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Evaluation of the DSM-5 Severity Indicator for Anorexia Nervosa

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Abstract

Objective: This study tested the new *DSM-5* severity criterion for anorexia nervosa (AN) based on proposed body mass index (BMI) cut-points.

Method: Participants were a clinical sample of 201 treatment-seeking patients diagnosed with *DSM-5* AN in Portugal. Participants were categorised based on *DSM-5* severity levels and were compared on demographic and clinical variables assessed with the Eating Disorder Examination-Questionnaire.

Results: Based on *DSM-5* severity definitions for AN, 73 (36.3%) participants were categorised as mild (≥17.0 BMI), 40 (19.9%) as moderate (16–16.99 BMI), 30 (14.9%) as severe (15–15.99 BMI) and 58 (28.9%) as extreme (<15 BMI). The severity groups did not differ significantly in age or gender. Analyses comparing the severity groups on measures of eating-disorder psychopathology revealed no significant differences on the Eating Disorder Examination-Questionnaire global or subscale scores. The groups also did not differ significantly on the frequency of binge eating or purging episodes within the past 28 days.

Conclusions: Our findings, in this clinical sample of patients with AN in Portugal, provide no evidence for the new *DSM-5* severity ratings based on BMI level. Further research on the validity of the *DSM-5* specifiers is needed and should test additional clinical or functional variables and especially prognostic utility for course and outcome across eating disorders.

Keywords

anorexia nervosa; diagnosis; severity; low weight

In 2013, the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*) was published by the American Psychiatric Association (APA, 2013). The *DSM-5* made a number of changes to the classification of eating disorders, which included severity specifiers intended to provide information regarding clinical severity for each of the diagnoses (Regier, Kuhl, & Kupfer, 2013). Although the level of severity may be increased

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by clinicians to reflect clinical symptoms, levels of disability, or the need for supervision, body mass index (BMI), intervals are used to define the minimum level of severity in the case of anorexia nervosa (AN) in the *DSM-5* (APA, 2013).

To date, for bulimia nervosa (BN), two studies — one performed with a non-clinical sample (Grilo, Ivezaj, & White, 2015a) and one with a treatment-seeking clinical sample (Jenkins, Luck, Cardy, & Staniford, 2016) — reported modest support for the *DSM-5* severity rating based on the frequency of extreme weight compensatory behaviours. Grilo *et al.* (2015a) found that the *DSM-5* BN severity groups differed on some associated features of eating-disorder psychopathology and depression but that the few statistically significant differences reflected small effect sizes. Jenkins *et al.* (2016), in a clinical sample of 214 patients with BN, found (i) few patients meeting the 'extreme' specifier; (ii) some statistical differences between the 'mild' and other severity groups but not between the 'moderate' and 'severe/extreme' groups on measures of eating disorder pathology, psychological distress, and impairment; and (ii) the few statistically significant findings reflected small effect sizes. For binge eating disorder, two studies — one with a non-clinical (Grilo, Ivezaj, & White, 2015b) and one with a clinical (Grilo, Ivezaj, & White, 2015c) sample — converged in providing modest support for the *DSM-5* severity rating based on the frequency of binge eating episodes. Both studies, however, reported that the few statistically significant differences on clinical variables between severity levels reflected small effect sizes, and both studies provided stronger support for overvaluation of shape/weight as a specifier as it provided statistically significant and clinically meaningful (medium-to-large effect-sizes) information about severity. For AN, no published studies have tested the *DSM-5* severity specifier based on BMI using treatment seeking samples. Smink, Van Hoeken, Oldehinkel, and Hoek (2014), in a Dutch cohort study of adolescents identified 16 cases with *DSM-5*-defined AN for which they reported a statistically significant association between severity and detection and treatment rates but not with clinical recovery rates. Sysko *et al.* (2016) recently presented findings for a clinical sample of 162 patients diagnosed with AN suggesting that the BMI-based severity categories did not differ significantly on measures of eating-disorder psychopathology, depression, or psycho-social functioning; however, number of hospitalizations and illness duration both increased with *DSM-5*-based severity. The aim of the present study was to perform an examination of the *DSM-5* severity levels for AN based on BMI cut-points in a clinical sample.

Methods

Participants

The sample consisted of 193 women and eight men seeking treatment and diagnosed with AN at specialised eating disorder treatment units in Portugal. Participants met *DSM-5* (APA, 2013) criteria for anorexia nervosa (n = 109 diagnosed as AN-Restricting subtype and n = 92 as AN-Binge-Eating/Purging subtype). Overall, mean age was 22.4 (SD = 9.5, range = 11–61) with a mean BMI (kg/m^2) of 16.2 (SD = 1.9, range = 11.7–20.0). A staff psychiatrist or a doctoral level clinical psychology researcher ascertained participants' eating disorder diagnosis using diagnostic items from semi-structured interview (see subsequent text) based

on *DSM-5* criteria. The research was IRB-approved and all participants provided written informed consent.

Procedures and assessments

Assessments were performed in-person at the treatment facility by trained and experienced clinicians. Clinicians performing the evaluations used the diagnostic items of the Eating Disorder Examination (Fairburn, Cooper, & O'Connor, 2008), a well-established investigator-based interview to arrive at the *DSM-5* AN diagnosis. Weight and height were measured during the assessment evaluation and were used to calculate BMI.

The *Eating Disorder Examination-Questionnaire* (EDE-Q) (Fairburn & Beglin, 1994), the self-report version of the Eating Disorder Examination, was used to assess eating disorder psychopathology. The EDE-Q, which focuses on the past 28 days, assesses the frequency of objective binge eating episodes (defined as feeling a loss of control while eating unusually large quantities of food) and inappropriate weight compensatory behaviours (purging, laxative misuse, diuretic misuse and extreme exercise). The EDE-Q also comprises four subscales (Dietary Restraint, Eating concern, Shape concern and Weight Concern) and a global total score. The Portuguese-language version of the EDE-Q (Machado et al., 2014) used in this study has demonstrated good psychometric properties (Machado et al., 2014) much like that reported for other translated versions (Elder & Grilo, 2007) and the literature for the English version (Berg, Pterson, Frazier, & Crow, 2012). Internal consistency reliability, Cronbach's alpha, for the current sample of EDE-Q global score and subscales was either good or excellent (global, $\alpha = 0.96$; restraint, $\alpha = 0.86$; eating concern, $\alpha = 0.84$; shape concern, $\alpha = 0.91$; and weight concern, $\alpha = 0.82$).

Statistical analysis

Analysis of variance with Tukey's HSD *post hoc* comparisons and chi-square with follow-up pair-wise comparisons were used to compare *DSM-5*-defined AN severity categories on demographic characteristics, BMI, and measures of eating psychopathology. Partial η^2, an effect size measure, was calculated for analysis of variances and phi coefficients for chi-square.

Results

Based on *DSM-5* severity definitions for AN, 73 (36.3%) participants were categorised as mild (≥17.0 BMI), 40 (19.9%) as moderate (16–16.99 BMI), 30 (14.9%) as severe (15–15.99 BMI) and 58 (28.9%) as extreme (<15 BMI).

Table 1 summarises demographic and physical variables for patients with AN categorised based on the *DSM-5* mild, moderate, severe and extreme severity categories. The severity groups did not differ significantly in age or sex; BMI — as expected per the cut-points — the groups did differ significantly on BMI.

Table 2 summarises descriptive statistics and statistical analyses for patients with AN across the four *DSM-5* severity categories. Analyses comparing the severity groups on measures of eating-disorder psychopathology revealed no significant differences on the EDE-Q global or

subscale scores. The groups also did not differ significantly on the frequency of binge eating and purging episodes within the past 28 days.

Discussion

Findings from this clinical group of patients diagnosed with AN in Portugal provide very little support for the new *DSM-5* severity ratings for AN based on BMI level. In this clinical sample, 36.3% of the participants were categorised as mild, 19.9% as moderate, 14.9%, as severe and 28.9% as extreme. We have considered using more age-appropriate weight criteria for <18-year-olds, but that the advantage of using a single criterion for all ages weighed more heavily considering the relatively small *N* (73) of this age group. The BMI-based severity groups did not differ significantly in age or gender nor did they differ significantly on measures of eating-disorder psychopathology or on the frequency of either binge eating or purging behaviours. These findings for AN generally parallel those emerging for other eating disorder diagnoses, including BN (Grilo et al., 2015a; Jenkins et al., 2016) and binge eating disorder (Grilo et al., 2015b, 2015c), suggesting that the new *DSM-5* severity specifiers based on BMI intervals may not contribute much. Our findings, however, are based on cross-sectional analyses focused primarily on eating psychopathology. We emphasise that further research on the validity of the *DSM-5* specifiers is needed and should test additional clinical or functional variables and especially prognostic utility for course and outcome across eating disorders.

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REFERENCES

American Psychiatric Association (2013). Diagnostic and statistical manual of mental disorders, fifth edition (DSM-5). Washington, DC: American Psychiatric Association.

Berg KC, Pterson CB, Frazier P, & Crow SJ (2012). Psychometric evaluation of the eating disorder examination and eating disorder examination-questionnaire: A systematic review of the literature. International Journal of Eating Disorders, 45, 428–438.

Elder KA, & Grilo CM (2007). The Spanish-language version of the Eating Disorder examination – Questionnaire: Comparison with the Spanish language version of the eating disorder examination and test-retest reliability. Behaviour Research and Therapy, 45, 1369–1377. [PubMed: 17014823]

Fairburn CG, & Beglin SJ (1994). Assessment of eating disorders: interview or self-report questionnaire? International Journal of Eating Disorders, 16, 363–370.

Fairburn CG, Cooper Z, & O'Connor ME (2008). Eating Disorder Examination (Edition 16.0D). In Fairburn CG (Ed.), Cognitive behavior therapy and eating disorders (, pp. 265–308). New York: Guilford Press.

Grilo CM, Ivezaj V, & White MA (2015a). Evaluation of the DSM-5 severity indicator for bulimia nervosa. Behaviour Research and Therapy, 67, 41–44. [PubMed: 25744910]

Grilo CM, Ivezaj V, & White MA (2015b). Evaluation of the DSM-5 severity indicator for binge eating disorder in community sample. Behaviour Research and Therapy, 66, 72–76. [PubMed: 25701802]

Grilo CM, Ivezaj V, & White MA (2015c). Evaluation of the DSM-5 severity indicator for binge eating disorder in clinical sample. Behaviour Research and Therapy, 71, 110–114. [PubMed: 26114779]

Jenkins PE, Luck A, Cardy J, & Staniford J (2016). How useful is the DSM-5 severity indicator in bulimia nervosa? Psychiatry Research: A clinical study including a measure of impairment.

Machado PPP, Martins C, Vaz AR, Conceicao E, Bastos AP, & Goncalves S (2014). Eating disorder examination questionnaire: Psychometric properties and norms for the Portuguese population. European Eating Disorders Review, 22, 448–453. [PubMed: 25175299]

Regier DA, Kuhl EA, & Kupfer DJ (2013). The *DSM-5*: Classification and criteria changes. World Psychiatry, 12, 92–98. [PubMed: 23737408]

Smink FRE, Van Hoeken D, Oldehinkel AJ, & Hoek HW (2014). Prevalence and severity of DSM-5 eating disorders in a community cohort of adolescents. International Journal of Eating Disorders, 47, 610–619.

Sysko R, Gianini L, Roberto C, Attia E, Walsh BT, Thomas J, Eddy K, et al. (2016). Mild, moderate, meaningful? Examining the psychological and functioning correlates of DSM-5 severity specifiers. Presentation at the Annual Meeting of the Eating Disorder Research Society (New York, NY, October, 2016).

Table 1

Demographic and physical characteristics of patients with anorexia nervosa across *DSM-5* severity groups

	Mild *N*=73	Moderate *N*=40	Severe *N*=30	Extreme *N*=58	Test statistic	*P* value	Effect size
Age, mean (SD)	20.9 (8.4)	24.3 (11.2)	23.3 (9.0)	22.3 (9.9)	1.16	.326	.019
Female, *N* (%)	69 (94.5)	40 (100.0)	27 (90.0)	57 (98.3)	5.71	.127	.168
Body mass index[†]	18.1 (0.8)	16.5 (0.3)	15.5 (0.3)	13.8 (0.8)	431.1	<.001	.868
Restricting subtype, *N* (%)	39 (53.4)	19 (47.5)	15 (50.0)	36 (62.1)	2.40	.493	.109
Binge eating/purging subtype *N* (%)	34 (46.6)	21 (52.5)	15 (50.0)	22 (37.9)			

Note:

[†]Because the severity categories were created based on different body mass index levels, the statistical indices are reported merely to show (i.e. not to test) that the categorization did yield groups differing on body mass index.

Table 2

Comparison of eating disorder psychopathology in patients with anorexia nervosa across *DSM-5* severity groups

Measure	Mild (*N* = 73)		Moderate (*N* = 40)		Severe (*N* = 30)		Extreme (*N* = 58)		*F*	*p*	η^2
	M (SD)	95%CI	M (SD)	95%CI	M (SD)	95%CI	M (SD)	95%CI			
Objective binge eating episode	3.4 (6.0)	2.0–4.8	5.5 (8.2)	2.7–8.2	4.0 (7.5)	1.2–6.8	3.0 (7.1)	1.1–5.0	1.01	.391	.016
Purging	3.1 (8.1)	1.1–5.0	5.9 (10.2)	2.6–9.1	3.0 (10.3)	0–7.0	4.0 (11.0)	1.1–7.0	0.80	.494	.012
Restraint	2.3 (1.9)	1.8–2.7	2.6 (7.1)	2.1–3.2	2.0 (1.9)	1.3–2.7	2.9 (2.0)	2.4–3.4	1.93	.126	.029
Eating concern	2.3 (1.7)	1.9–2.7	2.2 (1.6)	1.7–2.7	2.2 (1.7)	1.6–2.8	2.6 (1.8)	2.1–3.0	0.53	.662	.008
Shape concern	3.5 (1.9)	3.0–3.9	3.1 (1.9)	2.5–3.7	3.1 (1.9)	2.4–3.8	3.5 (1.7)	3.0–4.0	0.72	.542	.011
Weight concern	3.0 (1.8)	2.5–3.4	2.5 (1.7)	2.0–3.1	2.5 (1.6)	1.8–3.1	3.0 (1.6)	2.6–3.4	1.20	.311	.018
Global score	2.7 (1.7)	2.4–3.1	2.6 (1.6)	2.1–3.1	2.4 (1.6)	1.8–3.0	3.0 (1.6)	2.6–3.4	0.89	.451	.013