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Psychological interventions for internalized weight stigma: a systematic scoping review of feasibility, acceptability, and preliminary efficacy

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Abstract

Background Internalized weight stigma (IWS) is highly prevalent and associated with deleterious mental and physical health outcomes. Initiatives are needed to address IWS and promote effective coping and resilience among individuals who are exposed to weight stigma. We conducted a systematic scoping review of the literature on psychological interventions for IWS and explored their intervention components, feasibility, acceptability, and preliminary efficacy at reducing IWS and related negative physiological and psychological health outcomes.

Methods Eight databases were searched. Inclusion criteria included: (1) Psychological intervention; (2) Published in English; and (3) Included IWS as an outcome. Exclusion criteria included: (1) Commentary or review; and (2) Not a psychological intervention. A narrative review framework was used to synthesize results.

Results Of 161 articles screened, 20 were included. Included interventions demonstrated high feasibility, acceptability, and engagement overall. Sixteen of 20 included studies observed significant reductions in IWS that were maintained over follow-up periods, yet data on whether interventions produced greater reductions than control conditions were mixed. Studies observed significant improvements in numerous physical and mental health outcomes.

Conclusions Findings suggest that existing interventions are feasible, acceptable, and may provide meaningful improvements in IWS and associated health outcomes, highlighting the potential for psychological interventions to promote improved health and wellbeing in individuals with IWS. High-quality studies using rigorous study designs (e.g., randomized controlled trials) are needed to further evaluate the efficacy of interventions for IWS.

Keywords Internalized weight stigma, Weight bias, Body image, Psychological intervention, Weight

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Plain english summary
This study conducted a systematic scoping review of existing literature on psychological interventions for internalized weight stigma (IWS). We explored the intervention components, feasibility, acceptability, and preliminary efficacy of existing interventions at reducing IWS and related negative physiological and psychological health outcomes. Results indicated that existing psychological interventions are feasible, acceptable, and may provide meaningful improvements in IWS and associated health outcomes over long-term periods. Findings support the potential for psychological interventions to promote improved health and wellbeing in individuals with IWS.

Background

Decades of research have documented that weight stigma (i.e., the societal devaluation and mistreatment of individuals that results from negative attitudes, beliefs, and stereotypes based on weight) is a global public health concern [1–3]. Experiences of weight stigma and discrimination, which are widespread in employment and health care settings [4–7], are robustly associated with a myriad of adverse physiological outcomes (e.g., increased diabetes risk, dysregulated cortisol, oxidative stress) and mental health issues (e.g., depression, disordered eating, low self-esteem) [8–11]. Longitudinal research has also implicated weight stigma as a contributing factor to the maintenance of obesity and related diseases [12, 13]. Individuals often internalize the pervasive negative stereotypes based on weight (e.g., that individuals with higher weight are lazy or lack willpower), resulting in internalized weight stigma (IWS) [12, 13], also referred to as "weight self-stigma" or "weight bias internalization." An estimated 40–50% of U.S. adults with higher weight have IWS [16]. IWS is associated with negative mental and physical health outcomes, including depression, chronic stress, and disordered eating [17–20] and has been linked to healthcare avoidance [6, 21]. Initiatives are needed to address IWS and its deleterious effects on physical and mental health and to promote coping and resilience among individuals who experience weight stigma.

Although public health campaigns and policies to reduce weight stigma have been introduced and evaluated [22, 23], strategies for addressing IWS have received less attention. Research on strategies for reducing mental health self-stigma suggests that psychological interventions aimed at reducing IWS represent a promising approach for changing individuals' self-stigmatizing beliefs, increasing self-esteem and empowerment, and promoting effective coping [24]. In recent years, numerous studies developing and evaluating novel psychological interventions to address IWS have aimed to elucidate the potential for these interventions to reduce IWS and associated mental and physical health outcomes. It has also been proposed that intervention components targeting IWS may be integrated into lifestyle modification interventions to improve individuals' ability to engage in behavioral lifestyle changes, given that IWS is associated with shame and poor self-efficacy, which may interfere with these abilities [25–27].

No study to date has reviewed psychological interventions for IWS and associated health outcomes. As such, we conducted a systematic scoping review of the literature to explore the components of existing interventions, their feasibility and acceptability, and their preliminary efficacy at reducing IWS and related negative physiological and psychological health outcomes. As research in this area is limited, we included interventions specifically designed to target IWS, including adjunctive IWS interventions integrated within other interventions, as well as interventions that did not explicitly target IWS but included it as an outcome. This review intended to elucidate the state of the literature on psychological interventions for IWS and highlight gaps for future research.

Methods

This systematic scoping review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [28].

Literature search and study selection

A medical librarian (LHY) searched the literature for records including the concepts of internalized stigma, body weight, cognitive-behavioral therapy, self-compassion therapy, and psychological interventions. The librarian created search strategies using a combination of keywords and controlled vocabulary in Embase.com 1947-, Ovid Medline 1946-, Scopus 1823-, Cochrane Central Register of Controlled Trials (CENTRAL), The Cochrane Database of Systematic Reviews (CDSR), Cumulated Index to Nursing and Allied Health Literature (CINAHL Plus) 1937-, APA PsycInfo 1800s-, and Clinicaltrials.gov 1997-. Databases searched included grey literature.

All search strategies were completed 3/26/2024 with no added limits and a total of 311 results were found. Duplicate records (n = 150) were deleted using Covidence.org resulting in a total of 161 unique citations included in the project library. Fully reproducible search strategies for each database can be found in the Appendix.

Inclusion and exclusion criteria

Identified articles were screened based on the following inclusion criteria: (1) Psychological intervention (e.g., acceptance and commitment therapy, cognitive-behavioral therapy, self-compassion therapy); (2) Published in English; and (3) Included a measure of IWS or bias as an intervention outcome.

Identified studies were excluded based on the following exclusion criteria: (1) Commentary or review paper; (2) Not a psychological intervention (e.g., public health campaigns to reduce weight stigma); and (3) Interventions aimed to reduce weight stigmatizing attitudes in healthcare professionals.

Data extraction and synthesis

Identified articles were uploaded into Covidence systematic review software. Article titles and abstracts were independently screened for relevance by the first four authors (two authors screened each title/abstract). The first four authors then independently conducted full text reviews (two authors reviewed each full text). Authors consulted with one another to resolve conflicts during screening and full text reviews.

The following information was extracted from the articles: year of publication, country, study design, sample characteristics (e.g., sample size, demographics, weight, baseline IWS), type of psychological intervention evaluated, and data on the primary outcome of interest (i.e., IWS) and other relevant psychosocial or physiological health outcomes assessed (e.g., body image, weight, disordered eating behaviors, self-compassion, depression) following the intervention.

Results

Article selection

A total of 161 articles identified in the search following the removal of duplicates were screened, of which 104 were excluded from full-text review. Of the 57 full texts assessed for eligibility, 37 were excluded. Thus, 20 articles met eligibility criteria and were included in the review. See Fig. 1 for a PRISMA flow chart of the article search and selection process.

Study characteristics

Study characteristics for the 20 articles included in this review are presented in Table 1. Included studies were conducted between 2010 and 2023 and were most often conducted in the USA (n = 16) [23, 25, 27–41], followed by Portugal (n = 2) [42, 43], Australia (n = 1) [44], and Canada (n = 1) [37]. Study designs included pilot trials (n = 10) [23, 27–30, 33, 34, 36, 43, 44], randomized controlled trials (RCTs) (n = 9) [27, 33, 37, 39–44], and one proof-of-concept trial [34].

Nine studies evaluated lifestyle modification interventions (i.e., interventions targeting dietary or physical activity change or weight management) [27, 30, 32, 34, 37, 40, 41, 44, 45], 2 of which evaluated the addition of cognitive-behavioral intervention modules targeting IWS to behavioral weight loss treatment [40, 41] and one of which evaluated the addition of a mindful self-compassion intervention following behavioral weight loss treatment [30]; 8 studies evaluated interventions focused on weight stigma, IWS, or body gratitude [25, 33, 35, 36, 39, 42, 43, 46]; 2 studies evaluated interventions targeting disordered eating [31, 38]; and one study evaluated a stress management intervention [29]. The most common therapeutic approaches were acceptance and commitment therapy (n = 5) [36, 37, 42, 44, 45], of which 2 targeted weight stigma or IWS [36, 42], followed by cognitive-behavioral therapy (n = 3) [25, 40, 41], of which 1 targeted IWS [25] and the others targeted both body weight and IWS [40, 41], self-compassion interventions (n = 3) [30, 35, 46], of which 2 targeted weight stigma or IWS [35, 46], weight neutral or intuitive eating interventions (n = 2) [31, 38], behavioral interventions (n = 2) [27, 32], yoga interventions (n = 2) [29, 43], of which one targeted body gratitude [43], one positive psychology and motivational interviewing intervention [34], one journaling intervention (targeting IWS) [33], and one implicit stereotype retraining intervention (targeting IWS) [39].

Intervention duration ranged from 3 weeks [35] to 72 weeks (20-weeks of group treatment followed by 52 weeks of monthly and every-other-month sessions) [41]. Thirteen studies included follow-up periods [25, 27–32, 34, 37–39, 43, 44], and seven studies [23, 33, 35, 36, 40–42] examined effects from pre- to post-intervention. Follow-up periods in studies that included follow-ups ranged from one-week [33] to 72-weeks [41]. Formats included group sessions (n = 13) [25, 27, 29–32, 35, 37, 40, 41, 44–46]; online courses (n = 2) [38, 39]; telephone-based interventions (n = 1) [34]; and an individual writing-based intervention (n = 1) [33].

The sample sizes of included studies ranged from 12 to 162 participants. Most studies (n = 11) recruited mixed gender samples [25, 27, 29, 32, 34, 36–38, 40–42], and 9 studies enrolled only women [30, 31, 33, 35, 39, 43–46]. The mean age of participants spanned from 20.1 (*SD* = 2.0) [31] to 53.4 years (*SD* = 9.4) [25]. Three studies [31, 33, 43] recruited college-aged participants. The racial composition of the samples varied; most studies predominantly enrolled White participants, whereas 3 studies [25, 31, 40] recruited samples that were < 50% White. Studies most commonly targeted participants with body mass indexes (BMIs) above or equal to 25 (n = 9) [28, 30, 33–35, 41–44], 5 studies targeted participants with BMIs above or equal to 30 [25, 27, 30, 40, 41], one study

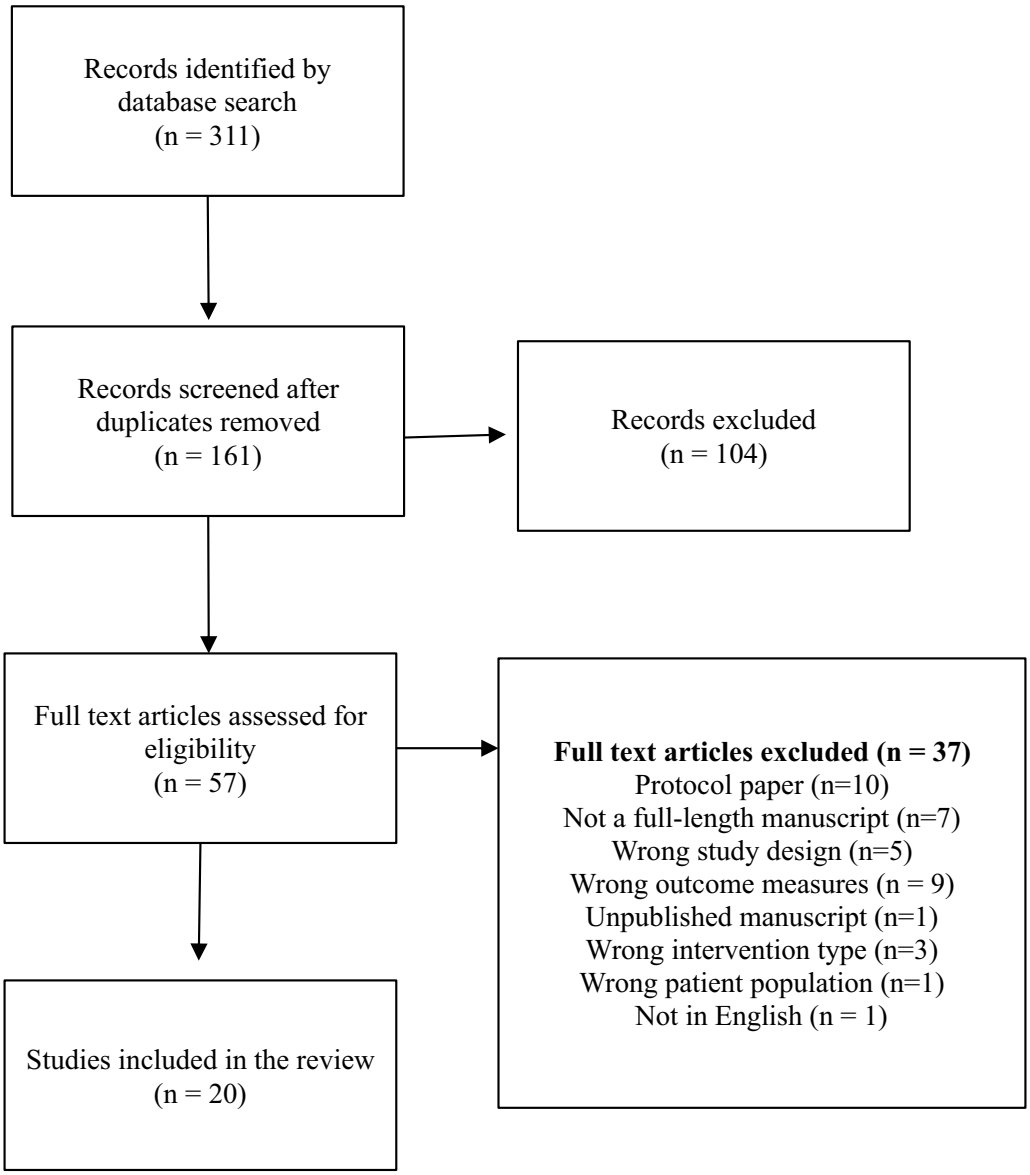

Fig. 1 Flow chart of study search and selection

targeted participants with BMIs above or equal to 27.5 [42], and one study targeted participants who self-identified as living with obesity [39]. One study excluded participants with BMIs over 40 [29]. Three studies did not include or exclude participants on the basis of BMI [31, 33, 38]. Eight studies specifically targeted participants with heightened IWS [25, 30, 33, 35, 36, 40–42].

Measurement of IWS

Measurement of IWS was highly consistent across included studies, with 8 studies [25, 30, 32, 35, 40, 41, 43, 46] using the Weight Bias Internalization Scale (WBIS) [14]; 9 studies [27, 30, 36, 37, 40–42, 44, 45] using the Weight Self-Stigma Questionnaire (WSSQ) [47]; and 6 studies [29, 31, 33, 34, 38, 39] using the Modified Weight Bias Internalization Scale (WBIS-M) [48], a modified version of the WBIS for individuals of all body weights. These measures were used to evaluate changes in IWS from baseline to post-intervention and over follow-up periods. The WBIS was developed to assess the degree to which respondents believes that negative stereotypes about individuals with higher weight apply to them and includes items such as: "As an overweight person, I feel that I am just as competent as anyone" and "I hate myself for being overweight" [12]. Some in the WBIS-M were modified to be applicable to individuals who do not have

Table 1 Study characteristics

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Braun et al. [30] USA, two-arm randomized pilot trial)	28 women (aged 18–65), class III obesity (BMI 40–55), ≥ 3 on the WBIS)	100% women, 92.9% White, mean age = 48.8 ± 10.4, mean BMI = 46.6 ± 3.7 kg/m2	4-month virtual BWL program followed by an 8-week mindful self-compassion (MSC) intervention vs. a cooking and dietary education control	WBIS, WSSQ	MSC had lower attendance (6.9 vs. 7.7 sessions) and usefulness (3.9 vs. 5.2) ratings vs. the control condition	WBIS scores significantly decreased from BL to 4 months (greater decreases in MSC vs. control; d = 0.65) and 4–6 months (no differences by condition; d = 0.26). WSSQ total scores significantly decreased from BL to 4 months and 4–6 months (no differences by condition; ds = 0.15–0.22)	Internalized shame decreased from BL to 4 months (greater decrease in MSC) and 4–6 months (no differences by condition). Self-compassion increased from BL to 4 months (no differences by condition) and 4–6 months (greater in MSC. Disinhibited eating decreased from 4–6 and 4–9 months (no differences by condition). Intuitive eating increased from BL to 4 months (no differences by condition), 4–6 months (greater in MSC), and 4–9 months (no differences by condition). Participants lost 6.3% of their weight by 4 months; MSC did not produce additional weight loss
Braun et al. [29] USA, single-arm pilot trial)	78 adults (aged 23–67), BMI < 40, self-report feeling stressed, consume ≤ 5 servings of fruits and vegetables/ day	70.5% women, 64.1% White, 11.5% multiracial, mean age = 39.4 ± 14.2, mean BMI = 25.6 ± 4.5	12-week yoga-based stress management intervention	WBIS-M	Not assessed	WBIS-M scores did not significantly change from BL to post-treatment (12-weeks) but significantly decreased from post-treatment to 24-week follow-up	Intuitive eating increased from BL to post-treatment and from post-treatment to 24-week follow-up

Table 1 (continued)

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Burnette & Mazzeo [31], USA, two-arm randomized uncontrolled pilot trial)	71 racially and ethnically diverse college women (aged 18–25), endorsed ≥ 1 fasting, binge, or compensatory behavior in the past 28 days	100% women, 39.4% White, 22.5% Black, mean age = 20.1 ± 2.0	8-week group vs. guided self-help (GSH) intuitive eating intervention	WBIS-M	The % of participants attending each session was higher in GSH (94%) vs. group (76%). Acceptability was high and did not differ between conditions	WBIS-M scores significantly decreased from BL to post-test and 16-weeks in both conditions (pre-post ds = 0.41–1.03)	Disordered eating behaviors and body dissatisfaction decreased and body appreciation, intuitive eating, and satisfaction with life increased from BL to post-test and 16-weeks in both conditions
Carels et al. [32] USA, two-arm randomized pilot trial)	54 adults, higher weight, seeking weight loss treatment	81.8% women, 89.0% White, mean age = 47.4 ± 11.7, mean BMI = 37.2 ± 6.7	14-week traditional BWL program vs. BWL with a focus on environmental influences on lifestyle behavior	WBIS	Not assessed	WBIS scores significantly decreased from BL to post-treatment (14-weeks) across conditions	Depression, binge eating, appearance orientation, explicit weight bias, and BMI significantly decreased from BL to post-treatment across conditions. Implicit weight bias scores did not change. Appearance evaluation significantly increased from BL to post-treatment
Davies et al. [43] USA, two-arm RCT)	135 young women (aged 18–25), endorsed ≥ 1 item of weight bias internalization on the WBIS-M	100% women, 47.4% White, 18.5% Asian, mean age = 20.8 ± 2.9, 45.2% in the 18.5—> 25 BMI range	Body gratitude journaling intervention vs. an expressive writing control condition; both conditions comprised 3 writing tasks over one week	WBIS-M	Not assessed	WBIS-M scores significantly decreased across conditions at post-test (day 5) and follow-up (one week); the intervention group had significantly greater reductions at both time points	Both conditions experienced significant increases in self-compassion and functionality appreciation from BL to post-test and follow-up (greater increases in intervention group). Both conditions experienced decreased healthcare stress at post-test and follow-up (greater decrease at follow-up in the intervention group)

Table 1 (continued)

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Feig et al. (2023, USA, single-arm proof-of-concept trial)	12 adults, history of metabolic/ bariatric surgery (MBS) within the past 6–12 months, < 200 min/ week of moderate to vigorous physical activity	58.3% women, 66.7% White, 16.7% Black, mean age = 45.8 ± 10.0, mean BMI = 39.4 ± 18.4	10-week telephone-based, positive psychology-motivational interviewing intervention aimed to promote physical activity post-MBS	WBIS-M	Participants completed 8.5/10 phone sessions. Participants reported positive psychology and motivational interviewing components to be easy and helpful; participants reported increases in momentary happiness following the positive psychology activities	WBIS-M scores significantly decreased from BL to follow-up (within 6 weeks of intervention completion; g = 0.67)	Depressive symptoms significantly decreased and optimism significantly increased from BL to follow-up. Light physical activity significantly increased at follow-up
Forbes et al. [46], Australia, open pilot trial)	15 women (aged 18–62), BMI ≥ 25, ≥ 1 previous experience of external weight stigma, scored ≥ 4 on the WBIS, scored ≤ 2.5 on the Self-Compassion Scale	100% women, 100% White, mean age = 43.6 ± 12.4, mean BMI = 31.2 ± 5.8	2-day intensive compassion-focused therapy group program targeting weight stigma	WBIS	100% of participants attended the program and completed measures at BL, post-treatment, and 3-month follow-up	WBIS scores significantly decreased from BL to post-treatment and 3-month follow-up ($\eta p^2 = 0.52$)	Self-compassion, life satisfaction, and weight efficacy significantly increased from BL to post-treatment and follow-up. Loneliness significantly decreased from BL to post-treatment. Body shame significantly decreased from BL to follow-up. Body dissatisfaction significantly decreased from BL to post-treatment and follow-up. There were no changes in weight
Haley et al. [35], USA, one-arm pilot trial)	15 women (aged ≥ 18), BMI ≥ 25, WBIS score ≥ 3.95	100% women, 80% White, mean age = 34.7 ± 14.8, mean BMI = 37.3 ± 9.5	3-week self-compassion group intervention (SCI) for IWS consisting of two 1.5 h sessions and one 75-min session	WBIS	66.7% of participants completed 3/3 sessions. 86.7% attended at least 2/3 sessions	WBIS scores did not change from BL to post-intervention (d = 0.06)	Intuitive eating, body appreciation, and self-compassion significantly increased from BL to post-intervention. Uncontrolled eating and emotional eating significantly decreased. Body image shame did not change

Table 1 (continued)

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Levin et al. [37], USA, two-arm RCT)	79 adults, BMI ≥ 25	82.3% women, 92.4% White, mean age = 39.6 ± 12.1, mean BMI = 33.8 ± 5.7	8-week acceptance and commitment therapy for diet and physical activity vs. waitlist control	WSSQ	Participants reported adequate usability (76.3, above the "good" benchmark) and high overall satisfaction (5.0 out of 6)	The intervention group had significantly greater reductions in WSSQ scores from pre- to post-intervention vs. the control condition ($\eta p^2 = 0.11$)	The intervention group had greater improvements in emotional eating, healthy eating, uncontrolled eating, dietary choice, weight, mental health, and psychological inflexibility from pre- to post-intervention vs. control. Cognitive restraint and physical activity did not differ between conditions
Levin et al. [36], USA, one-arm open pilot trial)	13 adults (aged 18–70), BMI ≥ 27.5, WSSQ score of ≥ 36, previously participated in a weight loss program	90% women, 90% White, mean age = 35.1 ± 12.6, mean BMI = 34.1 ± 5.2	7-week guided self-help acceptance and commitment therapy intervention for weight self-stigma	WSSQ	3/13 participants (23%) dropped out during the intervention. All 10 remaining participants read 95–100% of the program book. Participants reported high satisfaction (5.1–5.8 out of 6)	WSSQ scores significantly decreased from BL to post-intervention (d = 3.03) and 3-month follow-up (d = 2.63)	Emotional eating significantly decreased from BL to post-intervention. Depression significantly reduced from baseline to post-intervention and follow-up. Global health scores and weight control strategies significantly increased from BL to post-intervention and follow-up. Weight did not change

Table 1 (continued)

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Lillis et al. [27], USA, RCT)	162 adults (aged 18–70), BMI of 30–50 and elevated internal disinhibition	85% women, 88% White, mean age = 50.2 ± 10.9, mean BMI = 37.6 ± 5.3	12-month BWL intervention	WSSQ	Not assessed	WSSQ scores did not significantly change from BL to 6-months, 12-months, 18-months, or 24-months	Self-devaluation significantly decreased from BL to 6-months and 12-months and then gradually increased over time. Weight significantly decreased from BL to 6-months and then gradually increased over time. Use of weight control strategies significantly increased from BL to 6-months and then gradually reduced. Fear of enacted stigma did not change
Mensinger [38], USA, single arm pilot trial)	70 individuals	97.1% women, 87.1% White, mean age = 45.5 ± 10.9, 18.6% in the 25–29.9 BMI range and 18.6% in the > 40 BMI range	6-module weight neutral online course aimed to improve disordered eating	WBIS-M	Not assessed	WBIS-M scores significantly decreased from pre- to post-course	Body shame, traumatic stress, eating concern, overvaluation of weight and shape, and objective binge eating significantly decreased from pre- to post-course
Myre et al. [39], Canada, two-arm randomized trial)	103 women (aged ≥ 18), self-identified as living with obesity, able to safely engage in physical activity	100% women, mean age = 44.5 ± 2, mean BMI = 43 ± 8.6	4-week online implicit retraining intervention that showed counter-stereotypical images to reduce weight stigma internalization vs. a control goal-setting task	WBIS-M	Not assessed	WBIS-M scores did not significantly change over time in either condition. The intervention group had lower WBIS-M scores vs. control at post-test (d = 0.42) and one-week follow-up (d = 0.40)	Moderate to vigorous physical activity, physical activity self-efficacy, and physical activity attitudes did not change over time overall or by condition

Table 1 (continued)

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Palmeira et al. [45], Portugal, one-arm pilot study)	53 women (aged 18–55), BMI ≥ 25, in nutritional treatment for weight loss in primary care	100% women, mean age = 42.6 ± 9.1, mean BMI = 34.1 ± 5.3	10-week acceptance-, mindfulness-, and compassion-based group intervention for eating and higher weight	WSSQ	Not assessed	WSSQ scores significantly decreased from BL to post-intervention and 3-month follow-up ($\eta p^2 = 0.25$)	Emotional eating, shame, weight-related experiential avoidance, self-criticism, and BMI reduced, and quality of life and mindfulness and self-compassion abilities significantly increased from BL to post-intervention and follow-up
Palmeira et al. [44], Portugal, two-arm RCT)	73 women (aged 18–55), with BMI ≥ 25, without binge-eating, seeking weight loss treatment	100% women, mean age = 42.4 ± 8.6, mean BMI = 34.2 ± 5.0	10-week acceptance-, mindfulness-, and compassion-based group intervention for eating and higher weight vs. treatment as usual	WSSQ	24/27 participants in the intervention completed most (10.9) of the 12 sessions. Participants rated the program as important (4.37 out of 5), helpful (4.0), and significantly impacted their quality of life (4.0)	WSSQ scores significantly decreased more in the intervention group from BL to post-treatment vs. the control group (d = 0.74)	Intervention participants experienced significant decreases in emotional and uncontrolled eating, self-criticism, weight-related experiential avoidance, and BMI and significant increases in quality of life and exercise frequency at post-test vs. control. No differences between cholesterol or waist circumference were found
Pearl et al. [19], USA, pilot study)	14 adults (aged ≥ 18), BMI ≥ 30, prior weight-stigmatizing experiences, ≥ 4 on WBIS	78.6% women, 56.3% Black, 22.9% White, mean age = 53.4 ± 9.4, mean BMI = 40.4 ± 8.7	8-week group cognitive-behavioral treatment for internalized weight stigma vs. educational quasi-control group	WBIS	Intervention participants attended 6.3 out of 8 sessions on average. Participants were likely to recommend the program (6.9 out of 7) and rated it as highly acceptable (6.2)	WBIS scores significantly decreased more from pre- to post-intervention in the intervention group vs the quasi-control ($\eta p^2 = 0.36$)	Intervention participants experienced greater significant decreases in fat phobia and greater increases in weight efficacy vs. control participants. Significant changes in depression did not differ by condition

Table 1 (continued)

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Pearl et al. [40], USA, RCT)	72 adults (aged 18–65), seeking weight loss, BMI ≥ 30, prior weight-stigmatizing experiences, ≥ 4 on WBIS	84.7% women, 66.7% Black, 29.2% White, mean age = 47.1 ± 11.5, mean BMI = 39.3 ± 6.1	12-week group combined BWL + cognitive-behavioral IWS treatment (BWL + BIAS) vs. BWL alone	WBIS, WSSQ	Acceptability was high (6.3 out of 7)	WBIS and WSSQ scores significantly decreased across groups. Changes in WBIS scores did not differ by groups at Weeks 12 or 26. BWL + BIAS participants had greater WSSQ score reductions vs. BWL participants at Weeks 12 and 26	Both groups had significant improvements in depression, body image, quality of life, and systolic and diastolic blood pressure with no differences in changes between groups. Percent weight loss did not differ between groups. BWL + BIAS had greater improvements in physical activity tracking and greater reductions in hunger
Pearl et al. [41], USA, RCT)	105 adults (aged ≥ 18), BMI ≥ 30 or ≥ 27 with a health condition conferring CVD risk, prior weight-stigmatizing experiences, ≥ 4 on WBIS	90.5% women, 70.5% White, 24.8% Black, mean age = 49.1 ± 12.4, mean BMI = 38.0 ± 5.5	20-week group combined BWL + cognitive-behavioral IWS treatment (BWL + BIAS) vs. BWL alone, followed by 52 weeks of monthly and every-other-month sessions	WBIS, WSSQ	Participants in BWL + BIAS reported higher acceptability (6.5 vs 5.6 out of 7), greater change attitudes (5.9 vs 4.9), and greater learning (5.8 vs 5.0) and use of skills (3.8 vs 3.3) related to stigma vs BWL	WBIS and WSSQ scores significantly decreased across groups. Changes in WBIS scores did not differ between condition. BWL + BIAS produced greater improvements in WSSQ scores vs BWL at Week 46	Significant increases in eating self-efficacy and decreases in exercise barriers were greater in BWL + BIAS. Percent weight change, physical activity, systolic and diastolic blood pressure, waist circumference, triglycerides, HDL cholesterol, glucose, and C-reactive protein significantly improved across groups but did not differ between conditions

Table 1 (continued)

Author (year, country, study design)	Sample size and type	Sample gender, race, age, BMI	Intervention type and duration	Measure of IWS used	Feasibility/ acceptability and engagement	IWS outcomes	Physical and psychosocial outcomes
Potts et al. [42], USA, three-arm pilot RCT)	55 adults (aged 18–64), in the US, ≥ 36 on the WSSQ, BMI ≥ 27.5	81.8% women, 94.5% White, mean age = 38.7 ± 12.4, mean BMI = 37.0 ± 6.5	8-week acceptance and commitment therapy intervention for weight self-stigma delivered via guided self-help with phone coaching (GSH-P) vs. guided self-help with email prompts (GSH-E) vs. waitlist control	WSSQ	73% of GSH-P participants who completed a post-treatment and 58% of GSH-E participants read the entire program book. Overall satisfaction was high (GSH-P: 5.45 out of 6; GSH-E: 5.0)	GSH-P and GSH-E both produced significant reductions in WSSQ scores; both conditions had significantly lower scores at post-treatment vs. control, and scores between GSH-P and GSH-E did not differ	Binge eating and psychological inflexibility with weight significantly reduced more in GSH-P and GSH-E from pre-post vs. control. Neither intervention condition improved BMI, physical activity, self-monitoring, or emotional eating more than the control condition
Webb et al. [43], USA, two-arm pilot RCT)	75 undergraduate women (aged 18–30), practiced yoga < 1x/ week for the past 2 years, BMI ≥ 25	100% women, 50.0% White, 31.0% Black, mean age = 21.2 ± 2.5, mean BMI = 30.8 ± 5.7	4-week online yoga and body gratitude journaling intervention vs. waitlist control	WBIS	The intervention attrition rate was 36%. 81% of participants reported practicing with the videos 3–4 times/week as suggested. 86% expressed at least moderate satisfaction with the program	Across groups, participants experienced a significant decline in WBIS scores from pre- to post-intervention; this decline did not differ between conditions	Signifiant improvements in functional body satisfaction, internal body shame, body appreciation, functional body appreciation, and functional body awareness from pre- to post-intervention were greater in the intervention group. External body shame significantly improved across groups but did not differ by condition

BL Baseline; *BMI* Body mass index; *BWL* Behavioral weight loss; *CVD* Cardiovascular disease; *GSH* Guided self-help; *IWS* Internalized weight stigma; *MSC* Mindful self-compassion; *RCT* Randomized controlled trial; *WBIS* Weight Bias Internalization Scale; *WBIS-M* Weight Bias Internalization Scale-Modified; *WSSQ* Weight Self-Stigma Questionnaire

higher weight, such as: "Because of my weight, I feel that I am just as competent as anyone" and "I hate myself for my weight" [48]. The WSSQ was developed to assess self-devaluation based on weight and fear of enacted weight stigma; it includes items such as: "I'll always go back to being overweight"; "I feel guilty because of my weight problems"; and "People think that I am to blame for my weight problems" [47]. Among the studies that solely targeted IWS or related constructs [25, 33, 35, 36, 39, 42, 43, 46], four studies used the WBIS [25, 35, 43, 46], two studies used the WSSQ [36, 42], and two studies used the WBIS-M [33, 39]. The two studies that evaluated combined behavioral weight loss and IWS interventions used the WBIS [40, 41].

Feasibility and acceptability of interventions

Of the 20 included studies, 13 reported on feasibility, acceptability, and engagement metrics [25, 30, 31, 34–37, 40–44, 46]. Most studies (n = 8) reported high acceptability ratings, with participants finding the interventions relevant and useful [25, 36, 37, 40–44]. Of the 8 studies that evaluated interventions focused on weight stigma, IWS, or body gratitude, 4 reported high acceptability [23, 34, 40, 41]; both of the 2 studies that added adjunctive intervention modules focused on IWS to behavioral weight loss reported high acceptability [38, 39]. Pearl et al. [41] found higher acceptability and greater change attitudes among participants in the intervention group (behavioral weight loss plus a cognitive-behavioral intervention for IWS) relative to the control group (behavioral weight loss alone). Session attendance was generally high across studies; one study with two arms reported higher attendance and adherence rates in intervention conditions compared to controls [31], whereas another study found lower attendance and engagement in the intervention group relative to control [30].

Effects of psychological interventions on IWS

The majority of the included studies (n = 16) reported significant reductions in IWS from baseline to post-intervention and at follow-up assessments [25, 30–34, 36–38, 40–46]. Among studies with control conditions, 6 studies found greater significant decreases in IWS in the intervention group relative to controls [25, 33, 37, 40, 41, 44], whereas 5 found no differences between conditions [30–32, 42, 43]. Of the 8 studies that evaluated interventions focused on weight stigma, IWS, or body gratitude, 6 found significant reductions in IWS across conditions [25, 33, 36, 42, 43, 46]; of the 5 with control conditions, 2 found significantly greater decreases in the intervention conditions [25, 33] and 2 found no significant differences between conditions [42, 43]. While both the WBIS and WSSQ measures were represented in studies which did and did not report differences between conditions, Pearl et al.'s studies evaluating adjunctive IWS intervention modules as part of behavioral weight loss [40, 41] found that changes in WBIS scores did not differ between intervention and active control groups, whereas significant decreases in WSSQ scores were greater in the intervention condition. Across conditions, decreases in IWS were significant in both studies and using both the WBIS and WSSQ [40, 41]. Observed significant decreases in IWS measures were sustained over long-term follow-ups in most studies that detected effects, with follow-up periods ranging from one-week [33] to 72-weeks [41].

Other psychosocial and physiological outcomes

In addition to reductions in IWS, several studies (n = 19) reported improvements in a range of psychosocial outcomes, including internalized shame, self-compassion, disordered eating, intuitive eating, quality of life, body dissatisfaction, and body appreciation, yet the degree to which outcomes improved more in intervention vs. control conditions were mixed [25, 27, 29–38, 40–46].

Physiological outcomes, such as improvements in physical activity, blood pressure, and high-density lipoprotein (HDL) cholesterol were observed in numerous studies (n = 9); data were mixed regarding whether outcomes improved more in intervention vs. control conditions [27, 30, 34, 37, 40–42, 44, 45]. Reductions in weight were common among studies evaluating IWS interventions in combination with lifestyle modification programs (n = 7) [27, 30, 32, 40, 41, 44, 45].

Discussion

This review aimed to examine the scope of the literature on psychological interventions for IWS. We synthesized findings from 20 studies evaluating the feasibility, acceptability, and preliminary efficacy of existing interventions for IWS and their potential impact on related health outcomes. Overall, included studies showed high feasibility, acceptability, and engagement. Most studies observed significant reductions in IWS at post-intervention and over follow-ups, but data on whether reductions were greater in intervention versus control conditions were inconsistent. Several studies observed significant improvements in other physical and psychosocial health outcomes.

Of the 20 included studies, 65% reported on feasibility, acceptability, and engagement metrics. Most of these studies demonstrated high feasibility, acceptability, and session attendance. Most studies (n = 16) reported significant reductions in IWS from baseline to post-intervention and at follow-up assessments. These reductions were observed across numerous intervention types including behavioral weight loss, body gratitude

journaling, physical activity promotion, and weight stigma interventions and across modalities including group formats, guided self-help, and online courses. Six of the 8 IWS-focused interventions observed significant reductions in IWS, as did both of the 2 studies testing adjunctive IWS intervention modules within behavioral weight loss. However, data on whether interventions produced greater reductions than control conditions were mixed. Six studies with control conditions showed significantly greater decreases in IWS in the intervention groups compared to controls, whereas 5 found no significant differences (i.e., the intervention and control groups experienced equal reductions in IWS). Of the 5 IWS-focused interventions with control conditions, 2 found significantly greater decreases in IWS in the intervention group versus controls. This finding may suggest that some interventions are more efficacious at addressing IWS, or that common factors within the interventions and control conditions (e.g., supportive group treatments) were helpful for reducing IWS. For example, prior theoretical research has suggested that other factors that may improve in group interventions, such as self-esteem, may result in reduced self-stigma [24].

Of note, both the WBIS and WSSQ were represented in studies which did and did not report differences between conditions. However, Pearl et al.'s two studies [40, 41] found that changes in WBIS scores did not differ between intervention (behavioral weight loss plus a cognitive-behavioral intervention for IWS) and active control (behavioral weight loss alone) groups, whereas decreases in WSSQ scores were greater in the intervention condition. This finding may suggest that there are meaningful differences in measurement of IWS constructs between the WBIS and WSSQ. For example, although both measures assess self-devaluation based on weight, the WSSQ also captures perceived weight stigma enacted by others (e.g., "People discriminate against me because I've had weight problems") [47]; this construct may have been more sensitive to intervention effects in the above studies. Another possible explanation for the discrepancy in findings is that participants in these two studies were selected based on a WBIS cut-off score (but not a WSSQ cut-off score), which may have resulted in less variability in WBIS scores in the sample. Of note, Pearl et al. conducted an additional non-intervention follow-up to the 2020 study [40] at 52-weeks and found that IWS improvements were maintained across groups but did not differ between conditions on either the WBIS or the WSSQ [49]. Given the limited state of the literature and heterogeneity among included studies, we are unable to draw definitive conclusions about the strength of effects of interventions on IWS measures; as additional research is conducted, quantifying these effects using meta-analysis will be an important future direction.

In addition to reductions in IWS, several included studies reported improvements in a range of psychosocial and physiological outcomes, such as increased physical activity, improved blood pressure, and HDL cholesterol levels. Studies that included IWS interventions in combination with lifestyle modification focused on weight management were particularly effective in producing weight loss. These findings highlight the potential for interventions to improve both IWS's mental health correlates and associated negative clinical outcomes. While lifestyle modification programs with added IWS intervention components did not produce greater weight losses than lifestyle modification alone [40, 41], a finding which does not support the hypothesis that addressing IWS may further improve weight loss [27], neither do IWS interventions negatively impact weight outcomes. Additional studies with long-term follow-ups are needed to investigate if IWS interventions could be an important addition to lifestyle modification programs to prevent the emergence of, or reduce existing, IWS in patients.

This scoping review served as an important first step to demonstrate that psychological interventions may hold promise for addressing IWS, a critical direction given the harmful effects of IWS on physical health, mental health, and healthcare services use [17, 19]. Strengths of the review included the rigorous methodological approach used for study selection, which included the involvement of a medical librarian and screening of over 150 studies. Limitations included that many included studies had small, homogeneous samples. Further research in larger, more diverse samples is needed. Given the early state of the literature on this topic and the variability in types of existing interventions (e.g., lifestyle modification, body appreciation interventions) and psychological approaches used (e.g., self-compassion, mindfulness and acceptance), this review sought to identify the scope of existing research rather than quantify strength of effects or evaluate rigor of included studies. As such, we did not conduct a meta-analysis of observed intervention effects or conduct a quality appraisal of included studies. Thus, we are unable to identify intervention components or approaches that effectively reduce IWS. Future research is needed to rigorously evaluate interventions using RCTs and examine the mechanisms through which these interventions impact IWS and related health outcomes. Relatedly, using systematic approaches to evaluate the strength of intervention effects and quality of interventions targeting IWS represents a key future direction.

Conclusions

This review synthesized the state of the existing literature on psychological interventions for the reduction of IWS. Findings suggested that existing interventions are feasible, acceptable, and may provide meaningful improvements in IWS and associated health outcomes, highlighting the potential for psychological interventions to promote improved health and wellbeing in individuals with IWS. Conducting high-quality studies with rigorous study designs represents a key future direction for evaluating the efficacy of interventions for IWS.

Appendix 1: Full search strategies

Embase

Date Searched: 3/26/2024.
Applied Database Supplied Limits: none.
Number of Results: 82.
Full Search Strategy:

('internalized stigma'/exp OR 'self stigma'/exp OR ('internalization (behavior)'/exp AND 'stigma'/de) OR ((self OR internal* OR auto) NEAR/5 (stigma* OR bias OR stigmatisation OR prejudice OR stigmatization)):ti,ab,kw OR ('self-stigma' OR autostigmatisation OR autostigmatization OR selfstigma OR selfstigmatisation OR selfstigmatization OR 'weight bias internalization'):ti,ab,kw) AND ('body weight'/exp OR 'body image'/exp OR 'body dissatisfaction'/exp OR 'weight bias'/exp OR ('body image' OR 'body weight' OR obesity OR 'adipose tissue hyperplasia' OR corpulency OR 'fat overload syndrome' OR overweight OR obesity OR obese OR 'overweight/obesity'):ti,ab,kw) AND ('cognitive behavioral therapy'/exp OR 'mindfulness-based cognitive therapy'/exp OR 'cognitive therapy'/exp OR 'psychotherapy'/exp OR 'body psychotherapy'/exp OR 'emotion-focused therapy'/exp OR 'acceptance and commitment therapy'/exp OR 'mindfulness'/exp OR 'psychoeducation'/exp OR 'psychological intervention'/exp OR 'group therapy'/exp OR ('cognitive-behavioral' OR mindfulness OR mindfulness-based OR MBCT OR 'mindfulness-CBT' OR psychoeducation OR 'psycho-education' OR 'psychological intervention' OR psychotherapy OR psychotherapeutic OR 'self-compassion' OR 'self-compassion-based' OR 'Weight BIAS Program' OR journaling):ti,ab,kw OR (cognitive NEAR/2 (behavioral OR behavior OR behaviour OR behavioural OR treatment* OR therap* OR intervention*)):ti,ab,kw OR (('emotion-focused' OR 'emotional focused' OR 'emotionally focused' OR 'process-experiential' OR mindfulness OR group) NEAR/2 (therapy OR treatment*)):ti,ab,kw).

Ovid medline

Date Searched: 3/26/2024.
Applied Database Supplied Limits: none.
Number of Results: 55.
Full Search Strategy:

(((self OR internal* OR auto) ADJ5 (stigma* OR bias OR stigmatisation OR prejudice OR stigmatization)).ti,ab,kf. OR (self-stigma OR autostigmatisation OR autostigmatization OR selfstigma OR selfstigmatisation OR selfstigmatization OR weight bias internalization).ti,ab,kf.) AND (exp Body Weight/ OR exp Body Image/ OR exp Body Dissatisfaction/ OR exp Weight Prejudice/ OR (body image OR body weight OR obesity OR adipose tissue hyperplasia OR corpulency OR fat overload syndrome OR overweight OR obesity OR obese OR overweight obesity).ti,ab,kf.) AND (exp Cognitive Behavioral Therapy/ OR exp Psychotherapy/ OR exp Emotion-Focused Therapy/ OR exp "Acceptance and Commitment Therapy"/ OR exp Mindfulness/ OR.

exp Psychosocial Intervention/ OR exp Psychotherapy, Group/ OR (cognitive-behavioral OR mindfulness OR mindfulness-based OR MBCT OR mindfulness-CBT OR psychoeducation OR psycho-education OR psychological intervention OR psychotherapy OR psychotherapeutic OR self-compassion OR self-compassion-based OR Weight BIAS Program OR journaling).ti,ab,kf. OR (cognitive ADJ2 (behavioral OR behavior OR behaviour OR behavioural OR treatment* OR therap* OR intervention*)).ti,ab,kf. OR ((emotion-focused OR emotional focused OR emotionally focused OR process-experiential OR mindfulness OR group) ADJ2 (therapy OR treatment*)).ti,ab,kf.)

Scopus

Date Searched: 3/26/204.
Applied Database Supplied Limits: none.
Number of Results: 34.
Full Search Strategy:

((TITLE-ABS-KEY((self OR internal* OR auto) NEAR/5 (stigma* OR bias OR stigmatisation OR prejudice OR stigmatization))) OR (TITLE-ABS-KEY("self-stigma" OR autostigmatisation OR autostigmatization OR selfstigma OR selfstigmatisation OR selfstigmatization OR "weight bias internalization"))) AND ((TITLE-ABS-KEY("body image" OR "body weight" OR obesity OR "adipose tissue hyperplasia" OR corpulency OR "fat overload syndrome" OR overweight OR obesity OR obese OR "overweight/obesity"))) AND ((TITLE-ABS-KEY("cognitive-behavioral" OR mindfulness OR mindfulness-based OR MBCT OR "mindfulness-CBT" OR psychoeducation OR "psycho-education" OR "psychological intervention" OR psychotherapy OR psychotherapeutic OR "self-compassion" OR "self-compassion-based" OR "Weight BIAS Program" OR journaling)) OR (TITLE-ABS-KEY(cognitive W/2 (behavioral OR behavior OR

behaviour OR behavioural OR treatment* OR therap* OR intervention*))) OR (TITLE-ABS-KEY((“emotion-focused” OR “emotional focused” OR “emotionally focused” OR “process-experiential” OR mindfulness OR group) W/2 (therapy OR treatment*)))).

The cochrane library

Date Searched: 3/26/2024.
Applied Database Supplied Limits: none.
Number of Results.
CENTRAL: 44
CDSR: 1
Full Search Strategy:

(((self OR internal* OR auto) NEAR/5 (stigma* OR bias OR stigmatisation OR prejudice OR stigmatization)):ti,ab,kw OR (“self stigma” OR autostigmatisation OR autostigmatization OR selfstigma OR selfstigmatisation OR selfstigmatization OR “weight bias internalization”):ti,ab,kw) AND ([mh “Body Weight”] OR [mh “Body Image”] OR [mh “Body Dissatisfaction”] OR [mh “Weight Prejudice”] OR (“body image” OR “body weight” OR obesity OR “adipose tissue hyperplasia” OR corpulency OR “fat overload syndrome” OR overweight OR obesity OR obese OR “overweight obesity”):ti,ab,kw) AND ([mh “Cognitive Behavioral Therapy”] OR [mh “Psychotherapy”] OR [mh “Emotion-Focused Therapy”] OR [mh “Acceptance and Commitment Therapy”] OR [mh “Mindfulness”] OR [mh “Psychosocial Intervention”] OR [mh “Psychotherapy, Group”] OR (“cognitive behavioral” OR mindfulness OR mindfulness based OR MBCT OR “mindfulness CBT” OR psychoeducation OR “psycho education” OR “psychological intervention” OR psychotherapy OR psychotherapeutic OR “self compassion” OR “self compassion based” OR “Weight BIAS Program” OR journaling):ti,ab,kw OR (cognitive NEAR/2 (behavioral OR behavior OR behaviour OR behavioural OR treatment* OR therap* OR intervention*)):ti,ab,kw OR ((“emotion focused” OR “emotional focused” OR “emotionally focused” OR “process experiential” OR mindfulness OR group) NEAR/2 (therapy OR treatment*)):ti,ab,kw).

CINAHL plus

Date Searched: 3/26/2024.
Applied Database Supplied Limits: none.
Number of Results: 48.
Full Search Strategy:

1. ((MH "Internalizing Behavior") AND (MH "Stigma")) OR TI ((self OR internal* OR auto) N5 (stigma* OR bias OR stigmatisation OR prejudice OR stigmatization)) OR AB ((self OR internal* OR auto) N5 (stigma* OR bias OR stigmatisation OR prejudice OR stigmatization)) OR TI (“self stigma” OR autostigmatisation OR autostigmatization OR selfstigma OR selfstigmatisation OR selfstigmatization OR “weight bias internalization”) OR AB (“self stigma” OR autostigmatisation OR autostigmatization OR selfstigma OR selfstigmatisation OR selfstigmatization OR “weight bias internalization”).

AND

2. (MH "Body Weight+") OR (MH "Body Image+") OR (MH "Body Dissatisfaction") OR (MH "Weight Bias") OR TI (“body image” OR “body weight” OR obesity OR “adipose tissue hyperplasia” OR corpulency OR “fat overload syndrome” OR overweight OR obesity OR obese OR “overweight/obesity”) OR AB (“body image” OR “body weight” OR obesity OR “adipose tissue hyperplasia” OR corpulency OR “fat overload syndrome” OR overweight OR obesity OR obese OR “overweight/obesity”).

AND

3. (MH "Cognitive Therapy+") OR (MH "Psychotherapy+") OR (MH "Psychotherapy, Group+") OR (MH "Acceptance and Commitment Therapy") OR (MH "Mindfulness+") OR (MH "Psychoeducation") OR (MH "Psychosocial Intervention") OR TI (“cognitive-behavioral” OR mindfulness OR mindfulness-based OR MBCT OR “mindfulness-CBT” OR psychoeducation OR “psycho-education” OR “psychological intervention” OR psychotherapy OR psychotherapeutic OR “self-compassion” OR “self-compassion-based” OR “Weight BIAS Program” OR journaling) OR AB (“cognitive-behavioral” OR mindfulness OR mindfulness-based OR MBCT OR “mindfulness-CBT” OR psychoeducation OR “psycho-education” OR “psychological intervention” OR psychotherapy OR psychotherapeutic OR “self-compassion” OR “self-compassion-based” OR “Weight BIAS Program” OR journaling) OR TI (cognitive N2 (behavioral OR behavior OR behaviour OR behavioural OR treatment* OR therap* OR intervention*)) OR AB (cognitive N2 (behavioral OR behavior OR behaviour OR behavioural OR treatment* OR therap* OR intervention*)) OR TI ((“emotion-focused” OR “emotional focused” OR “emotionally focused” OR “process-experiential” OR mindfulness OR group) N2 (therapy OR treatment*)) OR AB ((“emotion-focused” OR “emotional focused” OR “emotionally focused” OR “process-experiential” OR mindfulness OR group) N2 (therapy OR treatment*)).

APA psycinfo

Date Searched: 3/26/2024.
Applied Database Supplied Limits: none.
Number of Results: 47.
Full Search Strategy:

1. (DE "Self-Stigma") OR ((DE "Stigma") AND (DE "Internalization")) OR TI ((self OR internal* OR auto) N5 (stigma* OR bias OR stigmatisation OR prejudice OR stigmatization)) OR AB ((self OR internal* OR auto) N5

(stigma* OR bias OR stigmatisation OR prejudice OR stigmatization)) OR TI ("self stigma" OR autostigmatisation OR autostigmatization OR selfstigma OR self-stigmatisation OR selfstigmatization OR "weight bias internalization") OR AB ("self stigma" OR autostigmatisation OR autostigmatization OR selfstigma OR self-stigmatisation OR selfstigmatization OR "weight bias internalization").

AND

2. DE "Body Weight" OR DE "Weight-Based Discrimination" OR DE "Body Dissatisfaction" OR DE "Weight Perception" OR DE "Body Image" OR (MH "Weight Bias") OR TI ("body image" OR "body weight" OR obesity OR "adipose tissue hyperplasia" OR corpulency OR "fat overload syndrome" OR overweight OR obesity OR obese OR "overweight/obesity") OR AB ("body image" OR "body weight" OR obesity OR "adipose tissue hyperplasia" OR corpulency OR "fat overload syndrome" OR overweight OR obesity OR obese OR "overweight/obesity").

AND

3. DE "Cognitive Behavior Therapy" OR DE "Mindfulness-Based Cognitive Therapy" OR DE "Cognitive Therapy" OR DE "Psychotherapy" AND DE "Emotion Focused Therapy" OR DE "Compassion Focused Therapy" OR DE "Acceptance and Commitment Therapy" AND DE "Mindfulness" OR DE "Mindfulness-Based Interventions" OR DE "Psychoeducation" OR DE "Psychosocial Interventions" OR DE "Group Psychotherapy" OR TI ("cognitive-behavioral" OR mindfulness OR mindfulness-based OR MBCT OR "mindfulness-CBT" OR psychoeducation OR "psycho-education" OR "psychological intervention" OR psychotherapy OR psychotherapeutic OR "self-compassion" OR "self-compassion-based" OR "Weight BIAS Program" OR journaling) OR AB ("cognitive-behavioral" OR mindfulness OR mindfulness-based OR MBCT OR "mindfulness-CBT" OR psychoeducation OR "psycho-education" OR "psychological intervention" OR psychotherapy OR psychotherapeutic OR "self-compassion" OR "self-compassion-based" OR "Weight BIAS Program" OR journaling) OR TI (cognitive N2 (behavioral OR behavior OR behaviour OR behavioural OR treatment* OR therap* OR intervention*)) OR AB (cognitive N2 (behavioral OR behavior OR behaviour OR behavioural OR treatment* OR therap* OR intervention*)) OR TI (("emotion-focused" OR "emotional focused" OR "emotionally focused" OR "process-experiential" OR mindfulness OR group) N2 (therapy OR treatment*)) OR AB (("emotion-focused" OR "emotional focused" OR "emotionally focused" OR "process-experiential" OR mindfulness OR group) N2 (therapy OR treatment*)).

ClinicalTrials.gov

Date Searched: 3/26/2024.

Number of Results: 15.

Full Search Strategy:

Intervention/treatment: ("cognitive-behavioral" OR "self-compassion" OR "psychological intervention").

Other terms: ("weight stigma" OR "weight bias") AND "self stigma".

Abbreviations

BMI	Body mass index
IWS	Internalized weight stigma
WBIS	Weight bias internalization scale
WBIS-M	Weight bias internalization scale-modified
WSSQ	Weight self-stigma questionnaire

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Not applicable.

Author contributions

LD, ATS, JG, LM, RP, and DEW conceptualized the study. LHY conducted the formal library search for articles. LD, ATS, JG, LM conducted article screening, full text review, and data extraction and synthesis. LD and LHY wrote the first draft of the manuscript. STD, JG, LM, SBA, RP, and DEW reviewed and edited the manuscript.

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Availability of data and materials

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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