ISSN: 2754-4516

Journal of Medicine and Healthcare

SCIENTIFIC Research and Community

Research Article

Open Access

Investigating the Multidimensional Comorbidity of Obsessive-Compulsive Disorder, Body Dysmorphic Disorders, and Eating Disorders: Theoretical and Practical Approaches to Treatment

Eda Gorbis[1], Alexander Gorbis[1], Rebecca Braverman[1] and Joseph O'Neill[2]

[1]The Westwood Institute for Anxiety Disorders, Los Angeles, CA

[2]Jane and Terry Semel Institute for Neuroscience & Human Behavior, University of California Los Angeles, CA

ABSTRACT

Research on obsessive-compulsive disorder (OCD), body dysmorphic disorder (BDD), and eating disorders (EDs), including anorexia and bulimia, has shown appreciable two-way comorbidity between these conditions, especially OCD and BDD. There are few, if any, however, assessments of the multidimensional comorbidity of OCD, BDD, and EDs. Here, we review the literature on prevalence and comorbidity of these disorders and estimate their three-way comorbidity. We calculate that *multidimensional comorbidity* of OCD, BDD, and EDs is present in about 1.5% of cases of primary OCD, 3.7% of cases of primary BDD and 9.8% of cases of primary EDs. We further provide recommendations for treatment of cases in which all three disorders appear together, beginning with the advice to treat that disorder first which poses the highest danger to the patient upon check in. for LVM.

***Corresponding author**

Eda Gorbis, The Westwood Institute for Anxiety Disorders, 921 Westwood Blvd., Suite 223, Los Angeles, California 90024, United States, USA.
E-mail: thewestwoodinstitute@gmail.com

Received: May 21, 2022; **Accepted:** June 08, 2022; **Published:** June 14, 2022

Keywords: Obsessive-Compulsive Disorder, Body Dysmorphic Disorder, Bulimia Nervosa, Anorexia Nervosa, ExRP, Cognitive Behavioral Therapy

Introduction

In the 5th edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5), obsessive-compulsive disorder (OCD) was moved from Anxiety Disorders into a new category, Obsessive-Compulsive and Related Disorders [1]. Based on current research showing that many mental disorders include obsessions and compulsions, OCD was joined under that heading by Body Dysmorphic Disorder (BDD), Hoarding Disorder, Trichotillomania, and Skin-Picking Disorder. Moreover, other disorders that were traditionally considered outside the obsessive-compulsive spectrum are now being examined under a different lens due to their high comorbidity with OCD. In particular, two disorders classified as Feeding and Eating Disorders in DSM-5, Anorexia nervosa (AN) and Bulimia nervosa (BN), have shown high comorbidity with both OCD and BDD [2,3]. Motivated by the recent appearance in our clinic at the Westwood Institute of three patients with simultaneous OCD, BDD, and an ED, we consulted the literature regarding the frequency of this three-way combination. As these patients present special challenges, we sought to approximate how often they might be encountered in a practice specialized in OC or EDs. This mini-review summarizes our findings. We briefly describe each disorder, review past ideas about their comorbidity, report or calculate the two-way and three-way comorbidity rates of the disorders from the literature, and discuss our findings in terms of application to patient management.

Obsessive-Compulsive Disorder

Obsessive-Compulsive Disorder (OCD) as defined in DSM-5 has two important diagnostic criteria. The first is the presence of obsessions or intrusive thoughts that are disturbing and pervasive in nature. Some of the most common themes of these thoughts include prevention of harm to self or others, fears of contamination, fear of serious illness, and perfectionism [4]. The second criterion is that the obsessions are followed by compulsions or behaviors intended to neutralize the intrusive thoughts and/or to prevent them from occurring in real life. These compulsions usually take longer than an hour and are considered significant impediments to daily functioning. The most common behavioral treatment for OCD is Exposure and Response Prevention (ExRP), an evidence-based therapy that purposefully triggers intrusive thoughts and lengthens the time between experiencing the intrusive thought and performing the compulsion. This intervention breaks the cycle of obsessive-compulsive behavior (Figure 1).

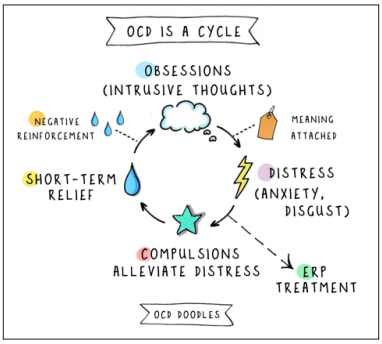

Figure 1: The cycle of OCD and its interruption by Exposure and Response Prevention (ERP), (Credit: OCD Doodles)

When evaluating and diagnosing OCD, it is important to consider whether the behavior is ego-dystonic or ego-syntonic. When a behavior is ego-dystonic, as it usually is with obsessive-compulsive behavior, the intrusive thoughts are unwanted, and the patient perceives them as disturbing. On the other hand, when a behavior is ego-syntonic, the thoughts and behaviors are viewed as pleasurable by the person experiencing them [5]. We revisit this concept below when evaluating BDD, BN, and AN against the criteria for OCD.

Body Dysmorphic Disorder

Body Dysmorphic Disorder (BDD) appears in the Obsessive-Compulsive and Related Disorders section of DSM-5 as a disorder which causes significant distress concerning "the preoccupation with one's physical appearance" [6]. BDD is very similar to OCD in that the person experiencing the disorder will perform repetitive checking behaviors and may seek reassurance from others in order to neutralize their intrusive thoughts about their appearance. Some of the most common compulsions associated with BDD include mirror checking and mirror avoidance. In both cases, people experiencing these symptoms have negative associations with mirrors because they are either checking themselves for hours at a time or refuse to use mirrors at all because of the worry of seeing something awful in their appearance [7]. Patients have often described their appearance as looking "like a monster" or "not right," causing them significant distress and impairment in their social lives. Because of this, it is important to specify the degree of insight the patient has in regards to their behavior. For example, if a patient regards their thoughts as ego-syntonic and believes the BDD-related thoughts are true, then they are specified "with absent insight/delusional beliefs".

OCD and BDD have a great deal in common as illustrated in Figure 2. For example, patients with OCD often report detrimental perfectionism as part of their symptoms, which is also part of the symptom list for patients with BDD. Patients with BDD are usually concerned with whether their facial features are symmetrical, causing significant concern and even seeking out corrective surgery [8]. However, patients are rarely satisfied with their care and have been known to repeatedly seek out aesthetic procedures as a compulsion in order to "fix" their appearance, often creating medical issues for themselves. Additionally, global events like the COVID-19 Pandemic have raised the demand for aesthetic procedures due to the increased use of video conferencing programs such as Zoom and FaceTime [9].

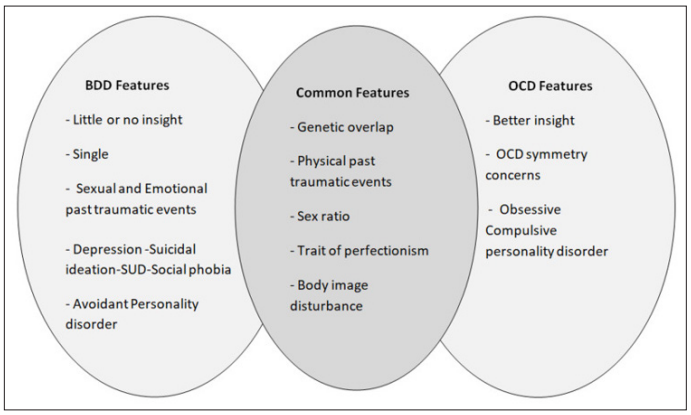

Figure 2: Separate and common features of body dysmorphic disorder (BDD) and obsessive-compulsive disorder (OCD). [15] (Credit: Eskander, Limbana, & Khan, 2020)

The most effective treatment for BDD has been ExRP, another commonality it shares with OCD. Exposures for BDD are specially crafted to trigger intrusive thoughts about a person's appearance and to encourage patients to live with the discomfort of leaving their compulsions incomplete. For example, at the Westwood Institute, patients with BDD are asked to look into "crooked" ("fun-house") mirrors without engaging in a compulsion. These mirrors, similar to those used at carnivals, are made to distort the image shown in the mirror which externalizes how the patient feels they look in real life. During this time, the therapist will record the anxiety reported by the patient and show them later how their anxiety levels decrease over time. This illustrates a very important aspect of ExRP, which is to show patients that their anxiety is not something to be avoided but confronted. Over time, anxiety levels will decrease, and the patient will no longer feel the need to perform compulsions because they are taught how to handle their anxiety in a healthy way.

Anorexia Nervosa

Anorexia nervosa (AN) is an eating disorder characterized by the limited intake of energy or the absence of eating altogether due to an intense fear of gaining weight, even at the risk of becoming severely underweight [1]. There are two specific subtypes of AN described as "restricting type" and "binge-eating/purge type," which describes the nature of the energy-intake behaviors. Patients with binge-eating/purging behavior engage in self-induced vomiting and the misuse of laxatives, diuretics, and/or enemas in order to purge the amount of food they had taken-in during a binge-eating episode. Patients with restricting behaviors do not engage in this behavior; instead, they will avoid or hide food, taking in very little at a time in order to continually lose weight [4]. Like most Feeding and Eating Disorders, treatment for AN is complicated due to the severe medical issues associated with the disorder. As a result of this and the elevated suicide risk, AN is known as the deadliest mental disorder due to its high mortality rate [10]. Therefore, proper treatment for this disorder is crucial not only to the patients' mental well-being, but to their very lives. Because of the cognitive distortions associated with AN, the "crooked" mirror exposure has also been shown to be helpful in the behavioral treatment for this disorder, especially when coupled with Cognitive Behavioral Therapy (CBT).

Bulimia Nervosa

Bulimia nervosa (BN), another type of eating and feeding disorder, is crucially different from AN in a few ways: first, BN is characterized by episodes of binge-eating in which a patient consumes an abnormally large amount of food followed by the compensatory purging behaviors listed earlier. Second, patients with BN tend to keep their weight at a healthy average but still experience medical complications due to the purging behavior [1]. Like the previous disorders listed, the most effective treatment for BN is CBT modified for eating disorders, although there is limited research on the overall effectiveness of CBT for BN [11]. At the Westwood Institute, we have found success with the "crooked" mirror technique as well as by adding a nutritionist to the treatment team for any case involving an ED.

OCD and Eating Disorders

The connection between OCD and EDs such as BN and AN is well documented. As far back as 1993, Hsu, Kaye, and Weltzin proposed that OCD and AN be considered part of the same disorder, as both disorders had compulsive components. Moreover, the disorders shared neurobiological changes in the central nervous system pertaining to serotonin and dopamine

activity, which could be successfully treated with Serotonin Reuptake Inhibitors (SRIs). Another study by [1]. Showed that AN also had significant connections to Obsessive-Compulsive Personality Disorder (OCPD). Patients with OCPD, as opposed to OCD, are characterized by rigid, perfectionistic standards, a significant preoccupation with rules and work, and unyielding stubbornness that affects their relationships with others. Those with OCPD do not have the high insight associated with OCD, therefore characterizing their behavior as ego-syntonic because they believe it is important to follow the rules and to stick to a rigid formula. The presence of their disorder co-occurring with AN can significantly complicate the treatment process and prevent the patient from wanting to participate in their own treatment. BN has also been shown to be highly comorbid with OCD, though it is not entirely clear how. One theory proposed by [12]. Points to the heightened startle reaction in both disorders and how they may influence each other. Current research on BN remains limited with empirical support lacking to confirm any theories.

BDD and Eating Disorders

BDD and eating disorders like BN and AN, on the surface, appear to have more in common with each other than with OCD. People with EDs have high rates of body dissatisfaction, appear to perceive their bodies in a distorted way, and perform compensatory behaviors in order to "fix" their issues. However, BDD is considered part of the obsessive-compulsive spectrum because of the nature of the associated compensatory behaviors. Unlike BN or AN, many of the beliefs held by people with BDD are ego-dystonic and are considered intrusive by the person experiencing them [13]. This makes the treatment process easier because patients are more likely to seek out treatment if they have greater insight into their maladaptive behaviors. These distinctions between BDD, BN, and AN are critical to the improvement of symptoms and non-psychiatric (e.g., cosmetic surgical) interventions can fail to address underlying behavioral issues, leading to relapses [3].

Materials and Methods

For a better understanding of the multidimensional comorbidity of these disorders, we sought out frequency estimates from previously published studies. PubMed was searched using "obsessive-compulsive disorder AND body dysmorphic disorder AND comorbidity", "obsessive-compulsive disorder AND eating disorders AND comorbidity", "body dysmorphic disorder AND eating disorders AND comorbidity", "obsessive-compulsive disorder AND anorexia nervosa AND comorbidity", "obsessive-compulsive disorder AND bulimia nervosa AND comorbidity", and similar search terms. Relevant epidemiological or clinical studies or reviews were identified, and data extracted as to prevalence (in the United Sates or internationally, as available) of each disorder in the general population and rates of comorbidity between each pair of disorders. Rates were combined across the EDs AN and BN. When multiple figures were obtained, values were averaged across studies. No source could be identified reporting a rate of three-way comorbidity between OCD, BDD, and EDs. Assuming statistical independence, we therefore calculated an approximate rate of three-way comorbidity as the fraction of OCD patients who also have both BDD and an ED by simply multiplying the comorbidity rate of OCD+BDD times the comorbidity rate of OCD+ED. Similarly, we obtained a second estimate of the three-way comorbidity as the fraction of BDD patients who also have both OCD and an ED by multiplying the comorbidity rate of BDD+OCD times the comorbidity rate of BDD+ED. Finally, we obtained a third estimate of the three-way comorbidity as the fraction of ED patients who also have both BDD and OCD by multiplying the comorbidity rate of ED+OCD times the comorbidity rate of ED+BDD.

Results/Observations

Prevalences of OCD, BDD and EDs; two-way comorbidity rates; and estimates of multidimensional comorbidity are compiled in Table 1. In the general population, DSM-5 cites prevalence of 2.3% for OCD, the prevalence of BDD in the general population ranges 0.7% to 2.4 %, which averages to 1.5% [6]. The prevalence of the ED AN in the general population is 4% and the prevalence of the ED BN in the general public is 2%, for a combined mean of 3% [10].

Data on the various comorbidity combinations of the three disorders vary based on the primary diagnosis and across the literature. For a primary diagnosis of OCD, one source found the estimated percentage with a comorbid diagnosis of BDD to be 10.4%, while another found the estimated percentage of a comorbid diagnosis of BDD to be 12%, which averages to 11.2% [10]. Continuing with a primary diagnosis of OCD, Serpell and colleagues found that the prevalence of an additional diagnosis of an ED is between 10% and 17%, with an average of 13.5% [4]. Similarly, the average percentage of EDs as a comorbid diagnosis with BDD as the primary disorder is also 13.5%, with one source finding the prevalence to be 12% and another finding it to be 15% [13]. It was also found that the prevalence of a primary diagnosis of BDD with a comorbid disorder of OCD was greater at 27.5% compared to the prevalence of a primary diagnosis of OCD with a comorbid disorder of BDD which, as previously stated, was a mean 11.2% [10]. Now, with an ED as the primary diagnosis, prevalence of comorbid OCD ranged 20% to 30%, (mean 25%) and prevalence of a comorbid diagnosis of BDD was 39% [2,3]. That completes the two-way comorbidities.

We went on to estimate that three-way comorbidity (OCD, BDD, ED) occurs in 1.5% (0.112x0.135*100%) of cases with a primary diagnosis of OCD, in 3.7% of cases with a primary diagnosis of BDD (0.275x0.135*100%), and in 9.8% (0.25x0.39*100%) of cases with a primary diagnosis of an ED. Those are the desired estimates of three-way comorbidity.

Discussion

Our above cursory inquiry into the literature (Table 1) reinforces existing notions that two-way comorbidity between combinations of obsessive-compulsive disorder (OCD), body dysmorphic disorder (BDD), and eating disorders (EDs) is common. For the first time, to our knowledge, multidimensional comorbidity (OCD, BDD, and ED) is estimated to occur in a small, but non-negligible minority of patients. In the past six months, three of these rare patients with multidimensional comorbidity—who can be very challenging to treat and diagnose-- were seen at the Westwood Institute. We summarize recommendations for their care based on our experience to date. First, in the OC or ED specialist psychiatric setting, it is paramount to perform a comprehensive and thorough assessment for all three disorders, even when they do not appear initially. The disorder that should be treated first is the one that poses the biggest threat to the patient's immediate safety. Because of the medical complications associated with EDs, it is highly recommended to treat any ED first. In particular, if not already stable, the patient should be medically stabilized before proceeding to any kind of psychological treatment. Because of the similar symptomatology, we suggest the modified use of both CBT and ExRP with careful consideration of ego-syntonic beliefs. When working with patients who have ego-syntonic beliefs or possibly

delusional thinking, treatment may become especially difficult and may require hospitalization based on the severity of the case.

Table 1: Prevalences, two-way and three-way comordbidity rates of OCD, BDD, and EDs

Primary Disorder	Comorbidities	Rates, %	Sources	Mean of Estimates, %
OCD	In General Population	2.3	DSM-5	2.3
	OCD + BDD	10.4	Frías et al. 2015	11.2
		12	Smink et al. 1995	
	OCD + ED	10 - 17	Serpell et al. 2002	13.5
	OCD+BDD+ED	--	Calculated	1.5
BDD	In General Population	0.7 - 2.4	Bjornsson et al. 2010	1.5
	BDD + OCD	27.5	Frías et al. 2015	27.5
	BDD + ED	12	Kollei et al. 2013	13.5
		15	Ruffalo et al. 2006	
	BDD + ED + OCD	--	Calculated	3.7
ED	In General Population	Anorexia Nervosa: 4	Smink et al. 1995	3
		Bulimia Nervosa: 2		
	ED + OCD	Anorexia Nervosa: 20 - 30	Hsu et al. 1993	25
	ED + BDD	39	Grant et al. 2012	39
	ED + BDD + OCD	--	Calculated	9.8

OCD=obsessive-compulsive disorder, BDD=body dysmorphic disorder, ED=eating disorder

Limitations of this review include its summary character; our reception of the literature falls short of being exhaustive and systematic. In particular, we have not discriminated sharply between population and clinical studies. In calculating three-way comorbidities, we assumed statistical independence. If three-way combinations of the disorders occur with above-chance probability, the stated figures may be underestimates. In conclusion, this analysis substantiates noteworthy two-way comorbidities among OCD, BDD, and EDs; three-way comorbidity may be anticipated in under 5% of OCD and BDD patients and up to 10% of ED patients. Further research may produce more exacting comorbidity rates, deeper investigation of the nosological and neurobiological interconnections of these disorders, and more detailed advice for their remediation.

Acknowledgements
Special thanks to Alexa Wasserman for assistance in the writing process, and to the Westwood Institute for Anxiety Disorders for support.

Ethical responsibilities
The authors declare that no experiments on humans or animals have been carried out for this article. Due to its content, it does not merit an ethics committee review.

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