



Evidence-based clinical guidelines for eating disorders: international comparison

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Purpose of review

The current systematic review sought to compare available evidence-based clinical treatment guidelines for all specific eating disorders.

Recent findings

Nine evidence-based clinical treatment guidelines for eating disorders were located through a systematic search. The international comparison demonstrated notable commonalities and differences among these current clinical guidelines.

Summary

Evidence-based clinical guidelines represent an important step toward the dissemination and implementation of evidence-based treatments into clinical practice. Despite advances in clinical research on eating disorders, a growing body of literature demonstrates that individuals with eating disorders often do not receive an evidence-based treatment for their disorder. Regarding the dissemination and implementation of evidence-based treatments, current guidelines do endorse the main empirically validated treatment approaches with considerable agreement, but additional recommendations are largely inconsistent. An increased evidence base is critical in offering clinically useful and reliable guidance for the treatment of eating disorders. Because developing and updating clinical guidelines is time-consuming and complex, an international coordination of guideline development, for example, across the European Union, would be desirable.

Keywords

eating disorders, evidence-based, guideline, therapy, treatment

INTRODUCTION

Anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder (BED) represent the specific eating disorders defined in the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (DSM-5 [1]). They are characterized – at varying degrees – by persistent disturbances in eating or weight-control behavior and shape and weight overconcern. The central characteristic of AN is a significantly low body weight, induced by restriction of energy intake. The main features of BN and BED are recurrent binge-eating episodes. Although individuals with BN usually attempt to prevent weight gain through inappropriate compensatory behaviors (e.g., self-induced vomiting), those with BED do not make recurrent use of them. All eating disorders result in significant impairments in health, psychosocial functioning, and quality of life [2,3]. Increased healthcare utilization and costs have been documented [4^a,5]. With a first onset that often occurs in adolescence or young adulthood [6], AN and BN

show a long-term natural course with remission in more than 50% of cases, whereas evidence on the natural course of BED is scarce [7]. While AN occurs in up to 4% of young women [7,8^a], BN and BED have a lifetime prevalence of 1.0 and 1.9%, respectively [9].

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KEY POINTS

- The systematic review showed notable commonalities and differences among evidence-based clinical treatment guidelines for eating disorders.
- Regarding the dissemination and implementation of evidence-based treatments, current guidelines endorse main empirically supported treatment approaches with considerable agreement, but additional recommendations are largely inconsistent.
- An increased evidence base is critical in offering clinically reliable and consistent guidance for the treatment of eating disorders.
- Because clinical guideline development is time-consuming and complex, an international coordination, for example, across the European Union, would be desirable.

Given the clinical significance of eating disorder symptomatology, over the past decades sustained effort has been placed on designing and evaluating psychological and medical treatments for eating disorders in rigorous, randomized-controlled efficacy studies [10¹¹,11–14]. Despite these advances, a growing body of literature demonstrates that individuals with eating disorders often do not receive an evidence-based treatment for their disorder [15¹⁶,16]. For example, Kessler *et al.* [9] documented in 24 124 adults from 14 countries that only 47.4% of lifetime cases with BN and 38.3% of lifetime cases with BED ever received a specific treatment for their eating disorder. In a study among 5 658 women 40–50 years old from the United Kingdom, only 27.4% of all women with a DSM-5 life-time diagnosis of an eating disorder had sought help or received treatment for an eating disorder at any point in their life [17¹⁷]. Multiple system factors (e.g., lack of screening for eating disorders) and personal patient factors (e.g., lack of information) may account for this ‘treatment gap’ [15¹⁸,18¹⁹]. In addition, a ‘research-practice gap,’ indicating a discrepancy between evidence-based treatments and actual treatment delivery, was identified: As an example, the majority of eating disorder therapists do not adhere to evidence-based treatment protocols but rather pursue eclectic combinations of interventions [20,21,22²²]; findings such as this highlight the significant challenge of disseminating and implementing of evidence-based eating disorder treatments into clinical practice [15²³,23,24].

As a first step toward the dissemination and implementation of evidence-based treatments into clinical practice, evidence-based clinical guidelines for eating disorders were issued in several countries

across the world. Their general aim is to inform clinical decision-making of healthcare professionals and patients on efficacious interventions and treatment strategies. Based on a systematic search, selection, and evaluation of the treatment literature, evidence-based treatment guidelines offer specific recommendations to optimize patient care [25–27]. In one narrative review, Herpertz-Dahlmann *et al.* [28] compared several evidence-based clinical guidelines from four European countries (Germany, Spain, The Netherlands, and the United Kingdom) regarding the treatment of AN. They found correspondence in major recommendations, but no consensus on treatment intensity/setting, as well as no consensus and lack of evidence on nutritional rehabilitation and weight restoration. The authors identified a need for European research initiatives on AN to enhance the evidence base and clinical guidance. Since this report, several new guidelines were issued (e.g., The Netherlands, the United Kingdom, Australia); however, current comparative information is lacking, especially for BN and BED. This systematic review sought to compare the available evidence-based clinical treatment guidelines for all specific eating disorders to investigate the necessity of future work on guidelines for translation into practice.

METHOD

Guideline identification

In May 2017, we systematically searched the electronic databases PubMed and Cochrane Database of Systematic Reviews [‘guideline AND (eating disorder OR anorexia nervosa OR bulimia nervosa OR binge-eating disorder)’]; the National Guideline Clearinghouse and the International Guideline Library (‘eating disorder OR anorexia nervosa OR bulimia nervosa OR binge-eating disorder’); the website of the Academy of Eating Disorders through which partners and affiliate organizations were obtained and contacted; and contacted other experts in the field. Relevant clinical guidelines were required to be evidence-based; the latest version; address the treatment of AN, BN, and/or BED; have a focus on adults; to be published in Dutch, English, or German; and have a national or international scope.

Assessments and analysis

To compare the content of the guidelines, key recommendations were summarized regarding predefined categories. For AN, BN, and BED, these categories included: first-line treatment setting, criteria for hospitalization, recommended treatment

modalities including nutritional counseling, specific psychological interventions, and medications. For the treatment of AN, guidelines were additionally compared with respect to the following categories: compulsory treatment, criteria for partial hospitalization, criteria for discharge, recommended energy intake and weight gain, feeding supplements, and artificial feeding.

Included guidelines were independently examined by two authors. Relevant content was extracted into a predefined coding table using the guidelines' original text by one author with corrections from the second author. For comparative purposes, it was noted whether a recommendation was given (✓) or not reported, and if possible, the guidelines' recommendations were recoded into three ratings: explicit recommendation in favor (+), recommendation requiring caution [(+)], and recommendation against (-). In addition, and if recoding was not possible, the guidelines' recommendations were reported in text format.

RESULTS

A total of 33 guidelines were identified, as depicted in the PRISMA flow chart (Fig. 1). Most guidelines had to be excluded for not meeting the language criterion ($n=12$). In addition, five guidelines were

earlier versions of included guidelines, four guidelines were non-evidence-based, two guidelines solely focused on childhood eating disorders, and one guideline had a regional scope. Accordingly, nine guidelines from eight countries, published between 2009 and 2017, were included in this report.

Most guidelines ($n=7$) included treatment recommendations for AN, BN, and BED: these were the guidelines from Australia and New Zealand [29], Germany [30], The Netherlands [31], Spain [32], the United Kingdom [33], the United States [34,35], and the World Federation of Societies of Biological Psychiatry (WFSBP; [36]). The guideline from Denmark [37,38] addressed the treatment of AN and BN, while the French guideline [39] focused on AN only. All guidelines are described in Table 1. The guideline by the WFSBP provided recommendations for medical treatment of eating disorders only, whereas all other guidelines addressed several treatment approaches. The majority of guidelines were developed by multiprofessional working groups (Australia and New Zealand, France, Germany, The Netherlands, Spain, the United Kingdom), while both the United States and WFSBP guidelines were developed by psychiatric groups. Regarding the modernity of the guidelines, three guidelines were published within the last 3 years (Australia and New Zealand, Denmark, the United

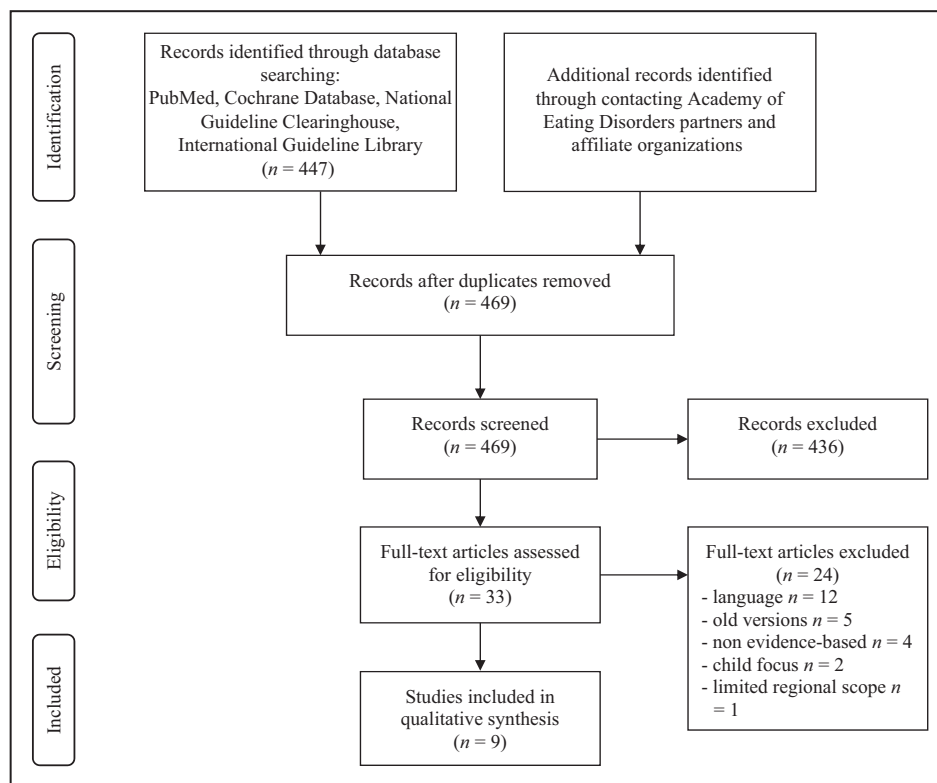


FIGURE 1. PRISMA flow diagram: international comparison of evidence-based clinical guidelines for eating disorders (15 June 2017).

Table 1. Evidence-based clinical guidelines for eating disorders published between 2009 and 2017

Abbreviations	Full guideline name	Year	Country	Status	Scientific society	Target ^a	Preparing committee ^b	Eating disorders ^c
AUS	Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the treatment of eating disorders [29]	2014	Australia and New Zealand	Active	Royal Australian and New Zealand College of Psychiatrists	Specialists	Multidisciplinary group of healthcare academics and professionals, consultation with key stakeholders and the community	AN, BN, BED
DEN	National clinical guideline for the treatment of anorexia nervosa – quick guide [37] National clinical guideline for the treatment of moderate and severe bulimia – quick guide [38]	2016	Denmark	Active	Danish Health Authority	Specialists	NR	AN, BN
FR	Clinical practice guidelines anorexia nervosa: management [39]	2010	France	Active	Association Française pour le Développement des Approches Spécialisées des Troubles du Comportement Alimentaire, Fédération Française de Psychiatrie, Haute Autorité de la Santé	Specialists	Multidisciplinary group	AN
GER	S3-guideline for the assessment and therapy of eating disorders [30]	2010	Germany	In revision	Association of the Scientific Medical Societies in Germany (AWMF)	Specialists	Multidisciplinary group of clinicians and researchers with expertise in the field of eating disorders	AN, BN, BED
NETH	Practice guideline for the treatment of eating disorders [31]	2017	The Netherlands	To be published	Dutch Foundation for Quality Development in Mental Healthcare	Population and specialists	Multidisciplinary group of healthcare professionals, health insurance representatives, patients and relatives	AN, BN, BED
SP	Clinical practice guideline for eating disorders [32]	2009	Spain	Active	Catalan Agency for Health Technology Assessment and Research, Ministry of Health and Consumer Affairs	Population and specialists	Multidisciplinary group of professionals involved in the field of eating disorders and experts on Clinical Practice Guidelines' methodology	AN, BN, BED
UK	Eating disorders: recognition and treatment, full guideline [33]	2017	United Kingdom	Active	National Institute for Health and Care Excellence	Specialists	Multidisciplinary group comprised of healthcare professionals, researchers and lay members	AN, BN, BED
US	Practice guideline for the treatment of patients with eating disorders, third edition, Guideline watch (August 2012) [34,35]	2010, 2012	United States	Active, guideline watch	American Psychiatric Association	Specialists	Psychiatrists in active clinical practice and some who are primarily involved in research or other academic endeavors	AN, BN, BED
WFSBP	World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for the pharmacological treatment of eating disorders [36]	2011	-	Active	World Federation of Societies of Biological Psychiatry	Specialists	Psychiatrists of WFSBP task force on eating disorders	AN, BN, BED

^aItalicized words indicate that the information was inferred from the text; where explicit information from the guideline was lacking.

^bNR of reported.

^cAN, anorexia nervosa; BN, bulimia nervosa; BED, binge-eating disorder.

Kingdom) or are currently being published (The Netherlands), while the remainder were published at least 5 years ago (France, Germany, Spain, the United States, WFSBP).

Comparison

The comparative results for AN, BN, and BED are summarized in Tables 2–4.

Anorexia nervosa

All guidelines which provided information on the treatment setting ($n = 7$) consistently recommended outpatient treatment as a first-line therapy setting for patients with AN. For determining more intense levels of care, most guidelines provided criteria for partial ($n = 5$) and full-time hospitalization ($n = 7$). The degree of detail and range of hospitalization criteria varied between guidelines. However, the guidelines consistently emphasized the necessity to decide about hospitalization on an individual basis taking multiple factors into account. Overall, hospitalization should be considered for patients who have failed at outpatient care, or who are at high risk for medical complications as determined using patient's weight status (e.g., extremely low body mass index), behavioral factors (e.g., decline in oral intake), vital signs (e.g., heart rate < 40 bpm), psychiatric comorbidity (e.g., suicide risk), or environmental aspects (e.g., family support). For very malnourished patients who do not consent to treatment, most guidelines provided some information on compulsory treatment ($n = 7$). Criteria for discharge from hospital were specified by the majority of guidelines ($n = 7$).

The majority of guidelines ($n = 6$) emphasized the importance to treat patients with AN and eating disorders in general, respectively, by specialized professionals and/or by professionals with substantial experience in the treatment of eating disorders. Regarding specific treatment modalities, most guidelines included recommendations for nutritional management ranging from artificial feeding ($n = 8$) to general nutritional counseling ($n = 6$). Although the extent to which information on artificial feeding was given differed among guidelines (e.g., concerning refeeding practice, duration, or indication), guidelines consistently favored oral enteral nutrition over parenteral nutrition which should only be used as a last option. Regarding general nutritional counseling, two (Germany, the United Kingdom) of six guidelines explicitly stated that it should be part of a multidisciplinary therapy approach and not used as a stand-alone treatment. Although there was substantial agreement across guidelines about the amount of recommended

weight gain per week in inpatient and outpatient settings, mostly ranging between 0.5–1.5 and 0.2–0.5 kg, respectively, variation in the amount of recommended energy intake per week was apparent. Although some guidelines recommended daily energy intakes of 30–40 kcal/kg (Germany, the United States) or higher (The Netherlands), others recommended considerably lower intakes (Spain, the United Kingdom), particularly for severely malnourished patients at risk for refeeding syndrome. Among the seven guidelines which specified the use of nutritional supplements, there was a large variation of recommendations regarding the type and indication for nutritional supplements. Some guidelines specifically recommended phosphate ($n = 6$), thiamine ($n = 3$), zinc ($n = 2$), or potassium ($n = 2$), if indicated, while others made a general recommendation for mineral or vitamin supplements ($n = 3$).

Although psychotherapy was deemed a central part of treatment by all guidelines, only seven guidelines recommended specific psychological interventions. All seven guidelines recommended family-based therapy (for greater detail, see Herpertz-Dahlmann in this issue [40,41]), particularly for younger patients. For individual psychotherapy, most guidelines recommended cognitive-behavioral therapy ($n = 6$) which intervenes at the symptom level and centers on the modification of dysfunctional behaviors and cognitions that maintain the disorder [42]. It was recommended as a first-line psychotherapy for AN by two guidelines (The Netherlands, the United Kingdom). Lesser agreement was achieved for psychodynamic therapy and interpersonal psychotherapy, which were explicitly recommended as an alternative by four and two guidelines, respectively. While psychodynamic therapy includes treatments that operate on an interpretative-supportive continuum [43], interpersonal psychotherapy is a focused, goal-oriented treatment which seeks to treat an eating disorder through resolving interpersonal problems in the context of what the disorder presents [44,45]. Further, the cognitive-interpersonal approach Maudsley Anorexia Nervosa Treatment for Adults [46] and the Specialist Supportive Clinical Management [47,48] were recommended as first-line therapies by two guidelines (The Netherlands, the United Kingdom). Although the German guideline only made a general recommendation for psychological interventions, it recommended involving the patient's family in the treatment of children and adolescents. Some guidelines noted that psychological interventions would be more effective in medically stabilized and cognitively improved patients ($n = 3$) or through combining psychological and nutritional interventions ($n = 1$).

Table 2 (Continued)

Recommendation	Clinical guideline									
	AUS	DEN	FR	GER	NETH	SP	UK	US	WFSBP	
Medication										
In general	N.R.	N.R.	(No specific medication to treat AN)	N.R.	N.R.	Not as only primary treatment	Not as sole treatment	N.R.	N.R.	
Antidepressants	(+) ^c	N.R.	+ Depressive disorders, anxious disorders, OCD	- Weight gain + depressive symptoms	N.R.	N.R.	N.R.	+ Depressive, anxiety, or obsessive-compulsive symptoms, or bulimic symptoms	N.R.	
SSRIs	- ^c	N.R.	N.R.	N.R.	-	N.R.	N.R.	- Weight gain + depressive, anxiety, obsessive-compulsive, or bulimic symptoms (in combination with psychotherapy or after weight restoration)	N.R.	
TCA's	N.R.	N.R.	(+)	N.R.	N.R.	N.R.	N.R.	-	N.R.	
MAOIs	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	-	N.R.	
Anipsychotics	(+) Obsessional thinking (olanzapine)	N.R.	(+)	- Weight gain (+) Obsessional thinking (only short-term)	(+) Obsessional thinking (olanzapine)	N.R.	N.R.	(+) Weight gain (+) Obsessional thinking (olanzapine, risperidone, quetiapine, chlorpromazine)	N.R.	
Appetizers	N.R.	N.R.	N.R.	-	N.R.	N.R.	N.R.	N.R.	N.R.	
Lithium	N.R.	N.R.	N.R.	-	N.R.	N.R.	N.R.	N.R.	N.R.	
Estrogen	N.R.	N.R.	(+)	N.R.	N.R.	(+)	(+)	(+)	N.R.	
Other medication	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	+ Pro-motility agents + Bupropion (+) Antianxiety agents	N.R.	
Other treatments	N.R.	+ Meal support/ (eating training (as adjunct) + Supervised physical activity (as adjunct) during weight gain phase)	N.R.	N.R.	N.R.	N.R.	- Physical therapy (transcranial magnetic stimulation, acupuncture, weight training, yoga or warming therapy)	- Electroconvulsive therapy (or only for severe cooccurring disorders)	N.R.	
Special issues	Separate recommendations for children and adolescents and for severe and long-standing AN, refeeding syndrome, medical management		Weighting, pregnancy, medical management	Detailed information on artificial feeding, different settings of care, weighing, specific recommendations for treatment of core symptoms	Separate recommendations for children and adolescents and for severe and long-standing AN, relapse prevention	Treatment of comorbidities, pregnancy, medical management	Separate recommendations for children and adolescents, detailed information on psychotherapies, carer support, weighing, medical management, treatment of comorbidities, pregnancy	Recommendations for acute AN versus after weight restoration versus chronic AN, refeeding syndrome		

Note: ✓ recommendation given; + explicit recommendation in favor; (+) cautious recommendation in favor; - recommendation against; N.R., no recommendation reported; AUS, Australia and New Zealand; CBT, cognitive-behavioral therapy; DEN, Denmark; FBT, family-based therapy; FR, France; GER, Germany; IPT, interpersonal therapy; OCD, obsessive-compulsive disorder; MAOI, monoamine oxidase inhibitor; MANTRA, Maudsley Anorexia Nervosa Treatment for Adults; NETH, The Netherlands; SSCM, Specialist Supportive Clinical Management; SSRI, selective serotonin reuptake inhibitor; SP, Spain; TCAs, tricyclic antidepressants; UK, United Kingdom; US, United States; WFSBP, World Federation of Societies of Biological Psychiatry.

^aRecommendations for weight gain and energy intake were derived from both the guideline's text and recommendations.

^bInformation on energy intake for the UK guideline was obtained from the Management of Really Sick Patients with Anorexia Nervosa (MARSPAN) guideline, because the UK guideline refers to it in this respect

^cIndicates that the recommended intervention refers to children and adolescents only.

Table 3. Comparison of evidence-based clinical guidelines for bulimia nervosa regarding key recommendations

	Clinical guideline							
	AUS	DEN	GER	NETH	SP	UK	US	WFSBP
Treatment setting								
First-line treatment: outpatient	+	N.R.	+	N.R.	+	+	+	N.R.
Criteria for day hospital treatment	✓	N.R.	✓	N.R.	N.R.	✓	✓	N.R.
Criteria for inpatient treatment	✓	N.R.	✓	N.R.	✓	✓	✓	N.R.
Treatment modalities								
Nutritional counseling	N.R.	+ (Individualized or standardized)	N.R.	N.R.	(+) Only with psychiatrist's approval	N.R.	+ (As part of the treatment)	N.R.
Psychological interventions								
In general	+ (Individual)	N.R.	+	N.R.	N.R.	N.R.	N.R.	N.R.
CBT	+ (First)	+ (First, individual or group)	+ (First)	+ (First, individual or group)	+	+ (Individual)	+ (First)	N.R.
FBT	N.R.	+ ^a	N.R.	+ ^a	N.R.	+ ^a	+	N.R.
Self-help	+ (Guided, CBT)	N.R.	+ (Guided, CBT)	+ (Guided, CBT)	+	+ (First, guided, CBT)	+	N.R.
Psychodynamic therapies	N.R.	N.R.	+	N.R.	N.R.	N.R.	+	N.R.
IPT	N.R.	N.R.	+	+	+	N.R.	+	N.R.
Other	+ Internet-based CBT	N.R.	N.R.	N.R.	N.R.	N.R.	+ Group psychotherapy and CBT and other psychodynamic interventions	N.R.
							+ Couples therapy	
							+ Support groups (as adjunct)	
Medications								
In general	+ (If psychotherapy is not available or as adjunctive therapy)	N.R.	N.R.	N.R.	Pharmacological treatments other than antidepressants are not recommended	Not as sole treatment	N.R.	N.R.
Antidepressants	+	N.R.	N.R.	N.R.	+	N.R.	+	N.R.
SSRIs	+ (Fluoxetine)	(+)	+ (Fluoxetine, in combination with psychotherapy)	+ (Fluoxetine)	+ (Fluoxetine)	N.R.	+ (Fluoxetine)	+ (Fluoxetine, fluvoxamine)
TCA	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	-	+ (Imipramine, desipramine)
MAOIs	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	-	- (Phenelzine)
Anticonvulsants	+ (Topiramate)	N.R.	N.R.	N.R.	N.R.	N.R.	(+)	(+) (Topiramate)
Lithium	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	-	N.R.
Other	+ Weight loss (orlistat)	N.R.	N.R.	N.R.	N.R.	N.R.	-	N.R.
Other treatments	+ Combined psychological and pharmacological therapy	N.R.	N.R.	N.R.	N.R.	-	+ Physical therapy (transcranial magnetic stimulation, acupuncture, weight training, yoga or warming therapy)	+ Combined treatment of CBT and antidepressants
							+ Bright light therapy (as adjunct)	+ Bright light therapy (as adjunct)
Special issues	Medical management	Medical management	Treatment of comorbidities	Treatment of comorbidities, options for weight loss	Treatment of comorbidities, pregnancy, medical management	Separate recommendations for children and adolescent with BN, detailed information on psychotherapies, carer support, medical management, treatment of comorbidities, pregnancy	Recommendations for initial versus maintenance phase	No long-term evidence

Note: ✓ recommendation given; + explicit recommendation in favor; (+) cautious recommendation in favor; - recommendation against; AUS, Australia and New Zealand; CBT, cognitive-behavioral therapy; DEN, Denmark; FBT, family-based therapy; GER, Germany; IPT, interpersonal therapy; MAOI, monoamine oxidase inhibitor; N.R., no recommendation reported; NETH, The Netherlands; SP, Spain; SSRi, selective serotonin reuptake inhibitor; TCA, tricyclic antidepressant; UK, United Kingdom; US, United States; WFSBP, World Federation of Societies of Biological Psychiatry.

^aIndicates that the recommended intervention refers to children and adolescents only.

Table 4. Comparison of evidence-based clinical guidelines for binge-eating disorder regarding key recommendations

	Clinical guideline						WFSBP
	AUS	GER	NETH	SP	UK	US	
Treatment setting							
First-line treatment: outpatient	N.R.	+	+	N.R.	+	N.R.	N.R.
Criteria for inpatient treatment	✓	✓	✓	N.R.	✓	N.R.	N.R.
Treatment modalities							
Nutritional counseling	N.R.	N.R.	N.R.	(+) (With approval of psychiatrist)	N.R.	+	(In the context of behavioral weight-control programs)
Psychological interventions							
In general							
CBT	+ (Individual) + (First)	+ (First)	+ (First, individual or group)	N.R.	N.R.	N.R.	N.R.
FBT	N.R.	N.R.	+ ^a	N.R.	N.R.	N.R.	N.R.
Self-help	+ (Guided, CBT)	+ (Guided, CBT)	+ (Guided, CBT)	+ (Guided or unguided)	+ (First, guided, CBT)	+	(Guided or unguided, CBT)
Psychodynamic therapies	N.R.	+	N.R.	N.R.	N.R.	N.R.	N.R.
IPT	N.R.	+	+	+	N.R.	+	N.R.
Medications							
In general	+ (If psychotherapy is not available or as adjunctive therapy)	N.R.	N.R.	N.R.	Not as sole treatment	N.R.	N.R.
Antidepressants	+	N.R.	N.R.	+	N.R.	+	N.R.
SSRI	+	+ (Off-label-use, short-term)	+ Binge eating frequency	+ Binge eating frequency	N.R.	+	Binge eating frequency (short-term) + (Citalopram/escitalopram, sertraline)
TCA	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
Anticonvulsants	+ (Topiramate)	N.R.	N.R.	N.R.	N.R.	+	(Topiramate, zonisamide) + (Topiramate)
Antiobesity medications	+ Weight loss (orlistat)	N.R.	N.R.	N.R.	N.R.	+	Binge-eating frequency (sibutramine, short-term) + Weight loss (orlistat, sibutramine)
Other treatments	+ Combined psychological and pharmacological therapy	N.R.	N.R.	N.R.	- Physical therapy (transcranial magnetic stimulation, acupuncture, weight training, yoga or warming therapy)	+	Behavioral weight-control programs + Orlistat plus guided self-help CBT + Fluoxetine plus group behavioral treatment
Special issues	Medical management	No long-term evidence for pharmacological treatment	Treatment of comorbidities, options for weight loss	Treatment of comorbidities, pregnancy	Detailed information on psychotherapies, medical management, treatment of comorbidities, pregnancy		No long-term evidence

Note: ✓ recommendation given; + explicit recommendation in favor; (+) cautious recommendation in favor; - recommendation against; AUS, Australia and New Zealand; CBT, cognitive-behavioral therapy; FBT, family-based therapy; GER, Germany; IPT, interpersonal therapy; MAOI, monoamine oxidase inhibitor; N.R., no recommendation reported; NETH, The Netherlands; SSRI, selective serotonin reuptake inhibitor; SP, Spain; TCAs, tricyclic antidepressants; UK, United Kingdom; US, United States; WFSBP, World Federation of Societies of Biological Psychiatry.

^aIndicates that the recommended intervention refers to children and adolescents only.

Regarding the pharmacological treatment of AN, five of nine guidelines provided specific recommendations with some notable variations. Two guidelines made the general recommendation that medication should not be used as the sole or primary treatment for patients with AN (Spain, the United Kingdom) or that there is no specific medication to treat AN (France). Antidepressants were generally recommended for those with depressive symptoms by four guidelines. At the same time, the German guideline cautioned against the use of antidepressants for weight gain. For selective serotonin reuptake inhibitors (SSRIs), there was one guideline which recommended its use for treating depressive symptoms in conjunction with psychotherapy or after weight restoration (the United States), while two other guidelines made general recommendations against their use, particularly in children and adolescents (Australia and New Zealand, The Netherlands). The use of tricyclic antidepressants (TCAs) was not explicitly favored, given that there was one recommendation against (the United States) and one cautious recommendation in favor (France). The use of monoamine oxidase inhibitors (MAOIs) or bupropion, an atypical antidepressant, was not recommended by the guideline from the United States, the only guideline reporting on these medications. Four guidelines consistently recommended the cautious use of antipsychotics for treating obsessional thinking in patients with AN, particularly olanzapine, because evidence from randomized-controlled trials and regarding long-term effects were lacking. Conflicting results were found for weight gain, given that one guideline recommended antipsychotics for weight gain (the United States), whereas another guideline stated that antipsychotics would not be appropriate for weight gain (Germany). Promotility agents and antianxiety agents were only recommended by the guideline from the United States for treating gastrointestinal problems and to reduce anticipatory anxiety concerning food intake, respectively. The use of appetizers and lithium was not recommended by the German guideline. In addition, four guidelines consistently stated that estrogen should not be routinely offered to patients with AN, as this would depend on the patient's menarche status or chronicity of AN, for example.

Adjunctive treatment recommendations were rarely made and included meal support, eating training, and supervised physical activity, as described by the Danish guideline. Physical therapies (e.g., electroconvulsive therapy, transcranial magnetic stimulation) were not recommended by two guidelines. Of note, four guidelines included information on the medical management of AN and three guidelines additionally reported on pregnancy

and pregnancy attempts. Two guidelines specifically provided information about the treatment of physical and mental comorbidities, as well as artificial feeding including refeeding syndrome.

Bulimia nervosa

Among the guidelines reporting on the prioritized treatment setting of BN, all recommended outpatient therapy as a first-line treatment ($n=5$). Four and five guidelines provided criteria for partial and full-time hospitalization, respectively. Regarding specific treatment modalities, nutritional counseling was generally recommended by the Danish guideline, in individualized or standardized format, while two other guidelines emphasized that nutritional interventions (e.g., to help develop a structured meal plan) should not be offered as stand-alone therapy (Spain, the United States).

Other than the WFSBP guideline, all available guidelines issued recommendations on specific psychological interventions. In agreement, five guidelines recommended cognitive-behavioral therapy as a first-line psychotherapy for patients with BN, particularly in an individual format. The remaining two guidelines also made recommendations in favor of cognitive-behavioral interventions, but prioritized cognitive-behavioral, guided self-help treatment as a first-line treatment (the United Kingdom), or did not provide an explicit treatment hierarchy (Spain). Overall, among the six guidelines which recommended self-help approaches, four highlighted the use of guided self-help based on cognitive-behavioral interventions (Australia and New Zealand, Germany, The Netherlands, the United Kingdom), that is, using structured self-help manuals supplemented with brief supportive sessions [49]. Interpersonal psychotherapy was recommended as an alternative to cognitive-behavioral therapy by most guidelines ($n=4$), while psychodynamic therapy ($n=2$) was rarely recommended. Family-based therapy was in particular recommended for younger patients with BN ($n=4$), and only explicitly recommended for adults by the guideline from the United States. Although the German guideline recommended cognitive-behavioral therapy for children and adolescents with BN, they emphasized the importance of including the patient's family into treatment. Alternative psychological interventions were, for example, the combination of psychodynamic and cognitive-behavioral therapies ($n=1$), couples therapy ($n=1$), or support groups ($n=1$).

Among the recommendations for pharmacological treatment, seven out of eight guidelines consistently recommended antidepressants, specifically the SSRI fluoxetine, although with some restrictions (e.g., to use antidepressants in combination with

psychotherapy). Conflicting recommendations were obtained for the use of TCAs such as imipramine and desipramine, which were recommended by the WFSBP, while the guideline from the United States explicitly did not recommend TCAs for initial treatment in patients with BN. Consistently, two guidelines advised against the use of MAOIs (United States, WFSBP). The use of anticonvulsants, specifically topiramate, was consistently recommended by two guidelines, while the remaining guidelines did not report on anticonvulsants. The only guideline which made a recommendation about lithium cautioned against its use (the United States). For patients with comorbid obesity, one guideline recommended the antiobesity medication orlistat (Australia and New Zealand).

Of note, four guidelines included specific information about the treatment of comorbidities, and three guidelines made recommendations for the medical management of BN.

Binge-eating disorder

Only three out of seven available guidelines explicitly included the recommendation that outpatient treatment is the first-line treatment setting for BED (Germany, The Netherlands, the United Kingdom). Criteria for hospitalization were provided by four guidelines (Australia and New Zealand, Germany, The Netherlands, the United Kingdom). An explicit recommendation for nutritional counseling was made by the guideline from the United States, specifically within the context of behavioral weight loss programs. The Spanish guideline generally recommended nutritional counseling for patients with eating disorders, with a psychiatrist's approval.

All guidelines provided recommendations for specific psychological interventions, except the WFSBP guideline. Cognitive-behavioral therapy was consistently recommended by all six guidelines, followed by guided ($n=6$) or unguided ($n=2$) cognitive-behavioral self-help treatment and interpersonal psychotherapy ($n=4$). An explicit recommendation for psychodynamic therapy was made by the German guideline only. With respect to first-line psychotherapy, four guidelines recommended cognitive-behavioral therapy, while one guideline favored guided cognitive-behavioral self-help treatment (the United Kingdom). Regarding the treatment format, guidelines varied highly, with one guideline specifically recommending individual psychotherapy (Australia and New Zealand), one prioritizing group format (the United Kingdom), and two guidelines not including any preference (The Netherlands, the United States). Family-based treatment was recommended for children and adolescents with BED by the Dutch guideline only.

The use of antidepressants was generally recommended by three guidelines (Australia and New Zealand, Spain, the United States). These three guidelines and three other guidelines (Germany, The Netherlands, WFSBP) consistently made a specific recommendation in favor of SSRIs for reducing binge-eating episodes, at least in the short-term. For TCAs, only the WFSBP recommended their use, particularly imipramine. For anticonvulsants, three guidelines (Australia and New Zealand, the United States, WFSBP) consistently recommended the use of topiramate, while the remaining guidelines did not report on it. Consistently, two out of two guidelines reporting on antiobesity medications explicitly recommended their use, specifically orlistat, for weight loss in patients with BED and comorbid obesity. In addition to weight loss, the antiobesity medication sibutramine was recommended for reducing binge eating (the United States). Two guidelines explicitly made a recommendation for pharmacological treatment in conjunction with psychological therapies (Australia and New Zealand, the United States).

Of note, three guidelines reported on the treatment of comorbidities, and two guidelines made recommendations for the medical management of BED.

DISCUSSION

The current systematic review of evidence-based clinical guidelines for eating disorders revealed many consistent recommendations, but also notable differences among the guidelines.

For the treatment of AN, the guidelines showed a substantial agreement on the amount of recommended weight gain, while recommended daily energy intakes varied considerably, which is consistent with Herpertz-Dahlmann *et al.* [28], who had narratively reviewed four European guidelines for the treatment of AN. Also in line with their findings, the recommendations for nutritional supplements varied widely, against a background of a lack of evidence. More consistently, most guidelines made recommendations for specific psychological interventions in the treatment of AN, especially for family-based therapy for younger patients, because of a large evidence base [40,50,51]. Most guidelines further supported cognitive-behavioral therapy [52]. Cognitive-behavioral therapy, the Maudsley Anorexia Nervosa Treatment for Adults, and the Specialist Supportive Clinical Management were even recommended as first-line therapies by the two current guidelines from The Netherlands and the United Kingdom, based on recently published results [53²²,54²²]. Little agreement was found for

psychodynamic therapy and interpersonal psychotherapy as alternative treatments, because of scant evidence for their use [55–57]. A need for further research on the psychological treatment of AN was noted for all ages [28,58].

Regarding pharmacotherapy of AN, recommendations varied widely – four guidelines, among them the medically oriented WFSBP guideline, made no specific recommendation for any medication, or advocated against their sole or primary use. The greatest level of consistency across four out of nine guidelines was found for the careful use of antipsychotics to reduce associated obsessional thinking in patients with AN, but it was inconsistent whether or not antipsychotics should be recommended for weight gain. In addition, three guidelines generally recommended antidepressants for the treatment of depressive symptoms, but a consistent recommendation for specific types of antidepressants (SSRIs, TCAs) could not be identified. Single guidelines' recommendations emerged regarding other medications, for example, against the use of bupropion. Estrogen was with some consistency recommended to be offered only upon specific indication (see [59]). Overall, these inconsistent pharmacological recommendations for the treatment of AN may reflect the scarce evidence base for the pharmacological treatment of this disorder [13,28,60].

For the treatment of BN, all guidelines but the medically oriented WFSBP guideline issued recommendations on specific psychological interventions: The majority of them recommended cognitive-behavioral therapy as a first-line treatment for BN, reflecting the treatment literature [11,52]. In contrast, the United Kingdom guideline recommended offering cognitive-behavioral self-help treatment first, presumably because of an emphasis on cost-effectiveness [27], for which initial data are available [61]. Interpersonal psychotherapy was recommended as an alternative to cognitive-behavioral therapy by the majority of guidelines, given its slower short-term efficacy, but equivalent long-term efficacy [52]. Psychodynamic therapy was recommended by the German and guideline from the United States only, despite its limited evidence base [62,63], possibly because of particularities in healthcare systems. Family-based therapy was recommended mostly for younger patients by half of the guidelines, which is supported by recent clinical research [64]. Most guidelines recommended self-help treatment, and the majority of these, especially the more recent guidelines, emphasized guided cognitive-behavioral self-help treatment, documented to be efficacious in the treatment of BN [65]. A few recommendations with unclear rationale and/or

sparse evidence base were issued for alternative treatments (e.g., a combination of psychodynamic and cognitive-behavioral therapies) and nutritional counseling.

Regarding the pharmacological treatment of BN, most guidelines recommended antidepressants for the treatment of BN, specifically the SSRI fluoxetine, albeit with several restrictions (e.g., combined use with psychotherapy only). Fluoxetine has approval for the treatment of adults with BN in several countries (e.g., the United States, Germany). However, only a few and often inconsistent recommendations were made for the use of TCAs and anticonvulsants, specifically topiramate, and against the use of MAOIs and lithium. Again, these singular and contradictory recommendations may mirror the overall paucity of research on pharmacological treatments of BN [13].

For the treatment of BED, all guidelines provided recommendations for specific psychological interventions (except the medically oriented WFSBP guideline). Cognitive-behavioral therapy was consistently recommended by all respective guidelines and mostly as a first-line treatment, given its comprehensive evidence base [10]. Cognitive-behavioral therapy was followed by cognitive-behavioral self-help treatment, with the majority of guidelines recommending a guided format, a treatment with an increasing evidence base [65]. Of note, the guideline from the United Kingdom favored guided cognitive-behavioral self-help treatment as a first-line treatment, likely for economic reasons, as described for BN. Interpersonal psychotherapy was further recommended by the majority of the guidelines, based on a small number of studies [52]. An explicit non-evidence-based recommendation for psychodynamic therapy was made by the German guideline only [66] reflecting healthcare system specificities, while family-based treatment was recommended for children and adolescents with BED by the Dutch guideline only, based on emerging evidence for family-based treatment of adolescents with BN [64]. A recommendation for nutritional counseling was made by two guidelines, which may reflect findings of lower efficacy of this treatment regarding binge-eating outcome [67].

Regarding the pharmacological treatment of BED, the majority of guidelines made a recommendation for SSRIs, which is in line with current literature [10], while only the WFSBP guideline recommended TCAs, based on studies published before 1999. Three guidelines recommended the use of the anticonvulsant topiramate; however, the drug's side-effects, especially cognitive impairment, have been noted [68]. Regarding antiobesity medications,

two guidelines recommended orlistat for weight loss in BED and BN [69,70] and sibutramine for binge eating in BED, the latter being withdrawn from many markets because of adverse cardiovascular events. Combined psychological and pharmacological treatment was recommended by two guidelines; however, this is not supported by current evidence [71[■]].

Overall, consistency across guidelines seemed to be the greatest for psychological treatments and for single medications with a larger evidence base, while for psychological and medical treatments with a smaller evidence base, recommendations varied considerably, and expert consensus played a greater role. Regarding the dissemination and implementation of evidence-based treatments into clinical practice, the guidelines thus do endorse main empirically validated treatment approaches with considerable agreement, but beyond this, the variability is greater in what recommendations evidence-based clinical guidelines subsume. A larger evidence base is critical in offering clinically reliable and consistent guidance in eating disorders, and many important areas of future clinical research have been identified for all eating disorders at different ages, given the treatment gap and the research-practice gap described at the outset of this article [15[■],22[■]].

The available evidence is one reason for differences among guidelines. Among additional reasons, while several guidelines were issued within the past 3 years or are about to be published, the majority were 5 years and older. Especially for disorders such as BED with a large recent increase in clinical research, changes in recommendations over time are to be expected. Several recommendations were non-evidence-based and likely reflected particularities in healthcare systems, for example, the availability of outpatient, day patient, and inpatient settings or of therapists trained in a specific intervention. The guidelines differed as well in their scope, considering treatment in selected aspects (e.g., Denmark, France) or comprehensively (e.g., Germany, the United States). Some guidelines were created by one healthcare profession or one specialized professional organization only (e.g., the guidelines from the United States, WFSBP) and may thus reflect the view of this profession only. Most guidelines, however, pursued a multiprofessional approach in guideline development, and some of them noted the inclusion of other stakeholders as well. In fact, the current literature for guideline development advocates for broad stakeholder involvement of all relevant professions, healthcare providers, and patients (e.g., [25–27]) for optimal acceptance and implementation.

Another additional source for differences among guidelines may be how the evidence was examined, with guidelines based on meta-analyses (e.g., Germany, the United Kingdom), systematic reviews (e.g., Australia and New Zealand, the United States), or unsystematic reviews of the evidence (e.g., France). The transparency with which evidence was converted into specific recommendations further varied across guidelines; several guidelines explicitly evaluated the strength of evidence and provided clear rationale for a specific recommendation (e.g., Germany, the United Kingdom, WFSBP), while others did not (e.g., France), leaving the empirical foundation of a recommendation unclear. To develop a guideline, it has been recommended to use a systematic approach to evaluate the strength of evidence, for example the Grading of Recommendations Assessment, Development, and Evaluation [72], or the system of the Oxford Centre for Evidence-Based Medicine [26,73]. For some guidelines, only summary statements without the systematic review component were available in the review languages, making the empirical background of a recommendation difficult to understand (e.g., Denmark). Guidelines differed further in readability, with most guidelines providing clear or even standardized recommendations that were easily located (e.g., Germany, the United Kingdom), while others provided them in a more complex text format (e.g., the United States). Although these aspects are central to the quality of a guideline, it is notable that a systematic quality evaluation [74] of clinical eating disorder guidelines is currently lacking; this was considered to be beyond the scope of this treatment-oriented review but could help to systematically identify strengths and limitations of current eating disorder guidelines.

Strengths of this study were a systematic compilation of main treatment recommendations of current evidence-based eating disorders guidelines. Not within the scope of this review were: general setting-oriented recommendations (e.g., communication with the patient, therapeutic infrastructure, organization of transitions between different levels of care); methods for the identification, assessment, and diagnosis of eating disorders; and the practical applicability of the guidelines and their actual implementation in clinical settings. Several of these aspects warrant further investigation. One further limitation is that several guidelines had to be excluded from this review because of not meeting the language requirement. For further comparative research, it would be desirable to have guidelines published not only in the national language, but also in other languages for international reception.

CONCLUSION

The current systematic, international comparison demonstrated notable commonalities and differences among current evidence-based clinical guidelines for eating disorders. Currently, several evidence-based clinical guidelines for eating disorders are in progress (e.g., Germany, the United States). Because developing and updating clinical guidelines is time-consuming and complex, an international coordination of guideline development, for example, across the European Union, would be desirable. Collaborative efforts would need to carefully specify the goals and scope of a common 'guideline trunc' which should be based on an elaborated, quality-assuring developmental process, while accounting for different cultures and national requirements. European clinical studies on major research gaps could represent an important first step toward this end.

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Conflicts of interest

There are no conflicts of interest.

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