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Body Dysmorphic Disorder and Other Clinically Significant Body Image Concerns in Adolescent Psychiatric Inpatients: Prevalence and Clinical Characteristics

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Abstract

Background— This study assessed prevalence and clinical correlates of body dysmorphic disorder (BDD), eating disorders (ED), and other clinically significant body image concerns in 208 consecutively admitted adolescent inpatients. It was hypothesized that adolescents with BDD would have higher levels of depression, anxiety, and suicidality. Adolescents with eating disorders were expected to have higher levels of depression, anxiety, and trauma-related symptoms. Trauma-related symptoms were also examined in relation to BDD, in the absence of specific hypotheses.

Method— Participants completed the Body Dysmorphic Disorder Questionnaire (BDDQ) and reliable and valid self-report measures of suicidality, depression, anxiety, post-traumatic stress disorder (PTSD), dissociation, and sexual preoccupation/distress. Prevalence of BDD, eating disorders, and other clinically significant body image concerns was determined, and clinical correlates were examined.

Results— 6.7% ($n = 14$) of participants met DSM-IV criteria for definite ($n = 10$) or probable ($n = 4$) DSM-IV BDD, 3.8% ($n = 8$) met criteria for an eating disorder, and 22.1% ($n = 46$) had clinically significant shape/weight concerns (SWC) that did not clearly meet criteria for BDD or an eating disorder. Both the BDD and SWC groups scored significantly higher than the group with no significant body image concerns (no BDD/ED/SWC group) on measures of anxiety and suicidality. The BDD, SWC, and ED groups all had significantly higher levels of depression than the no BDD/ED/SWC group. Only the SWC group scored significantly higher than the no BDD/ED/SWC group on measures of PTSD, dissociation, and sexual preoccupation/distress.

Conclusions— A high proportion of participants had clinically significant body image concerns or a body image disorder. These concerns/disorders were associated with higher levels of depression, anxiety, and suicidality. In addition, the group concerned with body shape or weight had significantly greater symptoms of PTSD, dissociation, and sexual preoccupation/distress. These relatively common body image concerns and disorders deserve further study in adolescents.

Keywords

Body dysmorphic disorder; adolescence; Eating disorders; Body image; Psychiatric inpatients

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Introduction

Body dysmorphic disorder (BDD), a DSM-IV somatoform disorder, is characterized by a distressing or impairing preoccupation with an imagined or slight defect in appearance. The preoccupation with perceived appearance flaws (which usually focus on the face or head) typically occurs for many hours a day, and most patients perform repetitive behaviors such as mirror checking, excessive grooming, and skin picking [1]. In adults, BDD is associated with markedly impaired psychosocial functioning, notably poor quality of life, and a high rate of suicidal ideation and suicide attempts [1–3].

BDD has received very little investigation in adolescents, even though BDD usually begins during the early adolescent years [4] and bodily appearance changes substantially during this developmental period [5]. The developmental literature underscores the crucial role of body image during adolescence as a factor which both influences and is impacted by adolescent transitions, including identity development, changing peer relationships, dating, and sexuality [5]. Aside from a few case reports and small case series [6–12], only one study has systematically examined BDD in children and adolescents [13]. That study ($n = 33$) found clinical characteristics similar to those in adults, including areas of concern (most often skin and hair), as well as high levels of distress, preoccupation, and impairment. There were also high rates of suicidal ideation, suicide attempts, social impairment, and school difficulties, including dropping out of school due to BDD. However, the study was limited in that all participants sought evaluation or treatment in a BDD outpatient specialty setting, making the generalizability of the findings to other clinical samples or community settings unclear. In addition, the study did not compare BDD subjects to another clinical group, and did not use standard non-BDD measures to examine clinical correlates of BDD.

BDD has been reported to occur in 0.7% to 1.0% of community samples [14,15]. Only two studies have assessed the prevalence of BDD in adolescents. One found that 2.2% of 566 high school students met DSM-IV criteria for BDD [16]. However, this study assessed BDD with a new self-report measure with unknown psychometric properties and no specified cutoff point for the diagnosis. A study by Grant and colleagues [17] assessed the prevalence of BDD in a combined sample of 122 adolescents and adults in a general psychiatric inpatient unit using a standardized, reliable BDD assessment measure. This study found that 3 of 21 (14.3%) adolescents met DSM-IV criteria for BDD; however, the adolescent sample size was very small, and 48% of eligible adolescents did not participate in the study, which may have introduced bias.

In the present study, we determined the prevalence of BDD in an adolescent inpatient sample using a self-report diagnostic measure with strong psychometric properties. Our study contains the largest clinical adolescent sample ($n = 208$) for which BDD prevalence has been the focus. Because appearance concerns are so important during adolescence [18,19], we also assessed the prevalence of distressing or impairing body image concerns not accounted for by classic BDD or an eating disorder. While studies have assessed body image concerns in adolescent and preadolescent girls [20] no study has assessed the prevalence of body image concerns causing preoccupation (i.e., frequent, intrusive thoughts) and clinically significant distress or functional impairment. In light of developmental literature indicating that pubertal changes, increases in body weight, and other life transitions are associated with increased rates of body dissatisfaction and increased onset of eating disorders [5,20], it is possible that BDD in adolescents may be characterized more frequently by body shape and weight related distress (i.e., weight and shape of stomach, thighs, hips) as opposed to “classic” BDD preoccupations, in which dissatisfaction with body part(s) is not typically expressed in terms of weight and shape concerns.

We also looked at whether individuals determined to have BDD via a self-report measure were diagnosed with BDD by their clinician. Four previous studies all found that in every case in which BDD was detected by the researchers, it was not diagnosed in the clinical record [1, 17,21,22]. This is likely due to clinicians' lack of systematic questioning about BDD, as well as patients' embarrassment and reluctance to reveal their symptoms [23], which may be particularly characteristic of adolescents [13].

An additional aim of our study was to compare clinical characteristics (suicidality, depression, anxiety, PTSD, dissociation, and sexual preoccupation/distress) of patients with BDD, an eating disorder, or other clinically significant body image concerns to those of other adolescent inpatients. No previous study has examined these domains in adolescents with BDD. We hypothesized that, compared to the group with no body image concerns, BDD subjects would have higher levels of depression and anxiety, based on studies in adults finding high levels of these symptoms [24]. We also hypothesized that BDD subjects would have higher levels of suicidality, based on a previous study that found high rates of suicidal ideation (67%) and suicide attempts (21%) in 33 children and adolescents with BDD [13]. We were interested in the prevalence of symptoms of PTSD, dissociation, and sexual concerns/distress, but did not have specific hypotheses about them; PTSD rates in adults with BDD do not appear elevated compared to general population rates [25], and no previous study has examined the other domains with BDD. We expected patients with an eating disorder to have higher levels of PTSD, dissociative symptoms, sexual concern/distress, depression, and anxiety than patients without an eating disturbance, as found in previous studies [26–32].

Methods

Participants

Participants were 208 adolescents, ages 12–17, consecutively admitted to the adolescent inpatient unit of a private, regional psychiatric children's hospital. This hospital serves all patients, regardless of insurance status. The mean age was 14.8 years ($SD = 1.4$), and 62.5% ($n = 130$) were female. 82.2% of participants ($n = 171$) were Caucasian, 8.2% ($n = 17$) were Hispanic, 4.8% ($n = 10$) were African American, and 4.8% ($n = 10$) belonged to another racial or ethnic group. According to state census tract data, 16.3% ($n = 34$) had high socioeconomic (SES) status; 39.3% ($n = 82$), middle SES; 15.3% ($n = 32$), low SES; and 12.2% ($n = 25$), poverty conditions, and 16.9% ($n = 35$) had unknown SES. There were no exclusion criteria, with the exception of non-compliance or inability to complete assessment measures due to cognitive limitations.

Procedure

Self-report measures, all of which are widely used and have strong psychometric properties (see below), were completed by all patients on the adolescent inpatient unit as part of their admission evaluation. An experienced master's level psychometrician collected these data. The hospital Institutional Review Board approved the use of these data for research purposes. Two of the authors (JD and JH) determined clinician-based psychiatric discharge diagnoses from the inpatient medical record. These two authors were blind to patients' responses on the self-report measures (see below). Medical record data included the following: intake interview summary forms, which included treatment and diagnostic history, diagnostic formulations provided by inpatient treatment providers in a comprehensive discharge summary, and inpatient treatment and milieu notes.

Measures

The *Body Dysmorphic Disorder Questionnaire (BDDQ)* [33] is a brief, widely used self-report measure that assesses the presence of current DSM-IV BDD by asking: (1) whether respondents

are very worried about how they look, think about their appearance problems a lot, and wish they could think about the problems less; (2) whether their main appearance concern is that they are not thin enough or might become too fat; (3) whether appearance concerns have affected their life by often upsetting them a lot, often getting in the way of doing things with friends or dating, causing problems with school or work, or causing them to avoid activities; and (4) how much time is usually spent per day focusing on the appearance concerns. Subjects are asked to describe body areas of concern and give examples of functional impairment and avoidance. In an inpatient psychiatric setting ($n = 66$), the BDDQ had a high sensitivity (100%) and acceptable specificity (89%) [33]. In 46 adults in a dermatology setting, it had a sensitivity of 100% and a specificity of 93% [34], and in a sample of 105 adult and 17 adolescent psychiatric inpatients, it had a sensitivity of 100% and a specificity of 93% [17]. The version used in the current study was slightly modified to make the wording more appropriate for adolescents.

BDD Classification—Based on review of BDD responses, participants were assigned to one of the following four categories: (1) BDD, (2) Shape/Weight Concerns (SWC), (3) Eating Disorders, or (4) No BDD/SWC/ED. Adolescents who met full DSM-IV criteria for BDD (excessive preoccupation and clinically significant distress and/or functional impairment) on the BDDQ were classified as having “definite BDD.” They were considered to have “probable BDD” when one of the three criteria was subthreshold but the other criteria and descriptive statements were clearly consistent with the BDD diagnosis. There is controversy in the field about whether individuals primarily concerned with body shape/weight should be considered to have BDD [23,35]. Therefore, we conservatively classified individuals with definite or probable BDD on the BDDQ who were primarily concerned with shape/weight, and did not meet criteria for an eating disorder, into a separate category, the clinically significant shape/weight concern (SWC) group. A final category involved diagnosis of a current eating disorder based on chart discharge diagnosis.

The *Body Mass Index* (BMI) was determined based on subjects’ height and weight, which is routinely obtained for all patients. BMI was classified as underweight (under 18.5), normal weight, or overweight (over 25) using Center for Disease Control guidelines for adolescents [36]. Two of the investigators (JD and KAP) independently assigned subjects to one of the four groups of interest: BDD, shape/weight concerns (SWC), eating disorder (ED), or no significant body image concerns (no BDD/SWC/ED). The few classification discrepancies that occurred were resolved through a consensus conference.

The *Suicide Probability Scale* (SPS) [37] is a 36-item self-report measure that uses Likert scoring, yielding a total scale score as well as subscales for hopelessness, suicidal ideation, negative self-evaluation, and hostility. T scores range from 25 to 85, with higher scores indicating greater suicidality. Psychometric properties include internal consistency ($\alpha = 0.93$), split-half reliability ($r = .93$), test-retest reliability ($r = 0.92$) and criterion validity (i.e., strong ability to discriminate between suicide attempters [total score $M = 84$] and other psychiatric patients ($M = 57$, $p < 0.01$) [37].

Reynolds Adolescent Depression Scale (RADS) [38] is a widely used self-report measure of depressive symptoms for adolescents. Scores are based on a Likert scale ranging from “almost never” to “most of the time.” Symptoms include neurovegetative symptoms, low self-worth and self-deprecation, pessimism, social withdrawal, and suicidal thoughts and behaviors. T scores range from 20 to 120; a score of 77 or higher is associated with clinical depression [38]. Psychometric properties include internal consistency ($\alpha = 0.92$), test-retest reliability ($r = 0.80$), and criterion validity [i.e., strong ability to discriminate between depressed ($M = 70.4$) and non-depressed groups ($M = 51.75$) [38].

The *Multidimensional Adolescent Anxiety Scale – Short Version (MASC-10)* [39] is a reliable and valid ten-item self-report version of the MASC that screens for physical symptoms of anxiety, harm avoidance, social anxiety, and separation/panic. Items are scored on a four-point Likert scale with T scores ranging from 25 to 90, with scores 61–65 considered “above average,” 66–70 “much above average,” and above 70 “very much above average.”

Psychometric properties for the MASC-10 include internal consistency ($\alpha = 0.87$), test-re-test reliability ($r = 0.83$) and discriminant validity, in terms of ability to correctly classify protocol in anxiety versus non-anxiety disordered groups (sensitivity = 0.95, specificity = 0.95, $k = 0.90$) [39].

PTSD symptoms, dissociation symptoms, and sexual concern/distress were assessed with these subscales of the *Trauma Symptom Checklist for Children and Adolescents (TSCC)* [40]. This 55-item measure with a 4-point Likert scales considers feelings experienced after upsetting life events (e.g., “wishing bad things had never happened,” “nightmares,” “trying not to think about things”). Subscale T scores range from 35–111; higher scores indicate more severe symptoms and scores ≥ 65 are considered clinically significant, with separate norms for children, adolescents, males, and females. Psychometric properties include internal consistency (subscale $\alpha = 0.82$ – 0.89), and construct validity (sexually abused children score significantly higher on the TSCC than non-sexually abused, and TSCC scores decrease after treatment). The authors also report that severe sexual abuse is most associated with the PTSD, Sexual Concerns, and Dissociation scales [40].

Data Analysis

The proportion (and 95% confidence intervals) of subjects who had BDD, clinically significant shape/weight concerns, an eating disorder, or no significant body image concerns was calculated. To increase power for analyses, the initial “definite BDD” and “probable BDD” groups were combined. The two raters had 100% agreement on the assignment of this category. Analysis of variance and covariance were used to compare mean scores on symptom self-report measures; when a significant difference was found, post-hoc comparisons were done using Tukey’s HSD procedure. Other characteristics of the four groups of interest were compared using chi-square analyses. The percentage of subjects endorsing specific body areas as a focus of preoccupation or concern was ascertained. All tests were two tailed; an α level of 0.05 established statistical significance. Because this study is the first to examine clinical correlates of BDD in a clinical adolescent population and is therefore exploratory, we report both uncorrected results and results corrected for multiple comparisons using the Bonferroni correction. Thus, there is possible inflation of Type I error rates among uncorrected results, and some findings, particularly those of modest significance, may reflect chance associations.

Results

Prevalence of Body Image Disorders and Body Areas of Concern

Two hundred and twenty-one (221) inpatients were eligible to participate and completed the study measures. However, 12 individuals (5.8% of the total sample) provided insufficient data on the BDDQ to be included in analyses, and one was excluded from analyses because she had an actual physical abnormality (a prosthesis). These 13 individuals did not significantly differ from those included in the study with regard to age ($t[219] = 0.012$, $p = 0.990$), gender ($\chi^2[1] = 1.35$, $p = 0.25$), or race ($\chi^2[3] = 4.13$, $p = 0.25$).

Table 1 shows rates of BDD, clinically significant shape/weight concerns, and eating disorders in the 208 inpatients included in analyses. 4.8% ($n = 10$) had definite BDD and 1.9% ($n = 4$) had probable BDD on the BDDQ (as shown in Table 1). However, only 0.5% ($n = 1$) of subjects received a diagnosis of BDD in their medical record.

Table 2 shows the body areas that subjects with definite or probable BDD considered defective and a focus of preoccupation. The most common areas were face, skin, and weight; however, weight was not the main concern of any subject with BDD. Regarding the shape/weight concern group, BMI data indicated that 2.2% ($n = 1$) were underweight, 58.7% ($n = 27$) were normal weight, and 40.0% ($n = 17$) were overweight.

Demographics and Comorbidity Across Study Groups

The four groups significantly differed on several demographic/clinical diagnosis variables (Table 3). Compared to the BDD and no BDD/SWC/ED groups, subjects in the SWC and eating disorder groups were more likely to be female. They were also more likely to be clinically diagnosed with a depressive disorder (major depression or dysthymic disorder). Subjects with an eating disorder were more likely to be diagnosed with a comorbid anxiety disorder than subjects in the three other groups. However, differences among groups with regard to comorbid diagnoses did not remain significant after employing the Bonferoni correction (corrected $\alpha = 0.008$) for multiple analyses.

Symptom Measure Scores Across Study Groups

The four groups differed significantly on all non-diagnostic symptom measures (Table 4), with these differences remaining significant after correcting for multiple comparisons ($p < 0.006$ using Bonferoni correction). The BDD and shape/weight concerns groups had significantly higher levels of suicidality (SPS score) than the no BDD/SWC/ED group. Regarding depressive symptoms (RADS score), the BDD, shape/weight concerns, and eating disorder groups all scored significantly higher than the no BDD/SWC/ED group. MASC anxiety scores were significantly higher in the BDD and shape/weight concerns groups than in the no BDD/SWC/ED group. The only significant group difference for measures of PTSD symptoms, dissociation, and sexual preoccupation/distress on the TSCC was between the shape/weight concerns group and the no BDD/SWC/ED group. Results for the three TSCC subscales remained significant (all $p < 0.006$) in an analysis of covariance that included gender as a covariate.

Discussion

This study found that one-third of inpatient adolescents currently had a body image disorder or problematic body image concerns. These patients were more severely ill than other adolescent inpatients in a number of important domains. Specifically, and consistent with our hypotheses, patients with BDD had significantly higher levels of depressive symptoms, anxiety symptoms, and suicidality. Although previous studies have documented higher levels of depression, anxiety, and suicidality among adults with BDD [24], this is to our knowledge the first study to document that adolescents with BDD display higher levels of symptomatology in these areas, as compared to adolescents with other psychiatric disorders. Our hypotheses regarding patients with eating disorders were only partially confirmed: those with eating disorders had higher rates of depression, but were not higher than other inpatients on measures of anxiety or trauma-related symptoms. An additional important finding of the current study was that patients with significant weight/shape concerns also endorsed significantly more symptoms of depression, anxiety, and suicidality than other adolescent inpatients, as well as higher levels of dissociation, sexual concerns, and PTSD symptomatology. This is (to our knowledge) the first study to document a relationship between weight-related body image concerns and higher levels of psychopathology among adolescents with psychiatric illnesses.

The prevalence of BDD found in this study is higher than was found in a community high school sample (2.3%) [16] but lower than the rate obtained in the only previous BDD inpatient study to date (14.3% of 21 adolescents) [17]. We did not expect our rate to be lower than that

found by Grant and colleagues, as BDD was diagnosed in that study using a reliable semi-structured clinician-administered measure rather than the BDDQ (the latter may yield some false positives). Our subjects' body areas of excessive concern were similar to those found in the 33 children and adolescents with BDD, in Albertini and Phillips [13], in which skin and hair concerns were most common.

It is worth highlighting that, in this study, only 1 of 14 subjects with definite or probable BDD was diagnosed with BDD in the clinical record. This is consistent with results from four previous BDD studies, which found that clinicians missed the diagnosis of BDD in every case in which researchers identified it through systematic screening [1,17,21,22]. This is not surprising considering that all 16 inpatients from Grant and colleagues [17] reported that they would not reveal their BDD symptoms to their physician unless they were specifically asked, due to feelings of shame. This was the case even though 13 of 16 patients considered BDD their biggest or a major problem.

A very high proportion of adolescents in our sample reported excessive preoccupation with weight/body shape, which caused significant distress and/or interference in functioning. This finding is consistent with previous literature indicating that shape/weight concerns are relatively common among both adults and adolescents [5,41–44], as well as with developmental literature indicating that the pubertal changes and increases in body weight that accompany adolescence often give rise to an intense bodily focus and body dissatisfaction, particularly among adolescent females [5,41,42].

However, previous studies have tended to focus on dissatisfaction with weight and body shape and their relation to disordered eating rather than focusing on body image disturbance severe enough to cause significant distress or functional impairment in patients without symptoms of an eating disorder. Our finding that subjects with shape/weight concerns in the absence of an eating disorder were both preoccupied and significantly distressed or functionally impaired by their body image concerns is significant and points to a need for further study in this area. Forty percent of subjects with excessive shape/weight concerns were actually overweight; such concerns may continue to rise as obesity increases in adolescents in the United States [45]. However, it is also concerning that a majority of the subjects with excessive weight/shape concerns (58.7%) had a normal BMI, indicating that their body image concerns were not realistic. This finding is consistent with reports that many normal weight adolescents are concerned about weight, shape, and dieting [43,44]. In addition, our findings suggest that, due to the body weight changes that accompany adolescence, weight concerns may appear more frequently as an area of preoccupation among adolescents (and particularly adolescent females) meeting other criteria for BDD, while adults with this disorder may more frequently endorse other areas of concern (such as skin and hair) [1].

Our findings are relevant to the controversy about whether preoccupying and distressing or impairing shape/weight concerns (in the absence of an eating disorder) should be considered a symptom of BDD [23,46]. While these concerns are not the most common BDD symptoms [1,35], some researchers have viewed them as qualifying for the diagnosis [47]. One study [35] comparing individuals with BDD who had primarily shape/weight concerns to those with more classic symptoms found that those in the shape/weight concerns group were similar to those in the classic BDD group. Both groups had significantly higher depression, anxiety, social anxiety, and actual versus ideal self-discrepancies than the non-BDD and non-weight/shape concerns group. Our findings reflected those of Veale et al. [35] in that patients in the shape/weight concerns group were nearly as severely ill as those with BDD on measures of suicidality, depression, anxiety, PTSD, and dissociative symptoms. They were also more severely ill than the eating disorder group on several of these measures. The only difference between the BDD and shape/weight concerns groups was that those in the SWC group had significantly higher

scores than the no BDD/SWC/ED group on measures of PTSD symptoms, dissociation, and sexual preoccupation. However, the PTSD and dissociation scores of BDD subjects were somewhat higher than scores in the shape/weight concerns group, so the lack of significant findings for the BDD group may reflect type II error due to the smaller sample size.

Both the BDD and shape/weight concerns groups had significantly higher scores than the no BDD/SWC/ED group on the Suicide Probability Scale. Although the difference between the eating disorder group and the no BDD/SWC/ED group was not significant, the eating disorder patients' scores were actually slightly higher than those of the shape/weight concerns group (although lower than those of the BDD group); thus, the lack of significance may represent type II error. These findings are consistent with high lifetime rates of suicidal ideation and suicide attempts in both adolescents and adults with BDD [3,4,13,17].

Limitations

Limitations of this preliminary study include limited statistical power due to the relatively small sizes of the BDD and eating disorder groups. Because this study was exploratory, we did not correct for multiple comparisons, which may have introduced type I error. Another limitation is that diagnoses other than BDD were made on the basis of chart review rather than a structured assessment instrument, which may have resulted in underdiagnosis. In addition, BDD was diagnosed with a self-report measure rather than a clinician-administered measure. While the BDDQ has been shown to have high sensitivity and specificity, its psychometric properties have been demonstrated in samples consisting entirely [33,34] or largely [17] of adults. Since the specificity of BDDQ is in the range of 89–93%, some BDD diagnoses may have been false positives. The BDD rate in our sample was lower than in the adolescent sample of Grant and colleagues [17] (17.6%), in which the BDD diagnosis was confirmed by clinical interview based on a reliable diagnostic measure for BDD [17,33]. In this study, all cases of definite BDD were corroborated by adolescents' descriptions of BDD symptoms (for example, "it keeps me from going to school" or "I don't go out because of it"). This study also had a number of strengths, including the use of reliable, valid, and widely used self-report measures, a relatively large overall sample size, and a very high questionnaire completion rate, which should minimize bias.

Clinical Implications

Our results underscore the importance of screening for and diagnosing BDD and other body image concerns in adolescents. We found a very high rate of such concerns, which caused clinically significant distress and/or functional impairment, indicating that problematic body image concerns extend beyond eating disorders. However, such concerns (at least in the case of BDD) were rarely diagnosed by clinicians. Patients' significantly higher levels of depression, anxiety, PTSD symptoms, dissociation, sexual concerns/distress, and suicidality were underscored by the significance of these body image concerns. Because BDD usually begins during early adolescence, it is particularly important to recognize BDD symptoms in this age group.

This important topic has received little investigation in adolescents, and future studies are needed, including studies that address the limitations of this study. Studies of BDD and other clinically significant body image concerns are also needed in other clinical settings (e.g., outpatient), in community samples, and in other racial and ethnic groups to assess their prevalence and their relationship to depression, anxiety, suicidality, and other important clinical constructs.

Summary

Body dysmorphic disorder (BDD), a DSM-IV somatoform disorder, is marked by distressing or impairing preoccupations with imagined or slight defects in appearance, including preoccupying, repetitive thoughts and behaviors. In adults, BDD is associated with poor functioning and high rates of suicidality, depression, and anxiety. Despite the fact that body image is salient during adolescence and BDD often begins during this developmental period, BDD among adolescents has received little systematic investigation. This study assessed prevalence and clinical correlates of BDD, eating disorders, and other clinically significant body image concerns in 208 consecutively admitted adolescent inpatients who completed the Body Dysmorphic Disorder Questionnaire (BDDQ) and various self-report measures. We found that 6.7% of inpatient adolescents met criteria for BDD, 3.8% met criteria for an eating disorder (ED), and 22.1% had clinically significant concerns pertaining to shape/weight concerns (SWC) that would have otherwise met BDD criteria. When compared to inpatients without clinically significant body image disturbances, BDD and SWC were associated with higher levels of anxiety and suicidality. BDD, SWC, and ED were associated with higher levels of depression. SWC were also associated with high levels of PTSD, dissociation, and sexual distress. In summary, a high proportion of adolescent inpatients had clinically significant body image concerns or a body image disorder, with these groups appearing more impaired in several areas compared to other psychiatric inpatients. These relatively common, yet distressing and impairing body image preoccupations deserve further study in adolescents.

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Table 1

Rates of BDD, problematic shape/weight concerns, and eating disorders in 221 adolescent inpatients

Group	<i>n</i>	%	95% CI
BDD	14	6.7	3.3 – 10.1
Definite	10	4.8	1.9 – 7.7
Probable	4	1.9	0.1 – 3.7
Shape/weight concerns	46	22.1	16.5 – 27.7
Definite	26	12.5	8.0 – 17.0
Probable	20	19.6	14.2 – 25.0
Eating disorder	8	3.8	1.2 – 6.4
<i>Total</i>	68	32.6	26.2 – 39.0
No BDD, shape/weight concerns, or eating disorder	140	67.3	60.9 – 73.7

Table 2
Percentage of participants with BDD endorsing specific body areas as a focus of preoccupation

Body area	<i>n</i>	% ^a
Overall face	5	38.4
Skin	5	38.4
Weight ^b	5	38.4
Overall body	3	23.1
Stomach/waist	2	15.4
Hair	2	15.4
Eyes	2	15.4
Ears	2	15.4
Genitals	2	15.4
Nose	1	7.7
Lips	1	7.7
Buttocks	1	7.7
Breasts	1	7.7

^aPercentages exceed 100% because many subjects endorsed more than one area. One subject did not specify body areas of concern, so percentages are based on an *n* of 13

^bWeight was not the main concern of any of these subjects

Table 3
Demographic characteristics and comorbid clinical diagnoses of participants by group

	BDD (<i>n</i> = 14)	Shape/Weight concerns (<i>n</i> = 46)	Eating disorder (<i>n</i> = 8)	No BDD/SWC/ED (<i>n</i> = 140)	<i>F</i> or chi square statistic	<i>p</i> -value
Gender (% female)	7 (50%)	43 (93.4%)	7 (87.5%)	73 (52.1%)	$\chi^2 = 28.6$	< 0.001 ^a
Mean age (with SD)	15.1 (1.3)	14.6 (1.4)	15.7 (.71)	14.9 (1.4)	$F(3, 204) = 1.88$	1.33
Race/ethnicity					$\chi^2 = 7.45$	0.587
White	12 (85.7%)	42 (91.3%)	8 (100%)	110 (78.3%)		
African American	0	0	0	10 (7.2%)		
Hispanic	1 (7.1%)	2 (4.3%)	0	13 (9.3%)		
Other	1 (7.1%)	2 (4.3%)	0	7 (5.2%)		
Bipolar disorder	9 (64.3%)	16 (34.8%)	2 (25.0%)	57 (40.7%)	$\chi^2 = 4.71$	0.194
Major depressive/dysthymic disorder	3 (21.4%)	26 (57.1%)	4 (50%)	49 (35.0%)	$\chi^2 = 9.05$	0.029 ^b
ODD/CD ^c	3 (21.4%)	4 (8.7%)	1 (12.5%)	32 (22.9%)	$\chi^2 = 4.75$	0.191
PTSD/ASD ^d	2 (14.3%)	8 (17.5%)	0 (0%)	22 (15.7%)	$\chi^2 = 1.62$	0.655
Anxiety disorder	2 (14.3%)	5 (10.9%)	3 (37.5%)	10 (7.1%)	$\chi^2 = 8.58$	0.035 ^e
ADHD	2 (14.3%)	4 (8.7%)	1 (12.5%)	18 (12.9%)	$\chi^2 = 0.78$	0.855
Other disorder	2 (14.3%)	1 (2.2%)	0	14 (10.0%)	$\chi^2 = 4.24$	0.237
Psychotic disorder	1 (7.1%)	0	0	6 (4.3%)	$\chi^2 = 2.86$	0.414

^aThe shape/weight concerns and eating disorder groups contained significantly more females than the BDD and no BDD/SWC/ED group.

^bThose in the shape/weight concerns and eating disorder groups were significantly more likely to be diagnosed with major depressive disorder or dysthymic disorder than those in the BDD group at the $p < 0.05$ level. This difference was not significant when employing the Bonferroni correction ($p < 0.006$) for multiple analyses

^cRefers to oppositional defiant disorder and conduct disorder diagnoses

^dRefers to posttraumatic stress disorder and acute stress disorder diagnoses

^eThose in the eating disorder group were significantly more likely to be diagnosed with an anxiety disorder than those in the other three groups at the $p < 0.05$. This difference was not significant when employing the Bonferroni correction ($p < 0.006$) for multiple analyses

Table 4

Mean scores by group on clinical scales

	BDD (<i>n</i> = 14)	Shape/weight concerns (<i>n</i> = 46)	Eating disorder (<i>n</i> = 8)	No BDD/SWC/ED (<i>n</i> = 140)	<i>F</i> statistic [*]
Suicide probability scale	73.08	70.11	71.38	62.61	11.65 (<i>p</i> < 0.001) ^d
Reynolds adolescent depression scale	85.43	81.30	83.75	66.16	17.08 (<i>p</i> < 0.001) ^b
Multidimensional adolescent anxiety scale	63.29	58.91	55.00	49.34	9.63 (<i>p</i> < 0.001) ^c
TSCC: ^d					
PTSD	56.86	54.56	54.13	49.38	4.13 (<i>p</i> = 0.007) ^e
Dissociation	56.64	56.28	50.87	50.10	4.14 (<i>p</i> = 0.007)
Sexual concerns	54.14	61.20	53.62	50.21	4.93 (<i>p</i> = 0.003)

^{*} All *F* values remained significant when employing the Bonferroni correction (*p* < 0.008) to correct for multiple analyses

^a Contrasts were computed using Tukey's HSD procedure. Compared to the no BDD/SWC/ED group, the BDD group (*D* = 10.47, *SE* = 2.80, *p* < 0.01) and the shape/weight concerns group (*D* = 7.50, *SE* = 1.58, *p* < 0.001) scored significantly higher on the SPS. A similar trend of marginal significance was observed for those in the Eating disorder group (*D* = 8.76, *SE* = 1.60, *p* = 0.05)

^b The BDD (*D* = 19.27, *SE* = 3.38, *p* < 0.001), shape/weight concerns (*D* = 5.14, *SE* = 2.66, *p* < 0.001) and eating disorder groups (*D* = 7.59, *SE* = 5.34, *p* < 0.05) all scored higher than the no BDD/SWC/ED group on the RADS

^c The BDD group (*D* = 13.94, *SE* = 3.68, *p* < 0.01) and shape/weight concerns group (*D* = 9.57, *SE* = 2.24, *p* < 0.01) scored higher than the no BDD/SWC/ED group on the MASC

^d Trauma Symptom Checklist for Children

^e The shape/weight concerns group scored significantly higher than the no BDD/SWC/ED group on the TSCC PTSD scale (*D* = 5.18, *SE* = 1.86, *p* < 0.05), dissociation scale (*D* = 6.18, *SE* = 1.98, *p* < 0.05), and sexual concerns scale (*D* = 10.99, *SE* = 2.92, *p* = 0.01). These differences remained with gender used as a covariate: PTSD (*F*[4,1] = 4.41, *p* = 0.001), dissociation (*F*[4,1] = 4.06, *p* = 0.002), and sexual concerns (*F*[4,1] = 3.81, *p* = 0.002)