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Publication Date

2016-05-01

DOI

10.1016/j.comppsy.2016.02.010

Peer reviewed



Published in final edited form as:

Compr Psychiatry. 2016 May ; 67: 54–58. doi:10.1016/j.comppsy.2016.02.010.

Examining the utility of narrowing anorexia nervosa subtypes for adults

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Abstract

Objective—The purpose of this investigation was to examine whether narrowing the criteria of anorexia nervosa (AN) subtypes among adults based on further delineations of current binge eating and purging (i.e., binge eating only, purging only, binge eating and purging, and restricting only) improves the potential clinical utility of the current DSM-5 system that specifies two types (i.e., current binge eating and/or purging and restricting, specified as the absence of current binge eating and/or purging).

Method—Self-reported eating disorder and psychiatric symptoms based on the Eating Disorder Questionnaire were examined in 347 adults from a multisite clinical sample who met DSM-IV criteria for AN. Classification based on binge eating and purging symptoms yielded the following subtypes: 118 restricting only (AN-R; no current binge eating or purging); 133 binge eating and purging (AN-B & P; current binge eating and purging); 43 binge eating only (AN-B; current binge eating and no current purging); and 53 purging only (AN-P; current purging and no current binge eating).

Results—The AN-R group had lower current body mass index compared to AN-B & P and AN-P with no group differences in highest, lowest, or desired body mass index. The probability of amenorrhea was higher for the AN-R and AN-B & P groups than the AN-P group. The probability of diet pill use was elevated for the AN-B & P and AN-P groups compared to the AN-R group. The AN-P group also had a higher probability of fasting than the AN-R group. The probability of substance use including tobacco was lower in the AN-R group than the other three groups. No

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Conflicts
None.

group differences were found on measures of hospitalization, body image, physical symptoms, exercise, or dieting behaviors.

Conclusions—These findings do not support the validity or clinical utility of classifying AN into narrower subtypes based on current binge eating, purging, and binge eating with purging given that few differences were found among groups who reported any combination of current binge eating and purging. Future research is needed to replicate these findings and to further examine the AN subtype classification schemes.

1. Introduction

Symptom heterogeneity within psychiatric diagnoses can complicate treatment if intervention approaches are effective for only certain patterns of symptoms. For this reason, delineating subgroupings within a diagnosis can facilitate a clearer understanding of co-occurring symptoms, longitudinal course, and prognosis as well as inform treatment approaches. Anorexia nervosa (AN), an eating disorder associated with significant medical and mortality risk [1–3], is often unresponsive to treatment and characterized by high rates of relapse [4]. Therefore, identifying meaningful subtypes is a potentially useful strategy to improve treatment efficacy.

Consistent with the previous version, the DSM-5 [5] designates two subtypes of AN: 1) a binge-eating and purging subtype (AN-BP), characterized by binge eating, purging (e.g., self-induced vomiting, misuse of laxatives or diuretics), or a combination of binge eating and purging symptoms in the past three months, and 2) a restricting subtype (AN-R), characterized by an absence of regular binge eating and/or purging in the three months prior to diagnosis. The process of revising the DSM-IV [6] criteria for DSM-5 resulted in a re-examination of the validity of the AN-R/AN-BP subtyping scheme as well as consideration of alternative subgrouping or staging strategies [7–9]. The AN-R and AN-BP subtypes were retained in DSM-5 given higher levels of suicidality [10,11], impulsivity and substance use [11–14], and co-occurring psychiatric symptoms [15–17] reported in AN-BP compared to AN-R samples. However, these findings have not consistently been replicated and contrary findings have been observed in several studies [18–20]. Similarly, although several prospective studies have observed that AN-BP is associated with poorer outcome than AN-R [4,21–23], other studies have not observed this difference [24]. Empirical classification studies have also been inconsistent in their support of the validity of the AN-R/AN-BP subtypes. Taxometric studies have yielded inconsistent findings about whether AN-R and AN-BP (and bulimic behavior more generally) are distinct entities or exist on a continuum [25,26], with some evidence from taxometric and latent structure analyses suggesting that AN-BP is more similar to bulimia nervosa than to AN-R [27–29]. In addition, considerable data suggest that subtypes remain inconsistent over time, with individuals with AN-R often crossing over into the AN-BP classification [7,18,30].

Although these inconsistent findings potentially challenge the validity of the DSM-5 subtyping schema, alternatively, they may be the result of heterogeneity within the AN subtypes. One potential strategy to increase the clinical utility of AN subtypes is to narrow the AN-BP subtype by further delineating this category into three subcategories: binge

eating without purging (i.e., binge eating only), purging without binge eating (i.e., purging only), and both binge eating and purging (i.e., combined binge eating and purging). Although some previous cross-sectional studies of this type of delineation have suggested that AN samples of individuals who purge but do not binge eat resemble AN-BP samples in terms of eating disorder psychopathology, clinical features, and comorbidity [16], other investigations have found that purging may be associated with higher levels of psychopathology than binge eating [31]. Subclassifying AN into four categories (i.e., restricting, binge eating only, purging only, and binge eating combined with purging) may potentially reduce the heterogeneity within the current AN-BP subtype and strengthen the validity and clinical utility of these diagnostic subcategories. Alternatively, further delineation may not create meaningful subgroups and could reduce the clinical utility of the current subtypes specified in DSM-5.

The purpose of the current investigation was to examine the utility of narrowing subtypes of AN to “pure” groups based on binge eating, purging, binge eating combined with purging, and restricting (i.e., the absence of binge eating and/or purging) by comparing these groups on measures of associated eating disorder symptoms, weight history, treatment history, body image, physical symptoms, and substance use. Clinically relevant differences among these four categories may indicate the usefulness of further subclassification based on patterns of binge eating and purging symptoms within the AN-BP group.

2. Method

2.1. Participants

Study participants included 347 individuals (94.8% female; 88.2% Caucasian; mean age = 27.82 years, $SD = 10.7$) recruited from clinical and research settings in five states in the USA (Florida, Illinois, Minnesota, Ohio, and North Dakota) between 1977 and 2001. Study participants represent a subgroup of a larger clinical sample of eating disorder patients ($N = 2966$; [32]) based on meeting current DSM-IV criteria for AN as assessed by the Eating Disorders Questionnaire (EDQ; [33,34]).

2.2. Instrument and classification

The EDQ [33,34] is a self-report measure that was used in this study to assess current eating disorder symptoms, attitudes toward weight and shape, weight history, substance use (i.e., tobacco, alcohol, drugs), treatment history, and demographics. The EDQ was also used to examine current DSM-IV AN criteria (except for amenorrhea [9]) including weight status, fear of weight gain, and body image disturbance. Previous research has demonstrated acceptable agreement between the EDQ and interview-based eating disorders diagnostic status [35].

Narrow subtypes were created based on the occurrence of any self-reported binge eating and purging symptoms within the past month. The restricting subgroup (AN-R) denied engaging in any current binge eating or purging (i.e., self-induced vomiting, misuse of laxatives or diuretics). The binge eating subgroup (AN-B) endorsed current binge eating but denied purging behaviors. The purging subgroup (AN-P) reported current purging symptoms but

denied binge eating episodes. The binge eating and purging group (AN-B & P) endorsed current binge eating and purging.

2.3. Procedures

All sites obtained Institutional Review Board approval for this investigation. Participants were administered the EDQ as part of their initial evaluation prior to the initiation of treatment in clinical or research settings.

2.4. Statistical analyses

Group differences were examined on the following measures: demographics, weight history (current BMI, lowest adult BMI, highest adult BMI), current eating disorder behaviors (diet pill use, fasting, skipping meals), body image (ideal/goal BMI, body dissatisfaction), substance use (tobacco, alcohol, drugs), amenorrhea (defined as missing three consecutive menstrual periods), physical pain after eating, and history of hospitalization for eating disorder or psychiatric symptoms. Continuous variables were analyzed using ANOVA. Categorical variables were analyzed using Chi Square and Kruskal Wallis procedures. Significance was set at $\alpha = .05$.

3. Results

3.1. Subtypes frequencies

Self-reported current symptoms on the EDQ yielded the following subgroups: 118 (34.0%) restricting (AN-R; no binge eating or purging); 133 (38.3%) binge eating and purging (AN-B & P; current binge eating and purging); 43 (12.4%) binge eating (AN-B; current binge eating, no purging); and 53 (15.3%) purging (AN-P; current purging, no binge eating).

3.2. Demographics, Eating Disorder Symptoms, and Substance Use

No group differences were observed on demographic variables including age ($p = 0.74$), race ($p = 0.81$), marital status ($p = 0.94$), or educational background ($p = 0.68$). As shown in Table 1, the AN-R group reported a significantly lower current BMI than the AN-B & P and AN-P groups with no differences in current goal BMI or lifetime history of lowest BMI. Although the overall ANOVA was significant for lifetime history of highest BMI, post hoc comparisons were non-significant. Results indicated that the AN-R and AN-B & P groups had a higher probability of a history of amenorrhea (i.e., missing at least three consecutive menstrual periods) than the AN-P group (see Table 1). The participants in the AN-B & P and the AN-P groups also had a higher probability of ever using diet pills compared to the AN-R group, and the AN-P group had a higher probability of ever fasting for 24 h compared to the AN-R group. In addition, the AN-R group had the lowest probability of substance and tobacco use, particularly compared to the AN-B & P group. No significant group differences were observed on EDQ measures of exercise frequency, dieting behaviors, body dissatisfaction, history of hospitalization, and pain after eating.

4. Discussion

This study examined the utility of narrowing AN subtypes to restricting only, binge eating only, purging only, and binge eating accompanied by purging. Although some notable differences were found in this investigation including amenorrhea history, current BMI, fasting, diet pill use, and substance use, most of these differences were observed between the AN-R and the AN-B & P and AN-P groups; few differences were found among the AN-B, AN-P, and AN-B & P groups. The fact that most of the findings were observed between AN-R and the other three groups provides empirical support of the current DSM-5 subtyping procedure and suggests that differences between AN-R and AN-BP on measures of eating disorder symptoms and substance use occur when classification is based on any combination of binge eating and/or purging symptoms. In addition, the absence of differences among the AN-B, AN-P, and AN-B & P groups is consistent with previous findings [16] suggesting commonalities in clinical features among individuals with AN who binge eat, purge, or binge eat and purge. In summary, these findings do not support the validity of subclassifying AN using narrower delineations based on categories of restricting only, binge eating only, purging only, and binge eating with purging on the measures included in this investigation.

This study is notable for several strengths including the use of a large multisite clinical sample. However, several limitations should be considered in interpreting the results of this study. First, because these data were derived from a self-report questionnaire, participants may have under- or over-reported symptoms [36,37], especially in the context of an initial treatment evaluation when patients often fear forced hospitalization; alternatively, the use of a self-report questionnaire rather than an interview may have enhanced self-disclosure of symptoms and behaviors [35]. Because binge eating estimates were based on questionnaire assessment, the extent to which binge eating episodes endorsed by participants on the EDQ would meet DSM-IV or DSM-5 criteria in terms of being characterized by a large amount of food and accompanied by a sense of loss of control is unclear [38,39]. In addition, current binge eating and purging symptoms were based on their self-reported occurrence in the past month and not the past three months as specified by the DSM-5, and diagnostic algorithms were based on DSM-IV (with similar but slightly different criteria). Another potential limitation in this study is that BMI was determined based on self-reported rather than measured height and weight. However, although self-reported height and weight are often inaccurate [40], previous research has suggested that individuals with eating disorders may be more accurate in their estimates of weight [41–43]. Also, because these participants were primarily Caucasian, female, and seeking treatment, these results may not generalize to broader samples of AN. Future research should replicate this investigation using interview-based assessment measures, as well as community and clinical samples. In addition, given previous studies of longitudinal “crossover” between AN subtypes (particularly from AN-R to AN-BP [18,30]), future research should also investigate the extent to which these narrower categories remain stable over time and/or have predictive validity in terms of course or treatment outcome.

5. Conclusions

In summary, these findings do not support the validity or utility of narrowing AN subtypes based on subclassifications of different types of bulimic symptoms but do provide empirical support for the subtype classification specified in the DSM-5. Future investigations should continue to explore alternative conceptualizations for subgrouping AN [44] including dimensional models and personality, cognitive, and neurobiological variables that can potentially guide the development of effective treatments as well as clarifying causal and maintenance mechanisms of this disorder.

Acknowledgments

This project was supported by the Minnesota Obesity Center (P30DK60456), NIDDK (U01DK67429 and P30DK050456), NIMH (K02MH65919 and T32MH082761) and the Neuro-psychiatric Research Institute.

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Table 1

Anorexia nervosa groups based on the occurrence of binge eating and purging in the past month¹.

	Restricting (AN-R) n = 118	Binge Eating and Purging (AN-B & P) n = 133	Binge Eating Only (AN-B) n = 43	Purging Only (AN-P) n = 53	Statistic	p	Group Difference ²
Age average (SD)	27.7 (10.6)	28.5 (11.7)	27.8 (9.1)	26.4 (9.5)	F = .04	0.74	
Current BMI average (SD)	15.7 (1.5)	16.3 (1.5)	16.1 (1.0)	16.2 (1.1)	F = 5.7	0.001	AN-R < AN-B & P, AN-P
Highest Adult BMI average (SD)	20.1 (3.3)	21.4 (4.0)	20.7 (3.5)	21.7 (3.6)	F = 3.3	0.02	post-hoc not significant
Lowest Adult BMI average (SD)	14.7 (1.8)	16.1 (9.3)	15.1 (1.6)	15.9 (2.9)	F = 1.2	0.31	
Current Goal BMI average (SD)	17.8 (2.4)	17.1 (2.2)	17.7 (1.8)	16.9 (3.4)	F = 2.2	0.09	
Body Dissatisfaction (“very much/extremely”) %	26.3	27.8	34.9	37.7	$\chi^2 = 5.84$	0.12	
Amenorrhea (“ever missed 3 consecutive menstrual periods”) %	59.3	72.9	55.8	37.7	$\chi^2 = 14.5$	0.002	AN-R, AN-B & P N AN-P
Pain after eating %	16.1	10.3	3.1	11.1	$\chi^2 = 4.2$	0.24	
Ever hospitalized (eating disorder or psychiatric) %	30.5	36.8	30.2	37.7	$\chi^2 = 1.4$	0.71	
Ever Used Diet Pills %	10.2	45.9	30.2	36.5	$\chi^2 = 38.8$	0.001	AN-B & P, AN-P N AN-R
Ever Fasted 24 Hours %	8.5	16.5	16.3	30.2	$\chi^2 = 13.1$	0.005	AN-P N AN-R
Ever Used Tobacco %	28.0	48.9	44.2	34.0	$\chi^2 = 10.6$	0.01	AN-B & P N AN-R
Ever Consumed Alcohol Weekly or More %	36.4	64.6	41.9	50.1	$\chi^2 = 21.3$	<0.001	AN-B & P N AN-B, AN-R
Ever Used Drugs (Sedatives, Marijuana, Hallucinogens Opiates, Cocaine) %	20.3	36.1	32.6	37.7	$\chi^2 = 9.1$	0.028	AN-B & P, AN-P N AN-R

¹ Based on the Eating Disorders Questionnaire.

² $\alpha = 0.05$.