Revisiting Classification of Eating Disorders-toward Diagnostic and Statistical Manual of Mental Disorders-5 and International Statistical Classification of Diseases and Related Health Problems-11

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ABSTRACT

Two of the most commonly used nosological systems- International Statistical Classification of Diseases and Related Health Problems (ICD)-10 and Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV are under revision. This process has generated a lot of interesting debates with regards to future of the current diagnostic categories. In fact, the status of categorical approach in the upcoming versions of ICD and DSM is also being debated. The current article focuses on the debate with regards to the eating disorders. The existing classification of eating disorders has been criticized for its limitations. A host of new diagnostic categories have been recommended for inclusion in the upcoming revisions. Also the structure of the existing categories has also been put under scrutiny.

Key words: *Anorexia nervosa, bulimia, eating disorders*

INTRODUCTION

Eating disorders have been defined as "disorders of eating behaviors, associated thoughts, attitudes and emotions, and their resulting physiological impairments". Anorexia nervosa (AN) is a syndrome characterized by three essential criteria. The first is a self-induced starvation to a significant degree—a behavior. The second is a relentless drive for thinness and/or a morbid fear of fatness—a psychopathology. The third criterion is the presence of medical signs and symptoms resulting from starvation—a physiological symptomatology.[1] National Comorbidity Survey Replication estimates the life time prevalence of AN, bulimia nervosa (BN) and binge eating at 0.9%, 1.5% and 3.5%, respectively, in women and 0.3%, 0.5%, and 2.0% in men.

Studies from western countries have reported that 1% college-aged women have anorexia and 4 % college-age women have bulimia in the U.S. Similarly, 2.6% of female Norwegian students and 1.3% of Italian students have been found to have anorexia. However, studies from Asian countries have reported lower prevalence as compared to western countries. The prevalence rates of AN in Japan has been reported to be 0.025-0.030% and 0.01% in China.[2] In fact,

Access this article online	
Website: www.ijpm.info	Quick Response Code
DOI: 10.4103/0253-7176.106041	

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eating disorders have for long being conceptualized as culture-bound syndromes seen in western settings. Understanding accurate epidemiology of eating disorder is not possible due to changing definition of what constitutes an eating disorder, presentation of eating disorders by their physical consequences in form as medical disorders and lack of clear diagnostic criteria and reliable assessment methods, especially for the nonstereotypical cases in males, minorities, and matrons. Hence there is a need to deal with all these issues appropriately in the upcoming modifications of the nosological systems.

MATERIALS AND METHODS

We conducted a literature review to investigate the lacunae in current classification of eating disorder and possible modification suggested by various authors. First, we identified articles on eating disorder, AN, BN, eating disorder NOS and binge-eating disorder (BED) by searching pubmed and MEDLINE. We also searched the articles cited in the reference sections of the papers that were retrieved from our initial search. Search term included eating disorder, AN, BN, eating disorder NOS, BED, new eating disorder, recent advances and DSM-V, ICD-11 in various combinations.

RESULTS

Evolution of eating disorder classification

In third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) and the revised third edition of the DSM (DSM-III-R), eating disorders were classified under disorders of childhood or adolescence, perhaps in part, contributing to previous under diagnosis of later-onset cases. DSM of the American Psychiatric Association has formally recognized two specific categories for the diagnosis of eating disorders- AN and BN (termed Bulimia in DSM-III and BN in DSM-IIIR and DSM-IV). In DSM-IV, all other clinically significant eating disorder problems are captured by the residual category of eating disorder not otherwise specified (EDNOS). In DSM-IV, BED was included under disorder for further research. Subsequently in DSM-IVTR eating disorder moved to independent section.

In ICD-9, eating disorders were classified under broad rubric of neurotic disorders, personality disorders, and other nonpsychotic mental disorders. Only two categories were specified viz. BN and pica. In ICD-10, eating disorders have been classified under behavioral syndromes associated with physiological disturbances and physical factors [Table 1].

Criticisms of current classification

Categorical versus dimensional approach

Current DSM classification is built on categorical model. Such a model has an inherent assumption about mental disorders being valid and discrete entities. These discrete categories are well demarcated by firm boundaries between one another and normality and separated by ''zones of rarity''.[3] However, such an approach precludes examination of full spectrum of disorder. It has been postulated that investigation of etiology of eating disorders is hindered by rigid adoption of DSM definitions.[4]

Criticisms of current criteria of anorexia nervosa

DSM IV TR specifies that refusal to maintain normal body weight as one of the criteria for AN. However, there is no empirical validation for use of 85% of expected body weight as the cut-off. This criteria has been criticized as being arbitrary, nonpredictive of treatment outcome, and insensitive to issues of age, gender, frame size, and ethnicity.[5] Also no minimum time required for the ''maintained'' low weight of AN has been presently specified.[6] In a retrospective study (n=397) of consecutive admissions to an eating disorders unit it was found that 30% of cases were diagnosed as EDNOS. Also, 28% cases of AN had body weight greater than 85% ideal body weight.[7]

DSM IV TR also specifies intense fear of gaining weight or becoming fat even though underweight is one of the criteria for AN. This criterion has also been criticized for being culture bound. Lack of weight concern has been a finding of the studies in non-western settings conducted among patients resembling anorectics.[8,9] Additionally, this criteria has little or no diagnostic specificity. Also it tends to poorly predict the outcome.[10] Moreover, at least some patients in North America and Europe have also reported change in eating behavior other than weight concern. These include fasting for spiritual end

Table 1: Current nosological status of eating disorders

ICD 10	DSM-IV TR
F50-F59 Behavioral syndromes associated with physiological disturbances and physical factors	Eating disorder
F50 Eating disorder	307.1 Anorexia nervosa
F50.0 Anorexia nervosa	307.51 Bulimia nervosa
F50.1 Atypical anorexia nervosa	307.50 Eating disorder not otherwise unspecified
F50.2 Bulimia nervosa	
F50.3 Atypical bulimia nervosa	
F50.4 Overeating associated with other psychological disturbances	
F50.5 Vomiting associated with other psychological disturbances	
F50.8 other eating disorders	
F50.9 Eating disorder, unspecified	

and dietary change motivated by eccentric nutritional idea.[11]

The third criteria of disturbance in the way in which one's body weight or shape is experienced and undue influence of body weight or shape on self-evaluation has been criticized for being influenced by sociocultural reasons. A case series of five cases from India revealed that there was no body image distortion associated with AN.[12] The possible explaination for this observation is lack of emphasison thinness as mark of feminine beauty in Indian culture.[8] In fact, girls with higher westernization score have been found to have greater dissatisfaction with body shape in studies conducted in Asian settings.[13] Also this criterion has been criticized for lacking conceptual specificity.[14]

Presence of amenorrhoea as defined by absence of at least three menstrual cycles is not applicable to males, prepubertal, postmenopausal women and women using hormone replacements.[15] It has been reported that many females fail to meet the amenorrhea criterion despite exhibiting all other criteria of AN. This places them in the EDNOS category. In the study by Andersen *et al.* (2001) 30% cases diagnosed as EDNOS 47% could be diagnosed as AN without amenorrhea.[5] Diagnosis of EDNOS for an underweight woman with AN who continues to menstruate may fail to indicate the severity of the individual's illness. Amenorrhoea in itself is not a relaible indicator of weight status. Also, it does not provide information with regard to clinical features, psychiatric co-morbidity, or outcome.[6]

Criticisms of current specifier of anorexia nervosa

Utility of the two AN subtypes (restricting type and binge-purge type) is unclear as subtypes were originally differentiated on the basis of co-morbid psychopathology and distress [Table 2]. The recent studies have failed to find significant differences in co-morbid psychopathology, recovery, relapse, or mortality rates based on the specifier types. Crossover is common between diagnostic subtypes. Upto 62% of patients with restricting-type AN are expected to develop binge-eating/purging-type AN eventually. AN (binge-eating/purging type) does not appear to be qualitatively different than BN (purging and nonpurging).[16] AN binge-purge subtype has been postulated to represent a more severe or chronologically advanced form of AN, rather than a distinct diagnostic subtype.[17]

Criticisms of current criteria of bulimia nervosa

''Short period of time'' as mentioned in one of the criteria for BN is not empirically based [Table 3]. Also, there is no evidence suggesting that distinction between longer or shorter binge episodes has clinical utility.[18] Similarly ''large amount'' has been difficult to operationalize and also puts in to question the reliability of subjective binge episode recall.[19] Additionally, the current research does not support a distinction between those engaging in behaviors once a week versus twice a week.[19] Moreover, data is not available to support validity of BN subtypes and also in taxometric and latent class analysis studies two subtypes have clustered together.[10]

Criticisms of current criteria of eating disorder not otherwise specified

EDNOS category is for disorders of eating that do not meet the criteria for any specific eating disorder. Instead of being a ''residual'' diagnostic category it has been well documented that EDNOS is most common eating disorder diagnosis in outpatient clinical settings. In a study out of 170 consecutive referrals only 4.7% met criteria for AN, 35.3% for BN and rest 60% for EDNOS.[5] EDNOS patients were similar on distinctive

Table 2: Current diagnostic criteria of anorexia nervosa

ICD-10	DSM-IV TR
For a definitive diagnosis the following are required	
Body weight is maintained at least 15% below that expected (either lost or never achieved) or BMI ≤ 17.5	Refusal to maintain body weight at or above a minimally normal weight for age and height (body weight less than 85% of that expected)
Weight loss is self-induced	Intense fear of gaining weight
Body-image distortion	Disturbance in the way in which one's body weight or shape is experienced
Endocrine disorder-hypothalamic pituitary-gonadal axis In women as amenorrhea In men as a loss of sexual interest and potency	Postmenarcheal females, amenorrhoea (absence three consecutive menstrual cycles)
Sequence of pubertal events is delayed or arrested	Specifier Restricting type binge-eating/purging type

Table 3: Current diagnostic criteria of bulimia nervosa

ICD-10	DSM-IV TR
For a definitive diagnosis the following are required	
Persistent preoccupation with eating/irresistible craving for food-succumbs to episodes of overeating	Recurrent episodes of binge eating Eating, in a discrete period of time an amount of food that is definitely larger A sense of lack of control over eating during the episode
Attempts to counteract the fattening effects by self-induced methods	Recurrent inappropriate compensatory behavior in order to prevent weight gain
	The binge eating and inappropriate compensatory behaviors both occur 2 per week for 3 months
Morbid dread of fatness	Self-evaluation is unduly influenced by body shape and weight
History of an earlier episode of anorexia nervosa	Specifier Purging Nonpurging type

attitudes, behaviors, and severity of co-morbid psychiatric disorders with AN/BN.[5]

Diagnosis of EDNOS fails to define the course of a disorder and fails to capture possible temporal changes in symptom profile associated with stage of disorder. EDNOS diagnosis fails to inform research, since limited attention and empirical investigation directed toward the study of these ''residual'' disorders. This is a common diagnosis for adolescents in early stages of AN or BN that fails to indicate prognosis.[5] Many cases diagnosed as EDNOS represent ''atypical'' cases of AN/BN. In a retrospective study of 397 consecutive admissions to an eating disorders unit it was found that of 30% of cases diagnosed as EDNOS 47% were AN without amenorrhea, 28% AN with greater than 85% ideal body weight (but more than a 20% reduction of initial weight) and 3% BN not meeting frequency or duration criteria.[6] Additionally, around 40% of EDNOS cases could be reclassified as AN or BN by loosening the diagnostic criteria for these disorders.[5]

Criticisms of current categorization of eating disorder

Problem of diagnostic crossover is common among different diagnosis of eating disorder and different subtypes. It has been estimated that 20%-50% of individuals with AN will develop BN over time.[20] Similarly, it has been found that 10-27% of those with initial diagnosis of BN crossed over to AN.[21] Crossover is also common between diagnostic subtypes of AN so that 62% of patients with restricting-type AN would change to binge-eating/purging-type AN.[22]

Proposed recommendations

In view of the limitations of the existing classification of eating disorders recommendations for change have been proposed. These recommendations along with the arguments, as reported in literature, have been presented here. Most of these recommendations could be grouped under three headings:

- Inclusion of new disorder in existing classification
- Broad Categories for the Diagnosis of Eating Disorders (BCD-ED) with specifier of dimension
- Addition of severity to the existing classification

These recommendations have been explored in view of the recommended criteria for psychiatric disorders proposed by Robins and Guze criteria [Table 4].[23,24]

Inclusion of non-fat-phobic anorexia nervosa

Nonfat phobic-anorexia nervosa (NFP-AN) refers to volitional self-starvation in the absence of fat phobia. Numerous case studies and case series from a variety of cultural contexts offer alternate rationales for food refusal. It has also been asserted that the presentation of AN is socially constructed in clinical encounters. Consequently manifestation of behavioral symptoms have deeply personal meanings.[25] NFP-AN patients tend to score lower on attitudinal measures of eating pathology and fewer NFP-AN patients endorse binging and purging as compared to current DSM-IVTR AN. Additionally, family studies examining the prevalence of NFP-AN in the first- or second-degree relatives of individuals with NFPAN have failed to find increased prevalence of fat phobic AN.[25] However, few longitudinal studies have examined course of fat-phobic versus NFP-AN, and available evidence is inconclusive.[26] Consequently NFP-AN fails to reach standard for diagnostic validity based on available evidence.

Binge-eating disorder as main category

BED tends to differ from other eating disorders in terms of the demographic profile (older age of onset, lower female to male ratio, more ethnic minorities), possible risk factors (less influence of previous history of dieting in retrospective studies, and association with obesity).[27] Obese women with BED have been found to consume more calories during a binge-eating episode than weight and sex-matched non-BED obese. Also they differ in terms of the food intake and selection during a binge.[28] BED can be differentiated from noneating disordered and obese person in degree of weight and shape concerns psychopathology, functional impairment and healthcare utilization.[29] Latent class analyses and taxometric analyses has shown both BN and BED to be distinct classes independent from other eating disorders and from normality.[10] Longitudinal study on the course of eating disorders has found that at 1 year about 7% of those diagnosed with BED recovered.[30] Study assessing stability of BED retrospectively in a community sample has shown that mean lifetime duration of BED was 14.4 years, significantly longer than for either BN or AN.[31] BED aggregates in families, independent of obesity.[29] Population-based twin study indicated significant additive genetic influences on binge eating in absence of compensatory behaviors.[32] Hence BED reaches

Table 4: Strength of evidence for the new proposed categories of eating disorders (based on Robins and Guze criteria)

	Clinical description	Laboratory studies	Delimitation from other disorders	Follow-up studies	Family studies
Non-fat-phobic anorexia nervosa	Yes	Yes	No	No	No
Binge-eating disorder	Yes	Yes	Yes	Yes	Yes
Purging disorder	Yes	Yes	Yes	No	No
Night eating disorder	Yes	Yes	No	No	No

standard for diagnostic validity based on available evidence.

Inclusion of purging disorder

Purging has been defined as the regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food. A recent review has found around 48 journal articles that include topic of purging disorder. Recurrent purging to influence weight or shape has been included in most (26/30; 87%) articles in contrast to the use of compensatory behaviors. Among the 26 studies that included recurrent purging as a central feature, different methods of purging (i.e., self-induced vomiting or laxative abuse) have been included in at least 20 (77%). In five studies, purging was not explicitly defined, and one study reported on the presence of recurrent self-induced vomiting among women without binge eating.[33] Several studies examining purging disorder have utilized eating disorders examination (EDE) or EDE-Questionnaire and module H of the Structured Clinical Interview for DSM-IV Axis I Disorders can be modified to identify individuals with purging disorder.[33] Fink *et al*. (2009) have reported excellent inter-rater reliability (0.91) for purging disorder.[34] Three studies have provided consistent support for a purging disorder class that is distinct from classes that resemble BN and BED. However, one study has suggested greater overlap among syndromes characterized by purging, including purging disorder, AN-binge purge subtype and BN-purging subtype.[33] Hence purging disorder also fails to me the standard for an independent diagnostic category.

Inclusion of night-eating disorder

Night-eating disorder (NES) has been described on the basis of three criteria: Consumption of large amounts of food during evening and night-least a quarter of his total calories for day during period following evening meal; sleeplessness of more than half of the time; and morning anorexia.[35] A significant amount of literature has focused specifically on NES or described studies of meal patterning on eating during the night. In spite of consistent definitions there are marked inconsistencies in the operationalization of each of the three core symptoms. While majority of studies required at least 50% of daily intake to be consumed late evening. Although nine studies set a less restrictive threshold (25% or more) calories consumed after the evening meal. Time frame varies for calories consumed ''late'' in the day (''after the evening meal'' versus a specific time, typically after 7 pm). Most of studies lack of frequency or duration criteria. Majority of the studies have used definitions-included morning anorexia as a core symptom. Although 10 articles reported that diagnosis of NES did not require lack of appetite or breakfast skipping.[35] Studies published before 2000 employed three-part criterion of evening hyperphagia, morning anorexia, and insomnia but in current literature insomnia was no longer are required for a diagnosis. There has been a good interclinician reliability for NES criteria like morning anorexia and evening hyperphagia. NES also fails to reach the diagnostic category threshold based on the available evidence.

Proposed diagnostic criteria for the broad categories for the diagnosis of eating disorders[36]

It has been proposed to make use of broad categories for the diagnosis of eating disorders in upcoming modifications of DSM and ICD. This broad category should be defined by the fundamental conceptual definition of an eating disorder, i.e., a persistent disturbance of eating or eating-related behavior that results in the altered consumption or absorption of food and that significantly impairs physical or psychosocial functioning. Additionally, the disturbance should not be secondary to any recognized general medical disorder or any other psychiatric disorder.[36]

Further, dimensional measures with the broad category could help ascertain the eating disorders along various domains. The proposed dimensional measures include: Body mass index, frequency and size of episodes of out of control eating, frequency and nature of inappropriate compensatory behaviors (e.g., self-induced vomiting, laxative misuse), concern about body shape and weight, degree of distress and impairment related to eating-disorder symptoms.

Category of AN has been proposed to be revised as "Anorexia Nervosa and Behaviorally Similar Disorders (AN-BSD)". The criteria for the proposed category would include: Severe restriction of food intake relative to caloric requirements leading to the maintenance of an inappropriately low body weight for the individual taking into account their age and height; Clinically significant distress or functional impairment related to the eating disturbance; Not better accounted for by another Axis I disorder or a general medical condition. It would include different subgroups viz., typical AN, with or without amenorrhea; AN, without evidence of distortions related to body shape and weight; AN-BSD with significant weight loss at or above a minimally acceptable body weight; AN-BSD-NOS.

Similarly, the proposed criteria for "Bulimia Nervosa and Behaviorally Similar Disorders (BN-BSD)" include recurrent out-of-control eating and the recurrent use of inappropriate purging behaviors after eating to control weight or shape and/or the absorption of food; Clinically significant distress or functional impairment related to these behaviors; Not better accounted for by

another Axis I disorder or a general medical condition; does not meet criteria for AN and Behaviorally Similar Disorders (AN-BSD). The different subgroups for this category would include: Typical BN; BN, low frequency; purging disorder; BN-BSD-NOS.

A third proposed category would be titled as "Binge Eating Disorder and Behaviorally Similar Disorders (BED-BSD)". The criteria for this category would include: Recurrent episodes of out of control eating, during which the individual feels as if he/she cannot stop or control eating behavior; Clinically significant distress or functional impairment related to these behaviors; Not better accounted for by another Axis I disorder or a general medical condition; Does not meet criteria for Anorexia Nervosa and Behaviorally Similar Disorders (AN-BSD) or Binge-eating Disorder and Behaviorally Similar Disorders (BED-BSD). the subcategories would include: Typical BED; BED, low frequency; BED-BSD, binge episodes not objectively large; BN-BSD-NOS.

This scheme of classification is expected to have certain advantages. This would help reduce the number of individuals who receive EDNOS diagnosis. At the same time it would help preserve a three-category system resembling that of DSM-IV. Such an approach would help in diagnosing individuals with eating disorders outside of specialist settings. However, if such an approach is implemented then it is likely that individuals classified in one of broad categories of the BCD-ED scheme (e.g., AN-BSD) may exhibit a different symptom constellation than prototypic individuals with DSM-IV defined ED. Additionally, there would always be a possibility of overdiagnosis.

CONCLUSIONS

Various modifications have been recommended for the existing categories for eating disorders in ICD-10 and DSM IV. While the current categorical approach is easy to sue specially in primary care setting, the current classification of eating disorders has been criticized for its limitation. Categorical approach is based on "all or none" principle with no options in-between. Even the concepts that are inherently dimensional are restricted to mutually exclusive compartments. The construct validity of such categorical approach is questionable. Also the current diagnostic criteria are not culture neutral. Finally, the stability of the current diagnostic categories has also been put to question.

The recommendations include retention of the categorical classification with addition of a dimensional component to each individual criterion. It has been recommended to specify a cut-off weight as well as duration. The criteria for amenorrhea should be removed from AN. The frequency cut-points for BN and BED should be reduced to once per week. There is a need for additional research to determine most valid way to subtype AN patients based on empirical evidence.

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How to cite this article: Goyal S, Balhara YS, Khandelwal SK. Revisiting classification of eating disorders-toward diagnostic and statistical manual of mental disorders-5 and international statistical classification of diseases and related health problems-11. Indian J Psychol Med 2012;34:290-6.

Source of Support: Nil, **Conflict of Interest:** None.