the effectiveness and safety of a preventive service. The questions are depicted by linkages that relate interventions and outcomes. For additional information see the USPSTF Procedure Manual.[13]

in the Supplement). Individual study quality ratings are reported in eTables 4-7 in the Supplement.

Data Synthesis and Analysis

Findings for each KQ were summarized in tables, figures, and narrative format. For KQ2, pooled sensitivities and specificities for screening tests were calculated using a hierarchical summary receiver operating characteristic curve analysis when at least 4 similar studies were available. For KQ4, random-effects restricted maximum likelihood models were conducted on continuous measures of eating disorder and depression symptom severity (analyzing standardized mean difference or unstandardized mean difference in change between groups) when at least 3 similar studies were available. When studies reported more than 1 continuous outcome for eating disorder symptom severity, the outcome most commonly reported by similar studies in pooled estimates was preferentially selected. Statistical significance was assumed when 95% CIs of pooled results did not cross the null. All testing was 2-sided. Comprehensive Meta-Analysis version 3.4 (Biostat Inc) and Stata version 16 (StataCorp)[12] were used to conduct all quantitative analyses.

The overall strength of the evidence for each KQ was assessed as high, moderate, low, or insufficient based on the overall quality of the studies, consistency of results between studies, precision of findings, risk of reporting bias, and limitations of the body of evidence, using methods developed for the USPSTF (and the Evidence-based Practice Center program).[13] Additionally, the applicability of the findings to US primary care populations and settings was assessed. Discrepancies were resolved through consensus discussion.

Results

A total of 57 studies (59 articles) with 10 773 participants were included (**Figure 2**).

Benefits of Screening

Key Question 1. Does screening for eating disorders in adolescents and adults improve health outcomes, including for specific subgroups of interest?

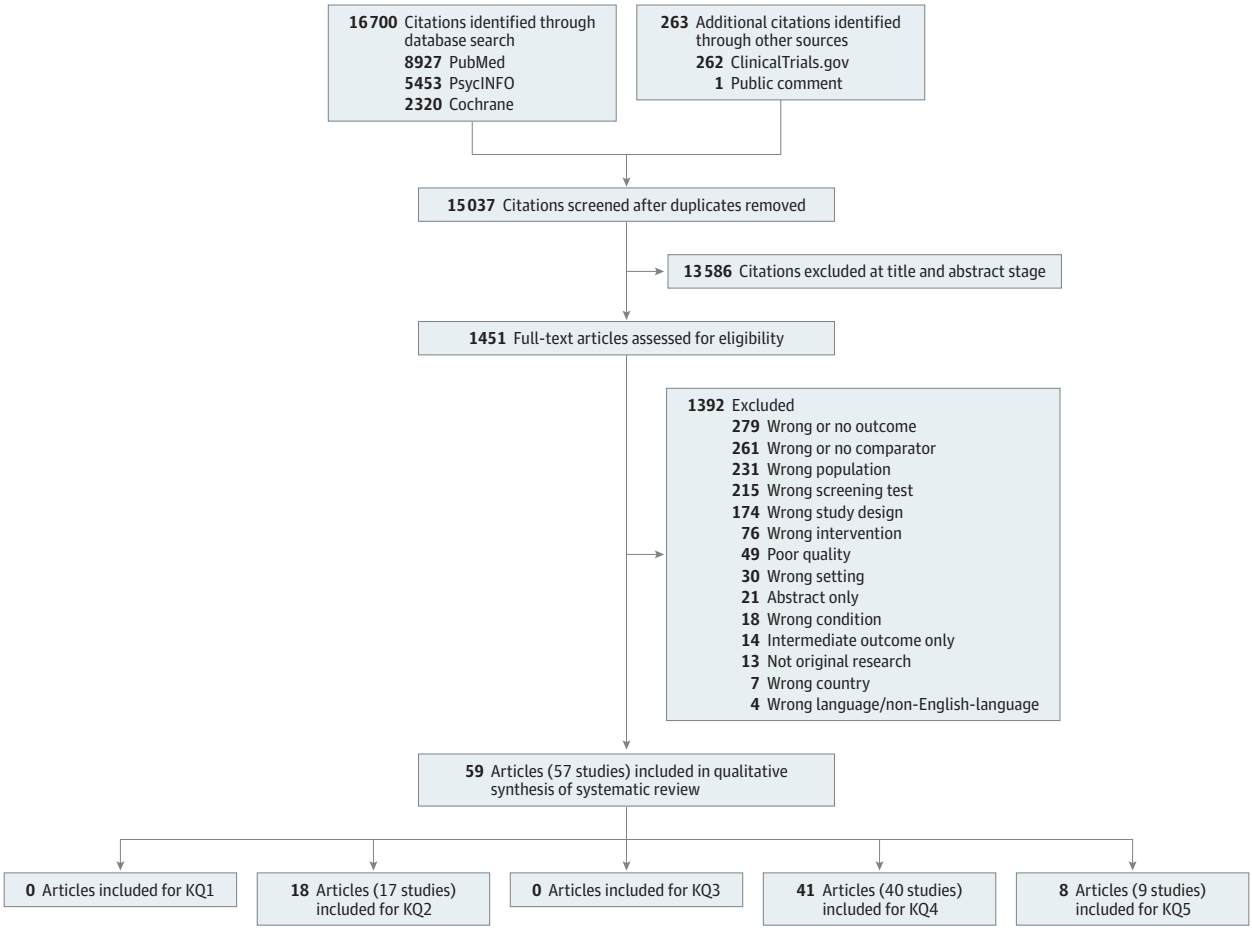
No eligible studies were identified.

Screening Accuracy

Key Question 2. What is the accuracy of primary care–relevant screening tests for eating disorders in adolescents and adults, including for specific subgroups of interest?

Ten good-quality[14-25] and 7 fair-quality[20,26-31] studies (18 articles) assessed the accuracy of 9 screening questionnaires; 5 were designed to detect any eating disorder,[14,15,17,18,20,21,24-28,31] and 4 were designed to detect eating disorders characterized by binge eating (bulimia nervosa or binge eating disorder).[19,23,29,30] Detailed characteristics are reported in **Table 1**.[14-32] Of the studies, 11 assessed the 5-item SCOFF questionnaire. (Some experts recommend not considering SCOFF an acronym since it is based on terminology from signaling questions that may not translate well [eg, "Have you recently lost more than One stone in a 3-month period?"].) Reference standards used to evaluate screening test accuracy included a diagnostic clinical interview or a longer diagnostic questionnaire.

Figure 2. Literature Search Flow Diagram: Screening for Eating Disorders in Adolescents and Adults



KQ indicates key question.

Most studies enrolled participants from university settings[17,18,20,22,25,31] and outpatient clinics (primary care,[15,19,24-26] psychiatry,[14] and obesity clinics).[23,28,30] Six studies were set in the US[15,18-20,26,29]; others were set in the UK,[24,25] Taiwan,[14] Malaysia,[17] and various European countries.[21-23,27,28,30,31] Most studies enrolled only females[15-18,22,24,28,31] or predominantly females (>60%)[14,20,23,25,29,30]; 2 enrolled a majority of males.[19,21] Two studies limited to adolescents with a mean or median age of 14 years, and all others enrolled adults (mean age, 20-63 years).[21,23] In 4 studies evaluating a screening tool for bulimia nervosa or binge eating disorder, prevalence (based on the reference standard) ranged from 8% to 22%[19,23,29,30]; the prevalence of any eating disorder ranged from 2% to 46%.

Table 2 summarizes results of screening test accuracy. In studies of adults (10 studies, n = 4348), the SCOFF questionnaire (cut point ≥2) had a pooled sensitivity of 84% (95% CI, 74% to 91%) and pooled specificity of 80% (95% CI, 65% to 89%) (Table 2; eFigure 1 in the Supplement). Seven studies (n = 3424) assessed the accuracy at a higher cut point (≥3)[14,17,22,24,26,28]; pooled sensitivity was lower at 69% (95% CI, 56% to 80%), and specificity was higher at 90% (95% CI, 69% to 98%) (Table 2; eFigure 2 in the Supplement). One study evaluated the SCOFF questionnaire (cut point ≥2) among adolescents (n = 954; mean age, 14 years)[21]; sensitivity was 73% (95% CI, 63% to 83%), and specificity was 78% (95% CI, 75% to 80%).

Eight other screening questionnaires were assessed across 8 included studies.[15,18,19,23,25,29-31] One, the EDS-PC (5 items, developed for use in primary care[25]) was evaluated in 2 studies (n = 627) enrolling different populations (Table 2); sensitivity ranged from 97% to 100%, and specificity ranged from 40% to 71%.[15,25] All other screening questionnaires were assessed by 1 study each; results are summarized in Table 2.[19,23,29,30]

Harms of Screening

Key Question 3. What are the harms of screening for eating disorders in adolescents and adults, including for specific subgroups of interest?

No eligible studies were identified.

Benefits of Treatment

Key Question 4. How effective are interventions for improving health outcomes in screen-detected or previously untreated adolescents and adults with eating disorders, including for specific subgroups of interest?

Table 1. Characteristics of Included Studies for KQ2

Source, country	Quality	Screener	Reference standard: eating disorder diagnoses assessed	Recruitment setting	Population	Eating disorder prevalence, %[a]	Age, mean (SD), y	Female, %	Non-White, %	BMI, mean (SD)
Cohort studies										
Lui et al,[14] 2015 Taiwan	Good	SCOFF	SCID (*DSM-IV*): anorexia nervosa, bulimia nervosa, BED, EDNOS	Outpatient psychiatric clinics	1541 Adults (18-45 y) recruited at their first outpatient psychiatric visit	Any eating disorder: 16	31 (7.9)	61	NR[b]	22.2 (5.4)
Graham et al,[18,32] 2019 US	Good	SWED	EDE (*DSM-5*): anorexia nervosa, bulimia nervosa, BED	University campuses	549 College-age women (18-25 y) responding to recruitment ads and flyers for an eating disorder prevention trial	Any eating disorder: 19[c,d]	21 (1.97)	100	44[d]	24.5 (5.02)
Dorflinger et al,[19] 2017 US	Good	VA-BES	QEWP-R: BED	VHA medical center	116 Veterans recruited at primary care–based weight management group	BED: 8	62 (8.73)	11	26	37.9 (7.35)
Rosenvinge et al,[31] 2001 Norway	Fair	EDS-5	SCID (*DSM-III-R*): any eating disorder	University campuses	51 College-age women (20-42 y) recruited at their teaching and nursing colleges	CED: 20[d]	25.2 (5.33)	100	NR	NR
Mond et al,[26] 2008 US	Fair	SCOFF	EDE	Primary care practices	147 Adult women (18-40 y) recruited at their primary care visit	Any eating disorder: 17	28 (6.50)	100	12	28.10 (7.20)
Cotton et al,[25] 2003 UK	Good	SCOFF, EDS-PC	QEDD	University campuses and primary care	225 Students (18-65 y) recruited from posters and lecture announcements and adults (18-65 y) recruited at a primary care visit	Any eating disorder: 12	29	77	NR	22
Lähteenmäki et al,[27] 2009 Finland	Fair	SCOFF	SCID (*DSM-IV*): anorexia nervosa, bulimia nervosa, EDNOS	Households	541 Young adults recruited via mail	Current anorexia nervosa, bulimia nervosa, EDNOS: 1[d] Lifetime anorexia nervosa, bulimia nervosa, EDNOS: 4[d]	NR	NR	NR	NR
Cross-sectional studies										
Maugen et al,[15] 2018 US	Good	EDS-PC, SCOFF, SDE	EDE-Q (*DSM-5*[e]): anorexia nervosa, bulimia nervosa, BED	VHA medical center	402 Female veterans (18-70 y) responding to mailed questionnaires	Any eating disorder: 16[d]	49 (NR)[d]	100	52[f]	NR
Chamay-Weber et al,[23] 2017 Switzerland	Good	ADO-BED	SCID (*DSM-IV*): BED	Outpatient pediatric obesity center	94 Adolescents (12-18 y) recruited at their outpatient pediatric visit	BED: Sub: 28 Full: 22 Overall: 50	Median (range): 14 (11-18)	60	NR	NR
Luck et al,[24] 2002; Hill et al,[16] 2010 UK	Good	SCOFF	Clinical interview (*DSM-IV*): anorexia nervosa, bulimia nervosa, EDNOS	Primary care practices	341 Women (18-50 y) attending primary care practices	Any eating disorder: 4[d]	NR	100	NR	NR
Siervo et al,[28] 2005 Italy	Fair	SCOFF	"Clinical diagnosis" (*DSM-IV*): bulimia nervosa, BED	Outpatient diet clinics	162 Women (16-35 y) recruited at an outpatient dietetic clinic	Any eating disorder: 46[d]	24[d]	100	NR	29.6[d]

(continued)

Table 1. Characteristics of Included Studies for KQ2 (continued)

Source, country	Quality	Screener	Reference standard: eating disorder diagnoses assessed	Recruitment setting	Population	Eating disorder prevalence, %[a]	Age, mean (SD), y	Female, %	Non-White, %	BMI, mean (SD)
Parker et al,[20] 2005	Good	SCOFF	EDE-Q (*DSM-IV*): anorexia nervosa, bulimia nervosa, EDNOS	University health center	297 Adults (20-51 y) recruited at their campus health visit	Any eating disorder: 20	<23 y: 10 23-26 y: 66 >26 y: 23	72	33	Range: 16-44
Ricca et al,[30] 2000 Italy	Fair	BES	SCID (*DSM-IV*): bulimia nervosa, BED	Outpatient clinic for metabolic diseases	344 Patients recruited at an outpatient clinic for metabolic diseases including obesity	BED: 8	43.5 (13.6)	83	NR	35.8 (6.1)
Wan Wahida et al,[17] 2017 Malaysia	Good	SCOFF	EAT-26	University	292 Undergraduate students (18-22 y) who understood English	Any eating disorder: 11	20 (0.5)	65	Malay: 44 Chinese: 42 Indian: 14	NR
Garcia et al,[22] 2010 France	Good	SCOFF	MINI (*DSM-IV-TR*): any eating disorder, anorexia nervosa, bulimia nervosa	University clinic	400 Female undergraduate students (18-35 y)	Any eating disorder: 9	21 (2.5)	100	14[f]	21.98 (3.5)
Muro-Sans et al,[21] 2008 Spain	Good	SCOFF	EDI-2	Primary and secondary schools	954 Adolescents (10-17 y) recruited from schools	Any eating disorder: 8[d]	14 (1.31)	49	NR	NR
Striegel-Moore et al,[29] 2010	Fair	PHQ-ED	EDE (*DSM-IV*): bulimia nervosa, BED	Health maintenance organization	348 Adults (18-35 y) selected from the EHR of an HMO via letter	Bulimia nervosa or BED: 8[d,e]	28 (5.38)	82	13	NR

Abbreviations: ADO-BED, Adolescent Binge-Eating Disorder Questionnaire; BED, binge eating disorder; BES, Binge Eating Scale; BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); CED, clinical eating disorder; *DSM-III-R*, *Diagnostic and Statistical Manual of Mental Disorders* (Third Edition Revised); *DSM-IV*, *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition); *DSM-IV-TR*, *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition, Text Revision); *DSM-5*, *Diagnostic and Statistical Manual of Mental Disorders* (Fifth Edition); EAT-26, Eating Attitudes Test; EDE, Eating Disorder Examination; EDE-Q, Eating Disorder Examination Questionnaire; EDI-2, Eating Disorder Inventory 2; EDNOS, eating disorder not otherwise specified; EDS-5, Eating Disturbance Scale 5; EDS-PC, Eating Disorder Screen for Primary Care; EHR, electronic health record; HMO, health maintenance organization; KQ, key question; MINI, Mini International Neuropsychiatric Interview; NR, not reported; PHQ-ED, eating disorder module of the Patient Health Questionnaire; QEDD, Questionnaire for Eating Disorder Diagnoses; QEWP-R, Questionnaire of Eating and Weight Patterns–Revised; SCID, Structured Clinical Interview for *DSM* Disorders; SDE, Screen for Disordered Eating; SWED, Stanford-Washington University Eating Disorder screen; VA-BES, Veterans Affairs Binge Eating Screener; VHA, Veterans Health Administration.

[a] *Full* refers to meeting the full diagnostic criteria for a given eating disorder; *sub* refers to a subthreshold condition definition.

[b] Conducted in Taiwan and required to understand Mandarin.

[c] Also conducted analysis including subthreshold bulimia nervosa, BED, and purging disorder (in addition to threshold anorexia nervosa, bulimia nervosa, and BED).

[d] Computed by data abstractors.

[e] BED defined as an average of 1 or more objective binge episodes per week without compensatory or purging behaviors.

[f] Enrolled all screen-positive participants and a random sample of those who screened negative.

Table 2. Summary of Accuracy for Included Screening Tests (KQ2)

Screener (cut point)	Eating disorder diagnosis	No. of studies (No. of participants)	% (95% CI)		LR+ (95% CI)	LR- (95% CI)
			Sensitivity	Specificity		
SCOFF						
≥3	Any	7 (2749)	Pooled: 69 (56-80)	Pooled: 90 (69-98)	Pooled: 7.3 (2.2-24.0)	Pooled: 0.34 (0.25-0.46)
≥2	Any	10 (3684)	Pooled: 84 (74-90)	Pooled: 80 (65-89)	Pooled: 4.1 (2.3-7.3)	Pooled: 0.20 (0.12-0.33)
SWED (>59)[18]	Any	1 (549)	80 (NR)	82 (NR)	NR	NR
EDS-PC (≥2)[15,25]	Any	2 (627)	97 (88-100)	40 (35-46)	NR	NR
			100 (90-100)	71 (64-77)		
SDE (≥2)[15]	Any	1 (402)	91 (80-96)	58 (80-96)	NR	NR
EDS-5 (≥16)[31]	Any	1 (51)	90 (NR)	88 (NR)	NR	NR
PHQ-ED (NA)[29]	BN, BED	1 (348)	100 (NR)	30 (NR)[a]		
ADO-BED (NA)[23]	BED	1 (94 adolescents)	100 (NR)	27 (NR)	NR	NR
VA-BES (≥1)[19]	BED	1 (162)	89 (NR)	65 (NR)	NR	NR
BES (≥17)[30]	BED	1 (344)	85 (NR)	75 (NR)	NR	NR

Abbreviations: ADO-BED, Adolescent Binge-Eating Disorder Questionnaire; BED, binge eating disorder; BES, Binge Eating Scale; BN, bulimia nervosa; EDS-5, Eating Disturbance Scale 5; EDS-PC, Eating Disorder Screen for Primary Care; KQ, key question; LR, likelihood ratio; NR, not reported; PHQ-ED, eating disorder module of the Patient Health Questionnaire; SDE, Screen for Disordered Eating; SWED, Stanford-Washington University Eating Disorder screen; VA-BES, Veterans Affairs Binge Eating Screener.

[a] Value calculated based on individual cell frequencies differs from reported specificity value reported in study (91.7% vs 27.7%, respectively).

Forty fair- to good-quality RCTs (n = 3969) of treatment for eating disorders were included—18 (19 publications) assessing pharmacotherapy[33-51] and 24 assessing therapy (eTables 9 and 10 in the Supplement); of these, 2 assessed both pharmacotherapy and therapy interventions compared with a control.[50,51] All enrolled populations referred or recruited to treatment; none enrolled populations detected by screening in primary care. In 17 studies describing race or ethnicity, 1 was limited to Latinas only,[52] 2 enrolled a population that was 54% to 55% non-White (from the US),[53,54] and all others enrolled a majority of White participants.

Among 18 RCTs evaluating the benefit of pharmacotherapy compared with placebo over 6 to 16 weeks (eTable 9 in the Supplement), 14 enrolled populations with binge eating disorder (defined by *Diagnostic and Statistical Manual of Mental Disorders* [Fourth Edition] or *Diagnostic and Statistical Manual of Mental Disorders* [Fifth Edition] [*DSM-5*] criteria), and 4 enrolled populations with bulimia nervosa defined by *Diagnostic and Statistical Manual of Mental Disorders* (Third Edition) criteria.[41,43,48,51] All enrolled adults, and 1 trial (n = 50) enrolled both adults and adolescents as young as 16 years (mean age, 25 years).[55] Detailed characteristics of populations and pharmacotherapy are reported in eTable 9 in the Supplement.

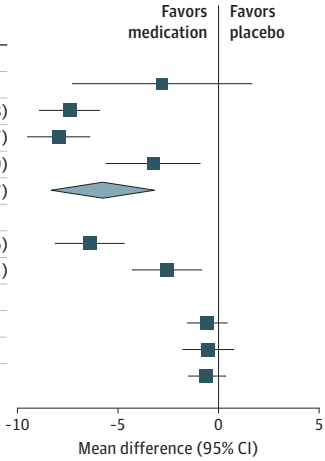
Four RCTs (described in 3 publications) compared lisdexamfetamine with placebo among adults with binge eating disorder.[33,35,37] All measured binge eating disorder symptom severity using the Yale-Brown Obsessive Compulsive Scale modified for binge eating (YBOCS-BE); for doses ranging from 50 to 60 mg/d, the pooled mean difference in change from the baseline score over 11 to 12 weeks (4 studies, n = 900) was −5.75 (95% CI, −8.32 to −3.17) (**Figure 3**). This difference falls within the range considered a minimum clinically important change on the YBOCS-BE (−4 to −17).[56] Other eligible outcomes were reported by only 1 or 2 studies each (eTable 9 in the Supplement). Two trials of topiramate (n = 465) measured reduction in eating disorder symptom severity using the YBOCS-BE over 14 to 15 weeks (mean or median dose, 212-300 mg/d).[44,48] Both found significant improvement favoring topiramate (Figure 3); 1 found a difference between groups in mean change from baseline score (−6.50) within the range considered a minimum clinically important change (−4 to −17),[44] and the other found a smaller difference in mean score change (−2.55).[48]

Five RCTs assessed a selective serotonin reuptake inhibitor (SSRI) for improving binge eating disorder, including fluoxetine (2 studies)[38,50] and 1 study each of fluvoxetine,[42] sertraline,[40] and escitalopram.[46] None selected participants based on the presence of comorbid depression; however, in 4 trials prevalence of lifetime depression ranged from 37% to 77%,[38,40,46,50] and in 3 trials prevalence of current major depression ranged from 18% to 25%.[38,40,46] Only 2 trials measured eating disorder symptom severity (the Eating Disorder Examination–Questionnaire [EDE-Q] and YBOCS-BE); although both found a reduction in symptom scores favoring SSRIs (eFigure 3 in the Supplement), results were imprecise. All reported on change in depression symptoms (eFigure 3 in the Supplement); SSRIs were associated with a larger reduction in depression symptom scores than placebo (pooled standardized mean difference [SMD], −0.6 [95% CI, −0.90 to −0.33]) (5 studies; n = 208).[36,39,45] Three trials assessed fluoxetine for populations with bulimia nervosa and found inconsistent results for eating disorder symptom severity and depression (eTable 12 in the Supplement). One trial each evaluated duloxetine,[39] bupropion,[36] and imipramine[45] for populations with binge eating disorder, and 1 evaluated desipramine for bulimia nervosa[41] (eTable 9 in the Supplement); none found a significant differences between groups on measures of eating disorder symptom severity or depression.

Twenty-four trials (n = 1644) assessed the benefit of a psychological intervention compared with an inactive control (eTable 10 in the Supplement).[50-55,57-74] Most enrolled populations with binge eating, either binge eating disorder or bulimia nervosa with recurrent binge eating behavior; 1 trial enrolled those with bulimia nervosa without mention of binge eating,[73] and 3 enrolled women with any *DSM-5* eating disorder.[55,57,62] One trial (n = 25) was limited to adolescents (mean age, 15 years),[74] 1 (n = 82) enrolled both adults and adolescents (as young as 14 years),[55] and all others enrolled adults only.

Figure 3. Results of Randomized Clinical Trials of Lisdexamfetamine and Topiramate vs Placebo for Binge Eating Disorder (KQ4)

Source	Outcome	Weeks	Mean dose, mg/d	No. of participants		Mean difference (95% CI)
				Medication	Placebo	
Lisdexamfetamine (eating disorder symptom severity)						
Guerdjikova et al,[33] 2016	YBOCS-BE	12	60	25	25	-2.80 (-7.28 to 1.68)
McElroy et al,[35] 2016	YBOCS-BE	12	57	190	184	-7.40 (-8.92 to -5.88)
	YBOCS-BE	12	58	174	176	-7.94 (-9.51 to -6.37)
McElroy et al,[37] 2015	YBOCS-BE	11	50	64	62	-3.25 (-5.61 to -0.89)
Heterogeneity: $\tau^2 = 5.31$, $I^2 = 82.75\%$, $H^2 = 5.80$						-5.75 (-8.32 to -3.17)
Topiramate (eating disorder symptom severity)						
McElroy et al,[44] 2007	YBOCS-BE	16	300	202	202	-6.40 (-8.14 to -4.66)
McElroy et al,[48] 2003	YBOCS-BE	14	212	30	31	-2.55 (-4.29 to -0.81)
Topiramate (depression, anxiety)						
McElroy et al,[48] 2003	HAM-D	14	212	30	31	-0.55 (-1.57 to 0.46)
McElroy et al,[44] 2007	MADRS	16	300	202	202	-0.50 (-1.79 to 0.79)
	HAM-A	16	300	202	202	-0.60 (-1.52 to 0.32)



HAM-A indicates Hamilton Anxiety Rating Scale; HAM-D, Hamilton Rating Scale for Depression; KQ, key question; MADRS, Montgomery-Åsberg Depression Rating Scale; YBOCS-BE, Yale-Brown Obsessive Compulsive Scale modified for binge eating.

Included trials focused on a variety of psychological interventions (eTable 10 in the Supplement); most evaluated a form of self-help based on cognitive behavioral therapy or other strategies, designed to help participants cope with eating disorder symptoms.[51-55,59-61,63,66,68,72,75] Seven trials evaluated a type of group therapy[57,65,67,69-71,73] and 4 evaluated a form of individual cognitive behavioral therapy.[50,62,64,74] eTable 11 in the Supplement provides additional detail related to the intervention approach, components, and intensity.

Thirteen trials evaluated a self-help intervention, 7 assessed a form of "guided" self-help,[52,58,59,61,63,68,72] and 7 assessed an "unguided" self-help intervention.[51,53-55,60,63,66] One trial compared both guided and unguided self-help interventions with a control.[63] Guided interventions included ongoing support and guidance, for example, several brief (25- to 30-minute) individually guided sessions, regular email contact for support,[52,59,61,63,72] or individual feedback on assignments.[58] Unguided interventions involved providing the intervention materials with instructions only.

Guided self-help was associated with a larger reduction in eating disorder severity than control (measured by the EDE or EDE-Q) over 12 to 24 weeks (pooled SMD, −0.96 [95% CI, −1.26 to −0.67] [5 studies; n = 391]) (**Figure 4**). Results from trials of unguided self-help (6 studies; n = 368) were consistent in favoring self-help, but pooled estimates were not statistically significant (SMD, −0.18 [95% CI, −0.38 to 0.03]) (Figure 4). For measures of depression, pooled results demonstrated larger reductions in mean scores compared with controls for both guided self-help (SMD, −0.73 [95% CI, −1.04 to −0.43]; 4 studies; n = 324) and unguided self-help (SMD, −0.37 [95% CI, −0.68 to −0.05]; 3 studies; n = 156). Few trials of self-help measured other eligible outcomes.

Seven RCTs assessed a group-based psychological intervention for binge eating disorder and bulimia nervosa with recurrent binge eating using different therapeutic approaches and number of sessions (eTable 11 in the Supplement).[57,65,67,69-71,73] Group therapy (7 studies; n = 253) was associated with larger reductions in depression scores from baseline than inactive control (pooled SMD, −0.48 [95% CI, −0.69 to 0.27]). Three trials of group therapy measured eating disorder symptom severity using the EDE-Q and found inconsistent results (eFigure 4 in the Supplement).[65,67] Four trials assessed different forms of individual therapy among adults and found mixed results (eFigure 4 in the Supplement).[50,62,64] One trial of individual cognitive behavioral therapy in adolescents (n = 25; mean age, 15) found no significant differences between groups at 12 or 24 weeks on depression symptoms and psychosocial functioning.[74]

Harms of Treatment

Key Question 5. What are the harms of interventions for eating disorders, including for specific subgroups of interest?

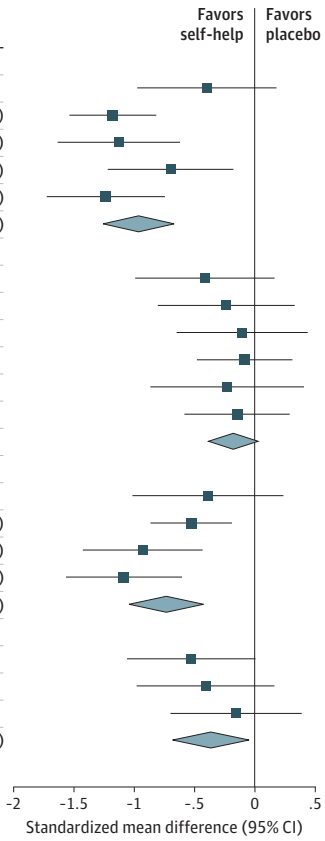
No included studies of psychological interventions reported on harms. Nine studies of pharmacotherapy reported various harms associated with 4 medications, including lisdexamfetamine (4 studies),[33,35,37] topiramate (2 studies),[44,48] fluoxetine (2 studies),[38,43] and escitalopram.[46] Characteristics are described in KQ4 and eTable 9 in the Supplement.

In 1 trial of lisdexamfetamine (n = 259) over 11 weeks, 1 participant died during the study, and postmortem toxicology analysis found that methamphetamine/amphetamine levels were consistent with a methamphetamine overdose (death was not attributed to the study drug).[37] Across all 4 trials of lisdexamfetamine, treatment-emergent harms were higher for the treatment groups than the placebo groups; commonly reported harms were dry mouth, insomnia, and jitteriness (eTable 13 in the Supplement).[33,35,37] Two trials of topiramate (duration, 14-16 weeks) found significantly higher rates of paresthesia and taste perversion[44,48] associated with topiramate than placebo. One trial found significantly higher rates of difficulty concentrating[44] and the other found significantly higher rates of confusion.[48]

In 3 trials of SSRIs, 1 found significantly higher rates of several harms in the fluoxetine group than in the placebo group (eTable 13 in the Supplement), such as insomnia, nausea, and tremor.[43] The other 2 trials reported no significant differences between groups for any adverse effects over 6 weeks.[38,46]

Figure 4. Results of Randomized Clinical Trials of Self-help Interventions for Eating Disorders (KQ4)

Source	Intervention type	Measure	Weeks	Standardized mean difference (95% CI)
Guided self-help (eating disorder symptom severity)				
Carter et al,[63] 2020	DBT	EDE-Q	24	-0.40 (-0.98 to 0.18)
Wagner et al,[58] 2016	CBT	EDE-Q	16	-1.18 (-1.54 to -0.82)
Ljotsson et al,[61] 2007	CBT	EDE-Q	12	-1.13 (-1.64 to -0.62)
Masson et al,[72] 2013	DBT	EDE-Q	13	-0.70 (-1.22 to -0.18)
Sánchez-Ortiz et al,[59] 2011	CBT	EDE	12	-1.24 (-1.73 to -0.75)
Heterogeneity: $\tau^2 = 0.05$, $I^2 = 46.37\%$, $H^2 = 1.86$				-0.96 (-1.26 to -0.67)
Unguided self-help (eating disorder symptom severity)				
Carter et al,[63] 2020	DBT	EDE-Q	24	-0.42 (-0.99 to 0.16)
Grilo et al,[53] 2013	CBT	EDE-Q	16	-0.24 (-0.81 to 0.33)
Grilo et al,[54] 2014	CBT	EDE-Q	26	-0.11 (-0.65 to 0.44)
Schmidt et al,[68] 2008	CBT	EDE-Q	12	-0.08 (-0.48 to 0.31)
Kelly and Carter,[60] 2015	CFT	EDE-Q	8	-0.23 (-0.87 to 0.41)
Green et al,[55] 2018	Body Project[a]	EDE-Q	8	-0.15 (-0.58 to 0.29)
Heterogeneity: $\tau^2 = 0.00$, $I^2 = 0.00\%$, $H^2 = 1.00$				-0.18 (-0.38 to 0.03)
Guided self-help (depression)				
Cachelin et al,[52] 2019	CBT	BDI-II	12	-0.39 (-1.02 to 0.24)
Wagner et al,[58] 2016	CBT	BDI	16	-0.53 (-0.87 to -0.19)
Ljotsson et al,[61] 2007	CBT	MADRS	12	-0.93 (-1.43 to -0.43)
Sánchez-Ortiz et al,[59] 2011	CBT	HADS-Dep	12	-1.09 (-1.57 to -0.60)
Heterogeneity: $\tau^2 = 0.04$, $I^2 = 41.88\%$, $H^2 = 1.72$				-0.73 (-1.04 to -0.43)
Unguided self-help (depression)				
Carter et al,[63] 2020	CBT	BDI	8	-0.53 (-1.06 to 0.01)
Grilo et al,[53] 2013	CBT	BDI	16	-0.41 (-0.98 to 0.16)
Grilo et al,[54] 2014	CBT	BDI	26	-0.16 (-0.70 to 0.39)
Heterogeneity: $\tau^2 = 0.00$, $I^2 = 0.00\%$, $H^2 = 1.00$				-0.37 (-0.68 to -0.05)



BDI indicates Beck Depression Inventory; CBT, cognitive behavioral therapy; CFT, compassion-focused therapy-based self-help; DBT, dialectical behavioral therapy; EDE, Eating Disorder Examination; EDE-Q, EDE Questionnaire; HADS-Dep, Hospital Anxiety and Depression Scale–Depression; KQ, key question; MADRS, Montgomery-Åsberg Depression Rating Scale.

[a] Cognitive-dissonance-based intervention (http://www.bodyprojectsupport.org/).

Discussion

This systematic review evaluated evidence relevant to screening for eating disorders in adults and adolescents. A summary of findings, including an assessment of the strength of evidence for each KQ, is presented in **Table 3**. To date, there is no direct evidence from trials comparing the benefits and harms of routine screening vs no screening. Thus, this review answered 2 questions: how well screening detects eating disorders and how effective are interventions at treating eating disorders among populations with screen-detected or previously untreated eating disorders.

Screening tools are available for clinical practice that may reasonably identify adults with eating disorders, primarily the SCOFF questionnaire. Other tools were assessed by only 1 study each, limiting the ability to make stronger conclusions about screening test accuracy. The estimates of SCOFF screening test accuracy were derived from populations with a current prevalence of eating disorders ranging from 4% to 46% based on the reference standard, higher than recent estimates of eating disorders in the US. Potential harms of screening include false-positive screening results that lead to unnecessary referrals or labeling. Based on the pooled estimates of SCOFF accuracy for detecting any eating disorder (Table 2) among adults (10 studies, 4348 participants), the expected rate of false-positive test results would be 20%.

Most RCTs evaluating interventions for eating disorders were limited to adult women with binge eating disorder and bulimia nervosa, enrolled treatment-seeking populations (either respondents to advertisements or referrals), and measured outcomes over a relatively short duration. Some recruited participants using ads that indicated trials of treatment for binge eating and obesity. Both lisdexamfetamine and topiramate were effective in reducing eating disorder severity among adults with binge eating disorder but were also associated with various harms. Few trials of SSRIs reported an eligible health outcome specific to eating disorder symptoms; however, results of 5 trials enrolling adults with binge eating disorder found consistent improvement in depression symptoms associated with various SSRIs. Although trials did not enroll participants based on depression status, lifetime depression rates ranged from 37% to 77% in 4 trials reporting on mental health comorbidity. Whether improvement on depression scores indicates improved eating disorder symptom severity is not clear.

Among the 24 trials assessing psychological interventions, guided self-help improved eating disorder symptom severity and depressive symptoms among adults with binge eating disorder; results for unguided self-help were consistent in direction of effect,

Table 3. Summary of Evidence for Screening in Eating Disorders in Adolescents and Adults

Topic	No. of studies (No. of participants)	Summary of findings	Consistency and precision	Study quality	Limitations (including reporting bias)	Overall strength of evidence	Applicability
KQ1: Benefits of screening							
	0	No eligible studies	NA	NA	NA	Insufficient	NA
KQ2: Accuracy of screening tests for detecting eating disorders							
	SCOFF (≥2): 10 (3684)	Pooled sensitivity, 84% (95% CI, 74%-90%); specificity, 80% (95% CI, 65%-89%)	Consistent and precise for sensitivity; inconsistent and imprecise for specificity[a]	7 Good; 3 Fair	Potential bias related to participant selection Reference standards varied across studies	Moderate for adequate accuracy	Studies enrolled adults and either limited to women or enrolled a majority of women Several studies enrolled from specialty clinics or college campuses
	SCOFF (≥3): 7 (2749)	Pooled sensitivity, 69% (95% CI, 56%-80%); specificity, 90% (95% CI, 69%-98%)	Inconsistent and imprecise for both sensitivity and specificity[b]	4 Good; 3 Fair	Potential bias related to participant selection Reference standards varied across studies	Low for adequate accuracy	All studies enrolled adults and either limited to women or enrolled a majority of women Several studies enrolled from specialty clinics or college campuses
	EDS-PC (≥2): 2 (627)	Sensitivity, 97% (95% CI, 88%-100%); 100% (95% CI, 90%-100%) Specificity, 40% (95% CI, 35%-46%); 71% (95% CI, 64%-77%)	Consistent and precise for sensitivity; inconsistent and imprecise for specificity	Good	Studies used different reference standards and enrolled diverse populations	Insufficient	One study recruited females and males from primary care and college campuses in the UK (77% females), and the other recruited female US veterans
KQ3: Harms of screening							
	0	No eligible studies	NA	NA	NA	Insufficient	NA
KQ4: Benefits and harms of interventions for screen-detected or previously untreated ED							
Benefits of pharmacotherapy	Lisdexamfetamine (BED): 4 (900)	Pooled mean difference for reduction in YBOCS-BE scores larger in lisdexamfetamine group vs placebo (−5.75 [95% CI, −9.32 to −3.17]) Other outcomes assessed by 1 trial each (depression, anxiety, QOL, and function)	YBOCS-BE: consistent, precise Other health outcomes: unknown consistency and imprecise	Fair	Outcomes assessed over relatively short duration (11-12 wk)	Moderate for benefit in eating disorder symptom severity; insufficient for other health outcomes	Studies enrolled adults with BED and obesity recruited via study advertisements
	Topiramate (BED): 2 (465)	Larger reduction in YBOCS-BE in topiramate groups vs placebo; difference between groups in score change, −6.40 (P < .001) and −2.55 (P = .004) Other outcomes assessed by 1 trial each (depression, anxiety)	YBOCS-BE; consistent, imprecise[c] Other outcomes: unknown consistency, imprecise	Fair	Outcomes assessed over a relatively short duration (14-16 wk)	Low for benefit in eating disorder symptom severity; insufficient for other outcomes	Studies enrolled adults with BED and obesity recruited via study advertisements
	SSRIs (BED) 5 (208)	Two reported on eating disorder symptom severity: fluoxetine (EDE-Q) SMD, −0.69 (95% CI, −1.30 to −0.08) and escitalopram (YBOCS-BE) SMD, −0.29 (95% CI, −0.83 to −0.24) Larger reduction in depression symptoms among SSRI groups vs placebo (5 trials): pooled SMD, −0.61 (95% CI, −0.90 to −0.33)	Eating disorder symptom severity: unknown consistency, imprecise[d] Depression: consistent, imprecise	Fair	Studies assessed different SSRIs and reported outcomes over 6-16 wk Study eligibility criteria varied in terms of body weight and duration/frequency of binge eating episodes	Insufficient for eating disorder symptom severity Low for benefit in depression symptom severity	Studies enrolled adults with BED, most recruited via advertisements. Two limited to populations that were obese, and 1 limited to those with concurrent depression

(continued)

Table 3. Summary of Evidence for Screening in Eating Disorders in Adolescents and Adults (continued)

Topic	No. of studies (No. of participants)	Summary of findings	Consistency and precision	Study quality	Limitations (including reporting bias)	Overall strength of evidence	Applicability
	Fluoxetine (bulimia nervosa): 3 (528)	Two found larger reduction in EAT scores among fluoxetine group vs placebo; difference was statistically significant in 1 trial Two found larger reductions in HAM-D scores among fluoxetine vs placebo; difference was statistically significant in 1 trial[e]	Eating disorder symptom severity: consistent; imprecise Depression symptom severity: consistent; imprecise	Fair	Studies reported outcomes at different durations (8 and 16 wk)	Low for benefit (eating disorder and depression symptom severity)	All enrolled populations with bulimia nervosa recruited via advertisements; 1 limited to those with bulimia nervosa and recurrent binge eating
Benefits of therapy interventions	Guided self-help: 7 (431)	Guided self-help reduced eating disorder symptom severity more than control (5 studies; n = 391): pooled SMD, −0.96 (95% CI, −1.26 to −0.67) Guided self-help reduced depression symptoms more than control (4 studies; n = 324): pooled SMD, −0.73 (95% CI, −1.04 to −0.43)	Eating disorder symptom severity: consistent, precise Depression symptom severity: consistent, precise	Fair	Frequency and mode of delivering guidance varied (eg, emails, individual sessions); studies assessed eating disorder and depression symptoms using different measures over a relatively short duration (8-16 wk)	Moderate for benefit (eating disorder and depression symptom severity)	All enrolled adults with BED recruited primarily via advertisements; several limited to populations that were obese
	Unguided self-help: 7 (421)	Pooled results (6 studies; n = 368) favored self-help for reduction in eating disorder symptom severity but difference was not statistically significant (SMD, −0.18 [95% CI, −0.38 to 0.03]) Unguided self-help reduced depression symptoms more than control (3 studies; n = 156) (SMD, 0.37 [95% CI, −0.68 to −0.05])	Eating disorder symptom severity: consistent, imprecise Depression symptom severity: consistent, imprecise	Fair	Studies assessed eating disorder and depression symptoms using various measures over a relatively short duration (8-16 wk) Content and underlying theory of some interventions varied	Low for benefit (eating disorder and depression symptom severity)	All enrolled adults with BED recruited primarily via advertisements; several limited to populations that were obese
	Group interventions: 7 (253)	Group therapy reduced depression symptoms more than control (7 studies; n = 253) (pooled SMD, −0.48 [95% CI, −0.69 to −0.27]) Three measured eating disorder symptom severity using the EDE-Q; 1 found a statistically significant benefit vs control (SMD, −1.01) and 2 found no significant differences between groups (SMD, −0.10 and −0.30)	Eating disorder symptom severity: inconsistent, imprecise Depression symptom severity: consistent, precise	Fair	Type of group therapy differed across studies (eg, CBT-based, interpersonal therapy) Outcomes were measured over a relatively short duration (8-16 wk) Number, length, and frequency of sessions varied	Moderate for benefit in depression symptom severity; insufficient for eating disorder symptom severity	All enrolled adults with BED recruited primarily via advertisements; several limited to populations that were obese

(continued)

Table 3. Summary of Evidence for Screening in Eating Disorders in Adolescents and Adults (continued)

Topic	No. of studies (No. of participants)	Summary of findings	Consistency and precision	Study quality	Limitations (including reporting bias)	Overall strength of evidence	Applicability
	Individual interventions: 4 (319)	One trial assessing 2 forms of individual CBT found no significant differences between groups on EDE-Q scores; 1 trial of AF-DBT found significant improvement in EDE-Q scores (SMD, −1.18 [95% CI, −1.94 to −0.43]) One trial of CBT found improvement in BDI scores (SMD, −0.60 [95% CI, −1.14 to −0.06]) and a trial of DBT-AF found significant improvement in BDI-II scores (SMD, −0.92 [95% CI, −1.65 to −0.19]) One trial limited to adolescents found no significant improvement in depression (BDI scores) or psychosocial function (SCARED scores)	Unknown consistency; imprecise	Fair	Trials addressed different types of individual therapy (eg, CBT, DBT) and reported on different outcomes over a relatively short duration (6 to 16 wk)	Insufficient	All enrolled adults with BED (or BED and bulimia nervosa) referred or recruited via trial advertisements
Harms of pharmacotherapy	9 (2006)	Lisdexamfetamine (4 studies) is associated with higher rates of dry mouth, headache, and insomnia vs placebo Topiramate (2 studies) was associated with significantly higher rates of paresthesia, taste, and difficulty with concentration/confusion vs placebo Trials of other medications were assessed by only 1 study each, and results were imprecise	Lisdexamfetamine: consistent; imprecise Topiramate; consistent, imprecise Other medications: unknown consistency; imprecise	Fair	Some trials did not prespecify adverse events or describe how they were ascertained; trials assessed adverse events over a relatively short duration	Topiramate and lisdexamfetamine: Moderate for increased rates of various adverse effects Other medications: insufficient	All studies enrolled adults with BED and obesity, recruited via referrals or study advertisements Most studies of lisdexamfetamine were limited to populations without ADHD, substance abuse, or other psychiatric comorbidity
Harms of therapy interventions	0	No eligible studies	NA	NA	NA	Insufficient	NA

Abbreviations: ADHD, attention-deficit/hyperactivity disorder; AF-DBT, appetite focused-dialectical behavior therapy; BDI, Beck Depression Inventory; BED, binge eating disorder; CBT, cognitive behavioral therapy; DBT, dialectical behavior therapy; DBT-AF, dialectical behavior therapy, appetite focused; EAT, Eating Attitudes Test; EDE-Q, Eating Disorder Examination Questionnaire; EDS-PC, Eating Disorder Screen for Primary Care; HAM-D, Hamilton Depression Rating Scale–Depression; KQ, key question; NA, not applicable; QOL, quality of life; SCARED, Screen for Child Anxiety-Related Emotional Disorders; SMD, standardized mean difference; SSRI, selective serotonin reuptake inhibitor; YBOCS-BE, Yale-Brown Obsessive Compulsive Scale modified for binge eating.

[a] Based on eFigure 1 in the Supplement, the 95% prediction region indicates the results are mostly consistent for sensitivity and somewhat inconsistent for specificity; based on the 95% confidence region, estimates are precise for sensitivity and somewhat imprecise for specificity.

[b] Based on eFigure 2 in the Supplement, the 95% prediction region indicates results are inconsistent; based on the 95% confidence region, estimates are imprecise.

[c] Difference between groups in mean YBOCS-BE met threshold considered to be a minimum clinically important change in only 1 of 2 studies.

[d] Although results were in same direction of effect (favoring SSRI), only 2 studies assessed change in eating disorder symptom reduction. Each assessed a different medication using different measures of eating disorder symptom burden (YBOCS-BE vs EDE-Q) and reported outcomes at slightly different durations (12 vs 16 weeks), limiting ability to assess consistency for this outcome.

[e] One additional trial (n = 42) assessed fluoxetine 60 mg/d for bulimia nervosa and reported no significant difference between groups for eating disorder symptom severity (EDI) and depression (HAM-D), $P > .05$.

but pooled estimates were imprecise and smaller in magnitude than estimates for guided self-help. Evidence for group and individual psychological interventions was heterogeneous, and results were mixed. No trials of psychological interventions reported on potential harms of interventions, including whether some participants experienced increased anxiety or stigma because of the intervention.

The evidence from the current report highlights several important research needs. First, RCTs assessing health outcomes that directly compare routine screening with no screening among populations with no obvious signs or symptoms of eating disorders would inform the potential effectiveness of routine screening. Studies of screening test accuracy that enroll populations from general primary care settings would improve certainty about the accuracy of existing screening tests in these settings. Studies of screening test accuracy in adolescents are needed, given that adolescence is considered a time of risk for eating disorder onset and concern about how social media influences the mental health of adolescents. Similarly, studies of screening test accuracy that enroll a more diverse population with respect to race and ethnicity, gender, and sexual identity would help assess whether findings are broadly representative of the US population. In addition, RCTs of treatment enrolling screen-detected populations, rather than treatment-seeking populations, would inform future recommendations on the benefit of screening followed by referral to treatment. Ideally, these trials would assess treatment specific to the range and severity of eating disorders likely to be detected via routine screening (which may differ from trials of referred or treatment-seeking populations).

Limitations

This review has several limitations. First, because its purpose was to inform a recommendation on routine screening in persons without signs and symptoms of an eating disorder, studies limited to populations who are underweight (defined by body mass index or other criteria) were excluded. In addition, studies evaluating head-to-head comparisons of different interventions were excluded because the scope was designed to provide evidence on benefits of treatments compared with no treatment rather than assess the comparative effectiveness of interventions. For these reasons, no trials of populations with anorexia nervosa met the eligibility criteria; however, a larger body of evidence demonstrates treatment benefits for populations with anorexia nervosa. Although studies of populations with "other specified feeding and eating disorder" were eligible, no included study used this *DSM-5* diagnosis to characterize participants; several enrolled populations with "subthreshold" criteria for bulimia nervosa or binge eating disorder (based on heterogeneous definitions), which may include participants who meet criteria for other specified eating or feeding disorder. The scope of this review was limited to studies that reported on health outcomes, including global measures of eating disorder severity; some excluded studies reported intermediate outcomes only (eg, mean changes in the frequency of binge eating episodes over short durations), which do not necessarily indicate long-term benefit. Most included treatment trials enrolled adults via advertisements and focused on specific eating disorders (primarily bulimia nervosa and binge eating disorder), including some focused on obesity and binge eating disorder; the applicability of results to populations who are not seeking care for eating disorder symptoms or who may have a new onset or less severe eating disorder is uncertain.

Conclusions

No studies directly assessed the benefits and harms of screening. The SCOFF questionnaire had adequate accuracy for detecting eating disorders among adults. No treatment trials enrolled screen-detected populations; guided self-help interventions, lisdexamfetamine, and topiramate were effective for reducing eating disorder symptom severity among referred populations with binge eating disorder, but pharmacotherapies were also associated with harms.

ARTICLE INFORMATION

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Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: Feltner, Peat, Reddy, Riley, Middleton, Jonas.
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