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Diagnostic Distribution of eating disorders: Comparison between DSM-IV-TR and DSM-5

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Introduction. The fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-5) includes a significant revision of Eating Disorders (ED). The objective of this study is to compare the distribution of diagnosis of ED in adolescents according to DSM-VI-TR and DSM-5 criteria. A second objective is to study the psychopathological differences between patients with ED (based on DSM-IV-TR) and those whose diagnosis changed by applying DSM-5 criteria.

Methodology. One hundred and one adolescents diagnosed with ED (mean: 14.68 years; SD: 1.46) were evaluated with clinical interviews and scales for eating psychopathology, perfectionism, anxiety, and depression.

Results. Applying the DSM-5 criteria led to a significant decrease in the diagnosed cases of Eating Disorders Not Otherwise Specified (EDNOS) (from 34.7% to 23.8%; p<0.001) and to a significant increase in those of anorexia nervosa (AN) (from 58.4% to 66.3%; p<0.001) and of bulimia nervosa (BN) (from 6.9% to 8.9%; p<0.001). No significant psychopathological differences were found between patients diagnosed with AN and BN based on DSM-IV-TR criteria and those newly diagnosed with AN and BN based on DSM-5 criteria.

Discussion. Using DSM-5 criteria for adolescents with ED leads to a significant decrease in the frequency of an EDNOS diagnosis. As similar psychopathological characteristics were observed between ED patients diagnosed based on DSM-IV-TR and those who were switched from EDNOS to AN or BN based on DSM-5, we conclude that the new criteria for ED in DSM-5 are valid for an adolescent population.

Keywords: Eating disorders, DSM-IV-TR, DSM-5, Diagnostic criteria, Adolescents

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Distribución diagnóstica de los trastornos de la conducta alimentaria: comparativa entre el DSM-IV-TR y el DSM-5

Introducción. La quinta edición del Manual Diagnóstico y Estadístico de los Trastornos Mentales (DSM-5) incluye una significativa revisión de los Trastornos de la Conducta Alimentaria (TCA). El objetivo de este estudio es comparar la distribución diagnóstica en adolescentes con TCA según los criterios de la 4ª edición revisada del DSM (DSM-IV-TR) y del DSM-5. Un segundo objetivo es estudiar las diferencias psicopatológicas entre los pacientes con TCA (DSM-IV-TR) y los que cambian de diagnóstico al aplicar los criterios del DSM-5.

Metodología. Se evaluaron a 101 pacientes con TCA (Media: 14.68 años; DE: 1.46) a través de entrevista clínica y escalas de psicopatología alimentaria, perfeccionismo, ansiedad y depresión.

Resultados. Se observa una disminución significativa de los casos diagnosticados de TCA-No Especificado (TCA-NE) aplicando los criterios DSM-5 (34.7% frente a 23.8%; p<0.001) y un aumento significativo de los casos de Anorexia Nerviosa (AN) (58.4% frente a 66.3%; p<0.001) y Bulimia Nerviosa (BN) (6.9% frente a 8.9%; p<0.001). No se encontraron diferencias significativas a nivel psicopatológico entre los pacientes diagnosticados de AN y BN según criterios DSM-IV-TR y los nuevos casos diagnosticados de AN y BN con el DSM-5.

Conclusiones. La aplicación de los criterios DSM-5 en adolescentes con TCA hace disminuir de forma significativa la frecuencia del diagnóstico de TCA-NE. Las similares características psicopatológicas entre los pacientes con TCA según el DSM-IV-TR y los nuevos casos que pasan de TCA-NE a AN y BN (DSM-5) apoyaría la validez de los nuevos criterios de los TCA del DSM-5 en población adolescente.

Palabras clave: Trastorno de la conducta alimentaria, DSM-IV-TR, DSM-5, Criterios diagnósticos, Adolescentes

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INTRODUCTION

The American Psychiatric Association (APA) presented the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) at its annual meeting in May 2013[1]. This edition includes a large and significant review of eating disorders (ED). The fourth revised edition, DSM-IV-TR[2], only included three diagnostic categories for the ED: Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Eating Disorder Not Otherwise Specified (EDNOS). In DSM-5, the ED section was renamed to "feeding and eating disorders" (FED) and includes four new diagnosis categories: binge eating disorder (BED), pica, rumination disorder, and avoidant/restrictive food intake disorder (ARFID). Some DSM-IV-TR diagnostic criteria for AN, BN, and EDNOS have also been modified, and new ones have been included. It should be noted that in DSM-IV[3], rumination, pica, and feeding disorder of infancy or early childhood (predecessor of ARFID) were included in the chapter on Feeding and Eating Disorders of Infancy or Early Childhood.

The main objective of the proposed changes in the DSM-5 for ED is to decrease the prevalence of EDNOS[4]. Patients who cannot be diagnosed with AN or BN according to DSM-IV-TR criteria have normally been diagnosed with EDNOS[5]. Different studies estimate that between 40% and 80.9% of the adolescent and adult population diagnosed with ED were classified as EDNOS according to DSM-IV-TR[6-8]. Indeed, a decrease from 62.3% to 32.6% of diagnosed EDNOS has been observed using DSM-5 diagnosis criteria as compared to DSM-IV-TR criteria[7]. Similarly, other studies have demonstrated a 20% reduction in adult-onset ED cases in the adult population[4]. Further, more than 50% of adolescents with ED, according to DSM-IV, were unable to be classified as AN or BN according to diagnostic criteria and were thus diagnosed with EDNOS [9,10].

Among the changes, amenorrhea is no longer considered a diagnostic criterion for AN but instead is now considered as clinical evidence of nutritional status, along with body temperature, blood pressure, and many others[11]. For AN, a behavioral component has also been added for prepubertal cases in which the affected person does not have the capacity to express cognitive and abstract aspects[7]. It was further established that weight should be "significantly low" with regard to age, sex, developmental trajectory, and physical health. Significantly low weight is defined as a weight that is less than minimally normal or, for children and adolescents, less than minimally expected[1]. Therefore, the term "refusal to maintain body weight at or above the minimally normal weight" is excluded by considering age and height; likewise, the criterion of weight loss of less than 85% is thereby removed. For BN, the required frequency of binge eating and inappropriate compensatory behaviors has been reduced to an average of once a week for three months[1]. In contrast, the criterion for this in DSM-IV-TR[2] was a mean of twice a week for three months. Also, a binge eating disorder (BED) has been formally recognized. While binge eating is defined the same for BED and BN, BED is often incorrectly associated with inappropriate compensatory behaviors in an attempt to find a non-existent connection between the two disorders[12]. According to the diagnostic criteria of DSM-5, binge eating is not always associated with the recurrent presence of inappropriate compensatory behavior that occurs in BN[1], and only a minority of patients with BED meets the diagnostic criteria for BN[12]. Finally, DSM-5 has introduced a new diagnosis of an avoidant/restrictive food intake disorder (ARFID). Individuals with ARFID maintain a restrictive food intake marked by malnutrition but do not manifest other alterations present in AN or BN, such as distortion of body image or fear of weight gain[7].

Therefore, understanding the diagnostic distribution of ED cases and studying the differences and similarities in applying the new DSM-5 diagnostic manual are of upmost importance, as this will allow us to provide epidemiological data for ED. The impact of these new criteria on the adolescent population has not been examined or studied extensively[7]. Thus, the objectives of this study are: first, to compare the distribution of ED diagnoses in adolescents according to DSM-IV-TR and DSM-5 criteria; and second, to analyze the psychopathological differences between patients with ED according to DSM-IV criteria and those who change diagnosis when the DSM-5 criteria are applied. As a hypothesis, we attempted to demonstrate that the new DSM-5 criteria meet their objectives and lead to a significant reduction of EDNOS and that patients for whom the diagnosis has changed do not present psychopathological differences as compared to those who had been diagnosed with AN or BN according to DSM-IV-TR criteria. We thereby validate the usefulness and significance of these changes.

METHODOLOGY

Participants

Between December 2011 and May 2014, a total of 101 adolescents from the ED unit of a general pediatric hospital participated in the study: 13 boys (12.9%) and 88 girls (87.1%). Ages ranged from 12 to 17 years (mean: 14.68 years; SD: 1.46). All participants had been diagnosed with ED by a clinical interview with parents and the adolescent, according to the DSM-IV-TR diagnostic criteria.

Of the total sample, 58.4% (n=59) of the patients were diagnosed with AN, with 89.9% (n=53) restricting type (AN-

R) and 10.2% (n=6) purging type (AN-P). A further 34.7% (n=35) were diagnosed with EDNOS and 6.9% (n=7) with BN, with 85.7% (n=6) purging type and 14.3% (n=1) non-purging type.

Amenorrhea was present in 71.6% of the girls (n=63). Participants either received outpatient treatment (37.6%; n=38) or were treated through partial hospitalization (62.4%; n=63). The time range from the onset of the disease was 2 to 47 months (mean: 12.95 months; SD: 9.73). The time range from the start of treatment was 0 to 45 months (mean: 5.50 months; SD: 8.43). Finally, 39.6% (n=40) of the participants were hospitalized throughout their treatment in the full hospitalization unit and 30.7% (n=31) were prescribed pharmacological treatment.

Instruments

1. The sociodemographic data questionnaire designed for this investigation consisted of two sections: sociodemographic data (age, sex, occupation, and family situation) and information corresponding to the ED (diagnosis, comorbidity, months of onset of illness and treatment, weight, height, body mass index, duration of amenorrhea, and pharmacotherapy).
2. PSPS: The Perfectionistic Self-Presentation Scale for children and adolescents[13,14] is a questionnaire of 27 items that evaluates the individual's need to appear perfect and not show his or her defects to others. This test predicts the distress generated by the need for personal perfection.
3. EDI-2: The Eating Disorder Inventory[15,16] is a self-report tool that evaluates symptoms related to ED. It consists of 91 items distributed in 11 scales clinically relevant to ED. Eight scales assess psychological traits, and three, attitudes related to eating behavior, body image, and weight.
4. EAT-40: The Eating Attitude Test[17] is a screening questionnaire for the early detection of ED in the general population. It comprises 40 items that evaluate behaviors related to fear of gaining weight, motivation to lose weight, and restrictive eating patterns.
5. BAT: The Body Attitude Test[18] evaluates the subjective aspect of body images and, in particular, alterations of the attitudes toward one's body in the female population. It consists of 20 items grouped into three factors: negative appreciation of body size, loss of familiarity with one's own body, and general body dissatisfaction.
6. BDI: The Beck Depression Inventory[19,20] is a self-report questionnaire consisting of 21 items that fundamentally evaluate the clinical symptoms of melancholia and the intrusive negative cognition present in depression.
7. STAI: The State-Trait Anxiety Inventory[21,22] is a self-report inventory comprising 40 items that was designed to evaluate two independent concepts of anxiety: state anxiety, as a transitory emotional state; and trait anxiety, as a relatively stable propensity for anxiety.
8. ANSOCQ: The Anorexia Nervosa Stages of Change Questionnaire[23,24] evaluates the readiness to recover from AN and the readiness to eat normally. It contains 20 items, with five alternatives for each response that reflect the stages of motivation for change, of pre-contemplation, contemplation, preparation, action, and maintenance[25].

Procedure

After obtaining written consent to participate in the study from parents and from children over 12 years old and verbal consent from children under 12 years old, a clinical interview was conducted with the participants and their parents. Afterwards, the battery of questionnaires was administered to study participants. The study was approved by the ethics committee of the institution.

First, sociodemographic and clinical data were collected from the patients. The questionnaires were then handed out in the following order: Perfectionistic Self-Presentation Scale (PSPS), Eating Disorder Inventory (EDI-2), Eating Attitude Test (EAT-40), Body Attitude Test (BAT), Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), and Anorexia Nervosa Stages of Change Questionnaire (ANSOCQ).

Data analysis

After the descriptive study, mean and percentage distribution comparisons were made with non-parametric chi-squared (Fisher's exact test) and Mann–Whitney U tests. For these analyses, the Statistical Package for the Social Sciences (version 21.0) was used.

RESULTS

According to the diagnostic criteria of DSM-IV-TR, 58.4% (n=59) of the participants were diagnosed with AN, 34.7% (n=35) with EDNOS, and 6.9% (n=7) with BN. When the new DSM-5 criteria were applied, a significant reduction

of EDNOS was observed, with 11 fewer cases, of which 8 had been re-diagnosed with AN, 2 with BN, and 1 with BED. Consequently, the cases of AN and BN increased significantly.

Based on results obtained using DSM-5 criteria, 67 patients (66.3%) were now diagnosed with AN, 24 with EDNOS (23.8%), 9 with BN (8.9%), and 1 with BED (0.9%) (Table 1).

No significant differences were observed in the psychopathological characteristics among participants diagnosed with AN according to DSM-IV and those diagnosed according to DSM-5 criteria (Table 2).

Likewise, no significant differences were observed for participants diagnosed with BN with DSM-IV or DSM-5 (Table 3).

Table 1 Distribution of ED diagnoses based on DSM-IV as compared to DSM-5 (n=101)

	DSM-IV n (%)	DSM-5 n (%)	p*
EDNOS	35 (34.7)	24 (23.8)	<0.001
AN	59 (58.4)	67 (66.3)	<0.001
BN	7 (6.9)	9 (8.9)	<0.001
BED	-	1 (1)	-

*chi-square (Fisher's exact test).
EDNOS: Eating Disorder Not Otherwise Specified; AN: Anorexia Nervosa; BN: Bulimia Nervosa; BED: Binge Eating Disorder; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, fourth edition; DSM-5: Diagnostic and Statistical Manual of Mental Disorders, fifth edition.

Table 2 Median and range of scale points of patients with AN according to DSM-IV and DSM-5

	AN (DSM-5) Total n = 67	AN (DSM-IV) n = 59	AN (DSM-5) n = 8	*p[1]
PSPS	125 (30–186)	125 (30–186)	97 (56–172)	0.643
EDI-2				
Drive for thinness	10 (0–21)	11 (0–21)	3 (0–18)	0.264
Bulimia	0 (0–9)	0 (0–9)	1 (0–7)	0.368
Body dissatisfaction	11 (0–27)	11 (0–27)	11 (5–23)	0.992
Ineffectiveness	7 (0–29)	7 (0–29)	8 (2–23)	0.510
Perfectionism	4 (0–17)	4 (0–17)	3 (1–12)	0.961
Interpersonal distrust	4 (0–20)	4 (0–20)	6 (1–12)	0.734
Interoceptive awareness	7 (0–24)	7 (0–24)	10 (2–19)	0.133
Maturity fears	8 (1–22)	8 (1–22)	10 (6–21)	0.218
Asceticism	6 (0–23)	5 (0–23)	8 (1–13)	0.313
Impulse regulation	5 (0–22)	5 (0–22)	4 (0–17)	0.620
Social insecurity	7 (0–20)	7 (0–20)	6 (2–14)	0.698
EAT	37 (0–103)	37 (0–103)	34 (8–95)	0.961
BAT	47 (0–96)	47 (0–96)	40 (7–85)	0.376
BDI	21 (0–52)	21 (0–52)	20 (5–37)	0.969
STAI				
STAI-State	35 (0–82)	35 (1–80)	35 (0–82)	0.809
STAI-Trait	38 (0–88)	38 (0–88)	51 (13–72)	0.092
ANSOCQ	30 (0–80)	28 (0–80)	30 (18–46)	0.931

*p[1] Mann–Whitney U test.
AN: Anorexia Nervosa; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, fourth edition; DSM-5: Diagnostic and Statistical Manual of Mental Disorders, fifth edition; PSPS: Perfectionistic Self-Presentation Scale; EDI-2: Eating Disorder Inventory-2; EAT: Eating Attitudes Test; BAT: Body Attitude Test; BDI: Beck Depression Inventory; STAI: State-Trait Anxiety Inventory; ANSOCQ: Anorexia Nervosa Stages of Change Questionnaire.

CONCLUSIONS

In the present study, we re-evaluated the diagnosis of a group of adolescents diagnosed with ED using the new diagnostic criteria of DSM-5[1]. The first objective of this study was to compare the distribution of ED diagnoses according to DSM-IV-TR or DSM-5 criteria. The results indicate that applying the new criteria of DSM-5 changes the ED diagnoses, with a decreased frequency of EDNOS and a corresponding increased frequency of AN, BN, and BED.

Several studies have obtained results similar to ours. For instance, using DSM-IV-TR criteria for the adult population resulted in diagnosing 14.2% of the sample with AN, 17.9% with BN, and 67.9% with EDNOS, while using the DSM-5 criteria resulted in 20% with AN, 18.3% with BN, 8.3% with BED, and 53.3% with EDNOS. Other studies also obtained significant results, showing a decrease from 50.8% (DSM-IV-TR) to 44% (DSM-5) of EDNOS in the university population[26], and a significant increase in AN and BN, from 9.3% to 40% and from 7% to 11.6%, respectively, in children and adolescents[7]. Therefore, we can conclude that DSM-5 has managed to decrease the frequency of cases diagnosed with EDNOS and to increase those diagnosed with specific ED.

The suitability of using the DSM-5 criteria for ED in children and adolescents has been questioned[27]. The DSM-5 task force in charge of the ED chapter sought to enhance the clinical judgment of professionals who are opposed to the rigid use of diagnostic criteria, and therefore it accepted the risk that this modification would reduce the reliability of the diagnostic categories[7]. Several authors have stated that EDNOS is a heterogeneous category that prevents a more specific diagnosis and that DSM-5 is an attempt to increase the number of diagnosed cases of ED into more specific categories, such as AN, BN or BED[28].

The fact that there were no differences in the psychopathological characteristics between the patients

Table 3 Median and range of scale points of patients with BN according to DSM-IV and DSM-5

	BN (DSM-5) Total n = 9	BN (DSM-IV) n = 7	BN (DSM-5) n = 2	*p[1]
PSPS	124 (75–175)	141 (75–175)	103 (90–117)	0.242
EDI-2				
Drive for thinness	18 (6–21)	18 (17–21)	13 (6–21)	0.761
Bulimia	5 (1–9)	5 (2–9)	2 (1–3)	0.104
Body dissatisfaction	26 (10–27)	26 (13–27)	18 (10–27)	0.646
Ineffectiveness	16 (3–24)	16 (7–24)	10 (3–18)	0.460
Perfectionism	7 (1–18)	7 (1–18)	6 (3–9)	0.883
Interpersonal distrust	3 (0–12)	2 (0–8)	9 (7–12)	0.078
Interoceptive awareness	11 (6–24)	10 (6–22)	17 (11–24)	0.242
Maturity fears	9 (3–22)	7 (3–15)	17 (12–22)	0.143
Asceticism	9 (4–16)	9 (4–16)	7 (5–10)	0.767
Impulse regulation	10 (2–24)	10 (6–24)	13 (2–24)	0.882
Social insecurity	8 (2–14)	8 (2–9)	9 (5–14)	0.765
EAT	72 (0–102)	72 (0–102)	54 (23–86)	0.558
BAT	83 (56–98)	85 (65–98)	56 (56–56)	0.134
BDI	31 (11–46)	31 (22–46)	25 (11–39)	0.462
STAI				
STAI–State	43 (22–78)	44 (36–78)	32 (22–42)	0.142
STAI–Trait	40 (34–74)	41 (34–74)	37 (34–40)	0.238

*p[1] Mann–Whitney U test.

BN: Bulimia Nervosa; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, fourth edition; DSM-5: Diagnostic and Statistical Manual of Mental Disorders, fifth edition; PSPS: Perfectionistic Self-Presentation Scale; EDI-2: Eating Disorder Inventory-2; EAT: Eating Attitudes Test; BAT: Body Attitude Test; BDI: Beck Depression Inventory; STAI: State-Trait Anxiety Inventory.

whose diagnosis changed from EDNOS to AN, based on the elimination of either the low weight criterion or using amenorrhea as a diagnostic criterion, supports the validity of the new diagnostic categories of DSM-5 for AN. Such criterion validity is also demonstrated among patients whose diagnosis changed from EDNOS to BED or BN, basing the new diagnosis on the lower frequency of binge episodes required for diagnosis.

To our knowledge, this is the first study in our field that attempts to ratify the use and validity of switching the diagnoses of adolescents previously diagnosed with DSM-IV-TR criteria by applying DSM-5 criteria, based on analyzing the psychopathological differences between the adolescents.

Strengths of the study include the sample size, the statistical analyses of the psychopathological characteristics of patients for whom the diagnosis was changed, and the fact that the evaluations were carried out by health care professionals. Limitations of the study include the retrospective nature of some of the cases (as we started with diagnoses based on DSM-IV-TR) and the fact that patients diagnosed with pica, rumination disorder, or ARFID were not included.

Future studies should evaluate the validity of the new DSM-5 diagnostic criteria for AN and BN, placing a greater emphasis on the new diagnostic categories included in this manual: ARFID, BED, pica, and rumination disorder.

In conclusion, we would like to emphasize how important it is that DSM-5 increases the specificity of diagnosing children and adolescents with ED. We believe that this specificity can help patients and their families receive a more accurate diagnosis and treatment.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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