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REVIEW ARTICLE

Eating disorders

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Twenty years have passed from the International Classification of Diseases, Tenth Revision (ICD-10) to the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5) and, in the meanwhile, a lot of research data about eating disorders has been published. This article reviews the main modifications to the classification of eating disorders reported in the "Feeding and Eating Disorders" chapter of the DSM-5, and compares them with the ICD-10 diagnostic guidelines. Particularly, we will show that DSM-5 criteria widened the diagnoses of anorexia and bulimia nervosa to less severe forms (so decreasing the frequency of Eating Disorders, Not Otherwise Specified (EDNOS) diagnoses), introduced the new category of Binge Eating Disorder, and incorporated several feeding disorders that were first diagnosed in infancy, childhood, or adolescence. On the whole, the DSM-5 revision should allow the clinician to make more reliable and timely diagnoses for eating disorders.

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Introduction

The Fifth Edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5)[1] includes a considerably revised section on eating disorders (ED), now defined as "Feeding and Eating Disorders."

We can summarize the major changes of DSM-5 for EDs into 3 categories:

1. Diagnostic criteria require a lesser symptom severity to make diagnosis, eg, we can now make diagnosis of a specific ED in anorexic patients without amenorrhoea or in bulimic patients with only 1 binge episode per week, thus reducing the prevalence of EDNOS patients.
2. Binge eating disorder (BED) is now recognized as an "official" ED.
3. The new lifespan approach of DSM-5,[2] which reflects the growing evidence on continuity between child, adolescent, and adult psychopathology,[3] eliminated the DSM-IV chapter "Feeding Disorders" and integrated all Feeding and Eating Disorders into a single category. Particularly, the formerly defined "Feeding Disorder of Infancy or Early Childhood" expanded diagnostic criteria to adults and was renamed "Avoidant/Restrictive Food Intake Disorder" (ARFID).

In the next paragraphs, we will consider, as a first step, the EDNOS issue–that is, the frequent use of the residual "Not Otherwise Specified" category for EDs when strictly applying the ICD-10[4] or DSM-IV[5] criteria. Then we will summarize the main characteristics of anorexia nervosa, bulimia nervosa, and binge eating disorder, comparing the ICD-10 with the new DSM-5 classification.

For reasons of space, feeding disorders will not be considered in this review.

EDNOS: The No Man's Land

According to an extensive literature,[6–11] EDNOS cases according to DSM-IV[5] and "atypical" anorexia and bulimia nervosa according to ICD-10 account for 40–60% of patients seeking treatment at ED facilities. Moreover, EDNOS may be even more common in non-specialized settings and in the community.

Common types of EDNOS according to DSM-IV include anorexia nervosa without amenorrhoea, bulimia nervosa without compensatory behaviors, and bulimia nervosa with bingeing episodes occurring less than twice a week. Such an etherogeneous group, an indirect sign of too rigid criteria for EDs, was unhelpful for research aims (eg, to define homogeneous cathegories for clinical

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TABLE 1. Similarities and differences between DSM-IV Eating Disorders Not Otherwise Specified (EDNOS), DSM-5 Other Specified Feeding or Eating Disorders (OSFED), and Unspecified Feeding or Eating Disorders (UFED)

DSM-IV EDNOS	DSM-5 OSFED	DSM-5 UFED	Comments
"… disorders of eating that do not meet the criteria for any specific Eating Disorder."	"… situations in which the clinician chooses to communicate the specific reason that the presentation does not meet the criteria …"	"… situations in which the clinician chooses not to specify the reason that the criteria are not met".	In DSM-5, EDNOS is split in 2 categories.
Six examples included:	Five examples included:		
"For females, all of the criteria for Anorexia Nervosa are met except that the individual has regular menses."			In DSM-5, absence of regular menses is no longer a diagnostic criterion for AN.
"…Anorexia Nervosa … despite significant weight loss, the individual's current weight is in the normal range."	"Atypical anorexia nervosa: … despite significant weight loss, the individual's weight is within or above the normal range."		In both DSM-IV and DSM-5, the clinician should consider with great attention a significant weight loss, even if the current weight is still in the normal range.
"… Bulimia Nervosa … less than twice a week or for a duration of less than 3 months."	"Bulimia nervosa (of low frequency and/or limited duration) … less than once a week and/or for less than 3 months"		In DSM-5, the severity criterion for low frequency Bulimia Nervosa is lessened.
"… inappropriate compensatory behavior … after eating small amounts of food (eg, self-induced vomiting after the consumption of two cookies)."	"Purging disorder: Recurrent purging behavior … in the absence of binge eating."		See the "Bulimia Nervosa" section ("subjective vs objective binge eaters").
"Repeatedly chewing and spitting out, but not swallowing, large amounts of food.			See Rumination Disorder in DSM-5.
Binge-eating disorder.	"Binge-eating disorder (of low frequency and/or limited duration): … less than once a week and/or for less than 3 months."		In DSM-5, BED is a specified disorder, and only a low frequency BED (ie, with less than 1 binge episode a week) can be diagnosed as OSFED.
	"Night eating syndrome."		A new specified clinical example in DSM-5.

trials) and even more unhelpful for clinical utiliy (eg, implications for treatment selection).

So, the DSM-5 proposal of broadening diagnostic criteria for anorexia and bulimia nervosa significantly reduced the proportion of EDNOS cases[11,12] and improved clinical utility in both research areas and everyday clinical practice.

As reported in Table 1, DSM-5 split the residual category of EDNOS into 2 categories: Other Specified Feeding or Eating Disorders (OSFED) and Unspecified Feeding or Eating Disorders (UFED).

In OSFED, the clinician chooses to specify the reason that the specific criteria are not met, and the reported examples are substantially different from DSM-IV. First of all, there is no more anorexia nervosa without menses or binge eating disorder, as they are now considered as specific disorders. In the second place, DSM-5 reports purging disorder (see the "Bulimia Nervosa" section for more details) and night eating syndrome, a syndrome not yet well-defined in clinical research[13] and in which an excessive food comsumption occurs after dinner and/or after awakening from sleep. Finally, the DSM-IV example of "chewing and spitting out, but not swallowing, large amounts of food" is now included in DSM-5 as rumination disorder.

Different from OSFED, the UFED residual category is mainly used when there is insufficient information to make a more specific diagnosis (eg, in emergency settings).

Anorexia Nervosa: Diagnose Earlier, Diagnose Better

One of the most common issues in clinical practice of anorexia nervosa (AN) is the delay between the onset of the first symptoms and the beginning of a suited treatment. Especially among early-onset patients, the duration of an untreated illness could be more than 2 years.[14] So, the broadened diagnostica criteria for AN, in which less severe cases are immediately classified as full syndromes, can help to timely detect clinically significant cases, and to direct them to the most appropriate treatment settings.

We can summarize the main differences between ICD-10 and DSM-5 diagnostic criteria for AN into 4 categories (see Table 2): (1) low body weight, (2) psychopathological features, (3) physical symptoms, and (4) additional features.

Low body weight

Both ICD-10 and DSM-5 use low body mass index (BMI) as a diagnostic threshold, but DSM reports more lenient values. Not only can we make diagnosis of AN with a BMI more than 17.5, but also, according to clinical judgment,

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TABLE 2. Diagnostic criteria in anorexia nervosa: similarities and differences between ICD-10 and DSM-5

	ICD-10 (F50.0)	DSM-5 (307.1)
1. Low body weight	(a) BMI ≤ 17.5	(A) "Weight that is less than minimally normal" (BMI ≤ 18.5), but clinical judgment may be considered for BMI > 18.5; (B) BMI-for-age percentiles (for children and adolescents)
	(b) "the weight loss is self induced" (avoidance of "fattening foods," purging behaviors, excessive exercise)	(A) "Restriction of energy intake relative to requirements"; (B2) "persistent behavior that interferes with weight gain"
2. Core psychopathological features	(c) "body-image distortion"; "dread of fatness persists as an intrusive, overvalued idea"	(B1) "Intense fear of gaining weight or of becoming fat"; (C) "disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, persistent lack of recognition of the seriousness of the current body weight"
3. Physical symptoms	(d) "a widespread endocrine disorder" (amenorrhoea in women, loss of sexual interest and potency in men; (e) "if onset is prepubertal, the sequence of pubertal events is delayed or even arrested"	Not necessary for diagnosis; (the amenorrhorea criterion was necessary in DSM-IV)

with BMI more than 18.5. In addition, DSM-5 uses BMI to specify severity. For instance, in cases of "extreme" (BMI < 15) anorexia nervosa, clinicians can specifically refer patients to a more intensive (ie, inpatient) treatment setting.

Psychopathological features

In both ICD-10 and DSM-5, we recognize 2 core psychopathological features: the "dread of fatness/fear of gaining weight" and the "body image distortion/disturbance in the way in which one's body weight or shape is experienced."

The fear of gainig weight is widely recognized as a core feature of AN,[15] but its dependence on development, culture, and illness stage questions the clinical utility of weight phobia as a diagnostic criterion.[3] Many studies reported that the fear of gaining weight may be dependent on many aspects, including developmental variables[16] (eg, child and early adolescent anorexics often deny fear of gaining weight, probably because of a not-yet-developed abstract reasoning ability), cross-cultural variables[17,18] (eg, anorexic patients in non-Western countries may complain about "digestive" symptoms, but not report fears about weight); and stage-related variables (eg, the fear of gaining weight often emerges during the initial treatment phases, when the weight restorations begins).

For such reasons, DSM-5 extends the "fear" criterion to include "fearless" anorexia: either "intense fear of gaining weight or of becoming fat" *or* "persistent behavior that interferes with weight gain" can make us diagnose a typical AN.

On the other hand, ICD-10 provides a more "psychopathological" definition of fears: it states that the "dread of fatness persists as an intrusive, overvalued idea," suggesting a link, as evidenced in the literature,[19–23] between AN and obsessive-compulsive spectrum disorders.

As for body image distortion, it is a fundamental aspect of AN psychopathology, and both ICD-10 and DSM-5 require it as a diagnostic criterion.

In addition, DSM-5 hints at a poor insight about body image distortion ("persistent lack of recognition of the seriousness of the current body weight"), but neither ICD-10 nor DSM-5 investigate the prospective clinical usefulness of insight as a predictor of outcome in AN.[24–26] In order to better evaluate insight in AN, specific rating scales such as the Yale–Brown Cornell Eating Disorders Scale (YBC-EDS)[27] and the Brown Assessment of Beliefs Scale (BABS)[28] could be helpful.

Physical symptoms

Amenorrhoea, described in ICD-10 inside the broader category of "a widespread endocrine disorder involving the hypothalamic–pituitary-gonadal axis," is traditionally considered a milestone in the diagnosis of AN.

However, many factors, including the widespread use of oral contraceptives among women, the early (ie, pre-pubertal) or late (ie, post-menopausal) onset patients, the small but significant percentage of male anorexics, and, most of all, the significant minority of women who menstruate but otherwise fulfil criteria for AN, lessened the clinical usefulness of amenorrhoea, and so the requirement of amenorrhoea as a diagnostic criterion was eliminated in DSM-5.

Additional features

More than the "differential diagnosis" paragraph in ICD-10, DSM-5 points out many other clinically useful associated features in AN and, as a rule, in any of the

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Feeding and Eating Disorders: developmental issues, risk and prognostic factors, culture-related diagnostic issues, diagnostic markers, suicide risk, differential diagnosis, and comorbidity.

Bulimia Nervosa: Lower Frequency of Binges, Same "large" Amounts of Food

The main change in DSM-5 was the reduction in the required minimum average frequency of both binge eating and compensatory behaviors, from twice to once a week for 3 months (see Table 3). On the other hand, ICD-10 simply required binge eating and compensatory behaviors to be "repeated," whereas ICD-10 Diagnostic Criteria for Research[29] required "recurrent episodes of overeating at least two times per week over a period of three months." Apart from frequency of binge episodes, there are some other differences between ICD-10 and ICD-10 Diagnostic Criteria for Research in bulimia nervosa: ICD-10 specifies differential diagnosis with upper gastrointestinal disorders, personality disorders, and depressive disorders, and, on a longitudinal perspective, emphasizes the frequent history of an earlier episode of anorexia nervosa in bulimic patients.

As for bulimic patients with a lower binge/purge frequency, in one study[30] the distinction between "full" BN and subthreshold BN accounted for only <5% of the criterion variance in general psychopathology measures. Another study[31] reports that, although the subthreshold BN had significantly lower scores on the scales that measured psychological disturbance (eg, drive for thinness, ineffectiveness, interoceptive awareness, depressive symptoms), both patient groups scored within the range of severity characteristics of clinical samples. A review study[32] does not equally show significant differences between full and subthreshold BN in body shape and weight concerns, and associated personality and psychiatric comorbidity, suggesting a once-weekly threshold for diagnosis of BN by similar factors of family history, history of treatment-seeking for weight or eating problems, clinical characteristics, personality, and response to treatment.

As a whole, these data are consistent with clinical practice, especially in community samples, showing that the DSM-IV[5] and ICD-10 Diagnostic Criteria for Research could exclude from diagnosis subjects who in every other way resemble patients with full BN.

As for the clinical characteristics of the single binge episode, an open question in bulimia nervosa is, to define a binge-eating episode, how large should the amount of food be? Both ICD-10 and DSM-5 state that the amount of food should be objectively larger, but there is increasing evidence[33–36] that subjective and objective binge-eaters do not have clinically meaningful differences regarding psychiatric comorbidity, socio-demographic characteristics, current levels of eating disorder psychopathology, general psychological distress, impairment in global functioning, health service utilization, and use of psychotropic medications. In addition, the removal of the "large amount of food" criterion may substantially reduce the prevalence of EDNOS category among bulimic patients.

So, future revisions of ICD and DSM could consider the "sense of lack of control" as the foremost clinical characteristic of binge-eating episodes in BN. At present, "subjective" BN could be diagnosed in DSM-5 as purging disorder, ie, "recurrent purging behavior to influence weight or shape (eg, self-induced vomiting; misuse of laxatives, diuretics, or other medications) in the absence of binge eating."

TABLE 3. Diagnostic criteria in bulimia nervosa: similarities and differences between ICD-10 and DSM-5

	ICD-10 (F50.2)	DSM-5 (307.51)
1. Overeating	(a) "episodes of overeating in which large amounts of food are consumed in short periods of time"	(A) "recurrent episodes of binge-eating", ie, "eating, in a discrete period of time, an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances" (A1); "a sense of lack of control over eating during the episode" (A2)
2. Compensatory behaviors	(b) "the patient attempts to counteract the fattening effect of food": "self-induced vomiting; purgative abuse; alternating periods of starvation; use of drugs such as appetite suppressants, thyroid preparations or diuretics; neglect of insulin treatment in diabetics"	(B) "self-induced vomiting; misuse of laxatives, diuretics or other medications; fasting; excessive exercise"
3. Severity threshold	Not specified (ICD-10); "two times per week over a period of three months" (ICD-10 Diagnostic Criteria for Research)	(C) "the binge eating and inappropriate compensatory behavior both occur, on average, at least once a week for 3 months"
4. Core psychopathological features	(a) "persistent preoccupation with eating"; "irresistible craving for food" (c) "morbid dread of fatness"; "sharply defined weight threshold, well below the premorbid weight"	(D) "self-evaluation is unduly influenced by body shape and weight"

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There are other minor but significant changes regarding subtyping and severity specifying in DSM-5:

Subtyping

The distinction in DSM-IV between purging and non-puging BN was eliminated in DSM-5, due to literature[37] that has shown poor clinical utility of such a distinction.

Severity

Unlike ICD-10, DSM-5 specifies 4 levels of severity according to the presence of inappropriate compensatory behaviors, from "mild" (1–3 episodes of compensatory behaviors per week) to "extreme" (14 or more episodes per week).

In addition, it could be useful in the clinical assessment of severity of BN to consider the presence of "multi-impulsive" behaviors (eg, shoplifting, substance abuse, and, most of all, self-damaging behaviors). Some data[38,39] have shown evidence that multi-impulsive BN could be a distinct subtype of bulimia, with different etiopathogenetic (eg, childhood trauma in multi-impulsives), prognostic (eg, a poorer treatment outcome), and theraputic implications (eg, the possibile benefits of a dialectical behavior therapy[40,41]).

Binge Eating Disorder: At Last, an "Official" Eating Disorder

In ICD-10, the F50.4 diagnosis "Overeating associated with other psychological disturbances" partially describes binge eating symptomatology, eg, a "reactive obesity" related to bereavements, accidents, surgical operations, and emotionally distressing events.

From the ICD-10 non-specific F50.4 category, binge eating disorder (BED) was cited in DSM-IV in Appendix B ("Criteria Sets and Axes Provided for Further Study") and was coded as EDNOS.

In DSM-5, BED is acknowledged as a typical eating disorder, along with AN and BN. Its diagnostic criteria remain essentially the same as listed in DSM-IV, except the severity criterion has been reduced to require an average of 1 binge-eating episode per week over a 3-month period.

At first glance, BED could look like a subtype of BN, in which there are binge-eating episodes with no evidence of inappropriate compensatory behaviors. However, extensive research data[42,43] have documented the clinical utility and validity of BED as a distinct disorder. For instance, BED patients are often obese, are usually older, show different comorbidities (eg, bipolar disorders), and, most of all, show a higher prevalence of men than anorexic and bulimic patients.[44]

Future Perspectives: Toward ICD-11

The World Health Organization (WHO) is currently preparing the eleventh revision of the International Classification of Diseases (ICD-11), which is scheduled for release in 2017.

In recent literature,[3,45,46] recommendations for the revised classification of EDs in ICD-11 were reported. Many of them seem to resemble most of the DSM-5 revised guidelines, eg, the integration of weight categories for AN, the merging of feeding and eating disorders, the inclusion of BED as a distinct disorder, the definition of less rigid criteria for AN and BN, and, in the Standard Format for ICD-11 Clinical Descriptions, the inclusion of comorbidities, culture-related features, and developmental presentations.

Such convergence between ICD and DSM classification will hopefully foster the exchange of clinical and research information between different countries and, on the whole, improve the clinical utility of diagnostic guidelines for feeding and eating disorders.

Disclosures

Stefano Erzegovesi and Laura Bellodi do not have anything to disclose.

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