

THE PREVALENCE OF BODY DYSMORPHIC DISORDER IN PATIENTS UNDERGOING COSMETIC SURGERY: A SYSTEMATIC REVIEW

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SUMMARY

Body dysmorphic disorder (BDD) is a somatoform disorder characterised by a distressing obsession with an imagined or slight appearance defect, which can significantly impair normal day-to-day functioning. Patients with BDD often first present, and are hence diagnosed, in cosmetic surgery settings. Several studies have investigated the prevalence rate of BDD in the general population or have done so for patients referring to cosmetic medical centers. To date, however, no review has been undertaken to compare the prevalence in the general community versus in a cosmetic surgery setting. Despite the lack of such a review it is a commonly held belief that BDD is more common in patients seeking cosmetic surgery. The current study aims to review the available literature in order to investigate whether BDD is indeed more prevalent in patients requesting cosmetic surgery, and if that is the case, to provide possible reasons for the difference in prevalence. In addition this review provides evidence on the effectiveness of cosmetic surgery as a treatment of BDD.

Key words: body dysmorphic disorder - somatoform disorder - cosmetic surgery - plastic surgery - psychiatry

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INTRODUCTION

Physical attractiveness is a human characteristic that has been appreciated and held of great value through the ages and across cultures (Buss 1990, Jones 1996). Despite the fact that the perception of beauty has always been considered subjective, research has shown that there exist common culture-specific ideals of physical attractiveness (Strzalko 1996). Given the importance that society places on physical attractiveness it is neither surprising nor uncommon to be dissatisfied with one's appearance. This dissatisfaction, however, rarely significantly affects one's psychological and social wellbeing.

Body dysmorphic disorder (BDD), originally termed "dysmorphophobia", is a psychiatric condition in which body image concerns become excessive and quite devastating. People with the disorder display a constant preoccupation with an imagined physical defect (American Psychiatric Association 2000). When the physical defect is not entirely imagined then, non-surprisingly, the person's concern becomes even more excessive (Veale 2003).

Although any aspect of the physical appearance can be the primary focus of concern, patients with BDD most often exhibit distressing preoccupations with the head or face, particularly the nose, the skin, both in terms of acne or wrinkles, and the hair. A patient with BDD will most often present with a complaint involving a perceived or slight defect, for example the chin is too big, the ears are too small, the nose is not straight, their hair is thinning, they have acne, scars or wrinkles, their complexion is too pale, or can even complain of a more general lack of symmetry and proportion. Sometimes complaints can be completely vague, such as a sufferer complaining of being generally ugly (Phillips 1993).

What distinguishes BDD patients from mentally-well people who are just dissatisfied with their appearance is the fact that in BDD patients the dissatisfaction is accompanied by a poor quality of life, which previous research has described as worse than depressed patients (Phillips 2000). These patients can spend an average of 2-8 hours a day thinking about and discussing their perceived defect. They are constantly checking the defect in the mirror, undertake excessive grooming and in social situations often attempt to camouflage the perceived defect. This time-consuming behaviour induces a significant amount of anxiety and distress (Phillips 1993).

The most severe cases of BDD have been associated with significant impairment in the sufferer's social life or occupation, complete avoidance of day-to-day activities, avoidance of going out in public resulting in people being housebound, and even hospitalised (Phillips 2006). Occurrence of secondary depressive symptoms and suicidal ideation can further complicate the course of the disorder (Hollander 1993).

In terms of prevalence, it is difficult to estimate the exact rate of BDD for at least two reasons. First, patients with BDD, especially those with poor insight, most often primarily refer to cosmetic surgeons or dermatology clinics rather than psychiatrists. Second, studies have suggested that the rate of subclinical BDD, which is characterised by the absence of significant impairment in functioning but a presence of the core symptoms of BDD, is quite high (Zimmerman 1998).

The primary aim of this study was to review the current literature and assess the main demographic characteristics of BDD patients in three non-psychiatric populations: the general community, student samples and subjects referring to cosmetic surgeons.

METHODS

PUBMED and Cochrane databases were searched using the terms “prevalence AND Body Dysmorphic Disorder”, “prevalence AND dysmorphia”, “Body Dysmorphic Disorder AND cosmetic surgery AND prevalence”, “Body Dysmorphic Disorder AND aesthetic surgery AND prevalence”, “Body Dysmorphic Disorder AND plastic surgery AND prevalence”, “dysmorphia AND cosmetic surgery AND prevalence”, “dysmorphia AND aesthetic surgery AND prevalence” and “dysmorphia AND plastic surgery AND prevalence”. The inclusion criteria were observational studies reporting on BDD prevalence in three different populations; first, people in the community, second, in high school and university students and third, in patients referring to cosmetic surgeons. The language was restricted to English. The titles and abstracts from the initial search were screened to isolate all possibly eligible studies. The full papers of this narrowed down selection were then evaluated to assess usefulness for the literature review.

RESULTS

Studies included in the literature review

Search of PUBMED yielded 286 articles, whereas search of the Cochrane database yielded no additional articles (Figure 1). Based on the title and abstract of the papers, 253 were excluded because they did not provide original data on the prevalence of BDD. The full papers were evaluated in 33 cases but only 28 fulfilled the selection criteria (Table 1); 7 studies provided data from a community sample, 10 studies provided data from a student sample, and 11 studies provided data from a cosmetic surgery sample. The 5 papers that were excluded presented data in settings other than the three selected populations, for example provided data on dermatology patients (Phillips 2000, Dufresne 2001, Harth 2001, Uzun 2003, Dogruk Kacar 2014).

Body Dysmorphic Disorder in the Community

A community study is one that is conducted in non-psychiatric settings and hence excludes both inpatients and outpatients. The four largest studies ($n=10001$) in general populations found BDD prevalence rates of 1.7% to 2.4% (Rief 2006; Koran 2008; Buhlmann 2010, Brohede 2013). Currently available studies for the United States general population indicate a BDD prevalence of approximately 2% (Bienvendu 2000, Koran 2008). The prevalence was found to be slightly lower at 0.7% in an all-female community sample in the United States (Otto 2001). To date, there have been two nationwide studies conducted in Germany (Rief 2006, Buhlmann 2010). Both studies reported a lower prevalence (1.7% and 1.8%, respectively) than the United States studies suggesting that Americans are at a higher risk of

being diagnosed with BDD than are Germans. A community survey in Italy demonstrated a BDD prevalence of 0.7% (Faravelli 1997). Most recently, an all-female community sample in Sweden was found to have a prevalence of 2.1% (Brohede 2013). In the four largest nationwide studies (Rief 2006, Koran 2008, Buhlmann 2010, Brohede 2013), the studies which were majorly comprised of female respondents (Koran et al. 2008 = 65.5% female, Brohede et al. 2013 = 100% female) had higher prevalence rates (2.4% and 2.1% respectively).

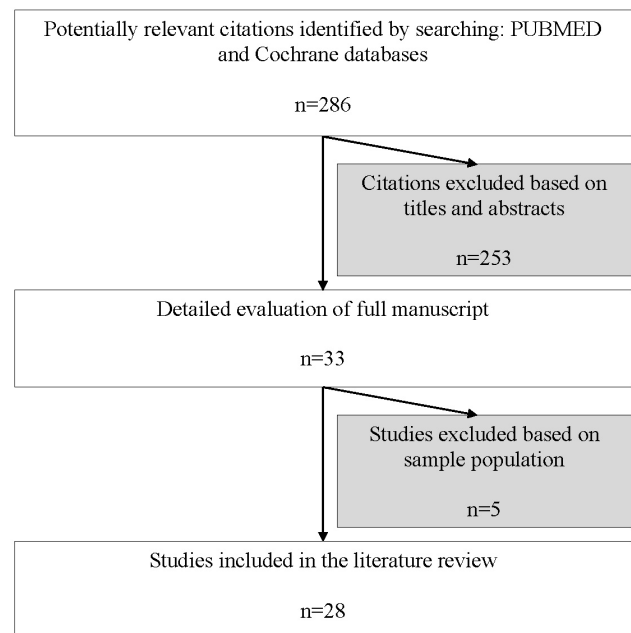


Figure 1. The selection process of the studies included in the literature review

Body Dysmorphic Disorder in Student Populations

Prevalence of BDD among students was found to range from 2.2% to 28% (Mayville 1999, Fitts 1989 respectively). The lowest prevalence rate was reported in a study of 566 high school students (Mayville 1999). In university populations, studies in the past decade have reported rates of BDD ranging from 2.3% to 5.8% (Bartsch 2007, Taqui 2008 respectively), which are comparable to the rates seen in the general community. Earlier studies of university students had suggested much higher rates of BDD (13% to 28%). In terms of cross cultural differences, BDD was found at 5.3% at a university in Germany (Bohne 2002), 4.8% in a female sample at a university in Turkey (Cansever 2003), 4.95% in a sample from 5 universities in China (Zhu 2010), and 2.5% at a university in the United States (Sarwer 2005). One study found that BDD was equally prevalent in male and female students (Zhu 2010), one indicated a higher prevalence of BDD in male students (Taqui 2008), whereas three studies found a higher prevalence in female students (Bohne 2002, Bartsch 2007, Boroughs 2010).

Table 1. Prevalence rates of BDD among general community, university student, and cosmetic surgery populations

Sample	Authors	Year	Country	Population	Sample	Rate
Community	Faravelli et al.	1997	Italy	Community sample	673	0.7
	Bienvenu et al.	2000	US	Community sample	373	1-3
	Otto et al.	2001	US	Community sample	976	0.7
	Rief et al.	2006	Germany	Community sample	2552	1.7
	Koran et al.	2008	US	Community sample	2048	2.4
	Buhlmann et al.	2010	Germany	Community sample	2510	1.8
	Brohede et al.	2013	Sweden	Community sample	2891	2.1
Students	Fitts et al.	1989	US	University students	258	28
	Biby	1998	US	University students	102	13
	Mayville et al.	1999	US	Highschool students	566	2.2
	Bohne et al.	2002	Germany	University students	133	5.3
	Bohne et al.	2002	US	University students	101	4
	Cansever et al.	2003	Turkey	University students	420	4.8
	Sarwer et al.	2005	US	University students	559	2.5
	Bartsch	2007	Australia	University students	619	2.3
	Taqi et al.	2008	Pakistan	University students	156	5.8
	Zhu & Deng	2010	China	University students	2463	4.95
Cosmetic surgery populations	Sarwer et al.	1998	US	Cosmetic surgery	100	7
	Ishigooka et al.	1998	Japan	Cosmetic surgery	415	15
	Altamura et al.	2001	Italy	Cosmetic surgery	487	6.3
	Vargel et al.	2001	Turkey	Cosmetic surgery	20	20
	Vindigni et al.	2002	Italy	Cosmetic surgery	56	53.6
	Aouizerate et al.	2003	France	Cosmetic surgery	132	9.1
	Veale et al.	2003	UK	Rhinoplasty	29	20.7
	Crerand et al.	2004	US	Cosmetic surgery	91	8
	Castle et al.	2004	Australia	Nonsurgical cosmetic	137	2.9
	Picavet et al.	2011	US	Rhinoplasty	226	33
Jeremy et al.	2014	Singapore	Rhinoplasty	52	15	

Body Dysmorphic Disorder in Cosmetic Surgery Populations

The rate of BDD in patients seeking cosmetic surgery was originally thought to be 2%, which is similar to the rate seen in the general population (Andreasen 1977). More recent studies, however, indicate a much higher rate of BDD. This literature review found that the rate of BDD among patients requesting cosmetic surgery ranged from 2.9% to 53.6% (Castle 2004, Vindigni 2002, respectively). This vast difference between estimated rates was also found when comparing studies conducted in the same country. More specifically, in cosmetic surgery populations in the United States, the rate of patients that met diagnostic criteria for BDD ranged from 7% (Sarwer 1998) to 33% (Picavet 2011). These studies had significant methodological problems, including small sample sizes and biases in the selection process, which could account for the vast discrepancies seen. In Europe, two studies that had improved methodologies and were based on larger samples reported rates of 6.3% and 9.1% in Italy and France respectively (Altamura 2001, Aouizerate 2003). These values again disagree with a more recent study on larger sample of patients seeking rhinoplasty, in which 33% were shown to meet the criteria for BDD (Picavet 2011). Most recently, a study conducted in Singapore reported a 15% prevalence of BDD in patients seeking rhinoplasty,

although the sample size in this study was relatively small (n=52). Findings, therefore, indicate that the estimated rates of BDD in cosmetic surgery populations are not very consistent and vary greatly from values similar to those seen in the general population to extraordinary high values not seen in either the general nor the student population.

DISCUSSION

This data suggests that BDD has the highest prevalence in cosmetic surgery populations, followed by the student population, and is least prevalent in the general community. However, there were many limitations to be noted in these studies which could account for the variation in prevalence rates.

Self-report versus clinician-administered interviews

Some studies were exclusively based on self-report. There are two main issues with this methodology.

First, individuals with BDD often lack insight and when responding to a survey some people with BDD may have failed to recognise their condition and hence would not have reported it (Eisen 2004). Consequently, the prevalence rate estimated from self-reporting studies may be an underestimate of the true prevalence of BDD.

For example, in one of the studies conducted in the general community the participants were asked to fill in a self-report survey. One of the questions in the survey asked whether the participant was preoccupied with a defect in their appearance that was obvious to other people. If a patient with BDD lacks insight then they will believe that their defect is real and is noticeable to other people, then due to their delusional thinking they would wrongly answer this question with a “Yes” (Buhlmann 2010).

Second, in the absence of independent corroboration, it is not possible to state that the perceived appearance defects in people who met the criteria for BDD were imagined or exaggerated. Indeed a defect may have been present and would have been evident to a cosmetic surgeon.

An alternative is to use clinician-administered interviews that are considered to be a very effective way to classify conditions in psychiatry. In the case of BDD, however, sufferers can often be ashamed of their symptoms making them rather secretive. A study on psychiatric inpatients of which 13% had BDD, reported that all the patients had stated that unless they were specifically asked about their BDD they would have not revealed the disorder to their doctor (Grant 2001). This was even the case with patients whose main concern was BDD. In addition, one study in the United Kingdom that looked at more than 1000 General Practice patients used a structured interview to investigate the prevalence of somatoform disorders but did not find a single individual with BDD (DeWaal 2004). This appears to be an underestimation of the true prevalence of BDD and indicates the issues with using structured interviews in identifying BDD. Consequently, a lot of the studies seen in this literature review used surveys in their methodology based on the belief that individuals are more willing to disclose their symptoms in a self-reporting survey than in a personal clinician-administered interview.

The question of which method is most effective in the classification of individuals with BDD warrants further research. Employing both a self-report survey and a clinician-administered structured interview might be an option, as it increases the possibility that any individuals with BDD missed by a survey will be identified by a clinician.

Reliability of present criteria to identify BDD

Another concern is the reliability of the current criteria used in the identification of BDD in cosmetic surgery populations. As stated above, the current estimated prevalence of BDD in student populations ranges from 2.3% to 5.8% (Bartsch 2007, Taqui 2008 respectively), which is comparable to the prevalence seen in the general population. Earlier studies, however, of university students had suggested higher rates of BDD - 13% to 28% - which is comparable to those found in cosmetic surgery settings. This discrepancy in the estimated

prevalence rates between the earliest and the more recent studies is most likely due to the fact that the earliest studies had employed less rigorous assessments (Crerand 2006).

Furthermore, in the past it was a commonly held belief that the majority of patients seeking cosmetic surgery had a psychiatric condition. For example, in a 1960 study conducted on 98 patients requesting cosmetic surgery a psychiatrist interviewed the patients and assigned a psychiatric diagnosis to 70% of these patients (Edgerton 1960). This number, which is remarkably high and is now considered to be a false estimation, is comparable to the 54% rate of BDD estimated in one of the studies on cosmetic surgery populations. With the application of more rigorous assessments the assumption that psychopathology is the norm in patients requesting cosmetic surgery became outdated (Ferraro 2005). The vast discrepancy in prevalence rates of BDD in cosmetic surgery populations may be due to differences in both the interpretation and the application of the diagnostic criteria for BDD and could be a reasonable explanation for some of the extremely high estimated rates of BDD.

Alternative explanations for the higher prevalence in cosmetic surgery settings

Sufferers with BDD, based on the data from this literature review, are seen fairly frequently in cosmetic surgery clinics. Although the obvious conclusion from this data is that a high percentage of patients seeking plastic surgery have varying degrees of BDD, there may be different explanations which are not that simple.

Specifically, as noted above, BDD is a hidden psychiatric disorder with many patients being too embarrassed to seek help from their general practitioner or psychiatrist. In a plastic surgery setting, however, people may feel more comfortable to express their concerns as they do not feel that the plastic surgeons will be judgmental of their preoccupation with their appearance. Hence, it might just be the case that BDD is not more common in cosmetic surgery settings, but rather patients feel more comfortable confiding their issues and concerns to a cosmetic surgeon.

In addition, another problem with this type of studies is that cosmetic surgery is rarely funded by insurance companies. If patients can prove that their preoccupation with a facial characteristic, for example their nose, is affecting their quality of life and causing immense amounts of anxiety then these patients may be able to obtain some funding for their surgery. Hence, patients may be admitting that their perceived defect has adverse effects on their personal life in order to prove that their surgery is not just a desire but rather a necessity.

On the other hand, much more simply, it could just be a misconception from the patient’s side that if the patient explains to the surgeon how extremely distressing they find their defect, then the surgeon might

try even harder to correct this defect in order to obtain great results and a satisfied patient.

Nonetheless, all the above reasons may account for an overestimation of the rates of BDD seen in cosmetic surgery settings.

Normative discontent

One observation noted in one of the studies analysing the prevalence of BDD in cosmetic surgery settings is that there exists a subgroup of people requesting cosmetic surgery who have no or a minimal defect, but also do not fulfill the criteria for BDD. This non-pathological dissatisfaction with physical appearance experienced by many people has been termed “normative discontent” (Aouizerate 2003) and underlines the social status assigned to physical appearance, and to its modification with aesthetic surgery. These people may be wrongly assigned to the BDD category under the assumption that since there is no physical defect then they must be suffering from BDD. This incorrect assumption complicates the recognition of BDD and could partly account for the very high rates of BDD in cosmetic surgery settings. Overall, cosmetic surgeons need to identify other patient characteristics, besides the no or slight defect, such as the presence of psychiatric comorbidity, preoccupation with more than one appearance concerns, and level of disability.

Is cosmetic surgery an effective treatment for BDD?

Studies have shown that overall cosmetic surgery can improve the quality of life and enhance the self-esteem and self-image of mentally healthy patients (de Brito 2010). Thus, one of the objectives of the current literature review was to determine whether cosmetic surgery is effective in alleviating BDD symptoms in patients.

Dissatisfaction with appearance, which may or may not be caused by BDD, is the main reason why individuals seek cosmetic surgery. The fact that the distinction between normal concerns about a minimal or moderate appearance defect and BDD is subjective, makes it difficult to predetermine which patients would not benefit from cosmetic surgery as they have a distorted body image and hence unrealistic expectations of the outcome and which patients would be good candidates for cosmetic surgery.

A recent prospective study conducted in Singapore looked at the satisfaction with rhinoplasty outcomes in patients who had displayed preoperative symptoms of BDD. Only patients with mild to moderate BDD were operated on. When followed up one year after surgery, all patients reported a very satisfactory post-operative result. In addition to a reduction in dissatisfaction with their appearance patients also reported a reduction in the time they spent worrying about their appearance. Interestingly it was also found that the level of post-operative satisfaction improved in both the non-BDD

and BDD group with the same magnitude of improvement. Based on this result, patients with mild to moderate BDD who have nasal defects that are evident to the surgeon may benefit from rhinoplasty (Jeremy 2014).

In addition, previous research conducted on rhinoplasty patients with subclinical BDD also reported satisfaction with the post-operative results (Veale 2003). In terms of cosmetic surgery in general, two studies to date have noted beneficial post-cosmetic surgery outcomes in patients with BDD, especially those with a mild or moderate form of the condition (Sarwer 2008, De Brito 2012).

Overall, these results contradict previous research that reported cosmetic surgery as a contraindication in patients with BDD (Phillips 2001, Crerand 2005). These studies, however, were retrospective studies making them more vulnerable to selection bias and possibly not accounting for the multi-dimensional nature of BDD (Phillips 2000, Lai 2010).

The finding that rhinoplasty may not be a contraindication in patients with mild to moderate BDD is a significant one as it indicates the possibility that a substantial number of patients denied cosmetic surgery due to their BDD might benefit from an aesthetic procedure that could reduce their emotional distress. In addition, this finding underlines the necessity for further research on the post-operative outcomes of cosmetic surgery in BDD patients.

CONCLUSION

BDD is a psychiatric condition that is often significantly disabling in which patients are extremely dissatisfied and completely preoccupied with an imagined or minor defect in their physical appearance.

This literature review found that current data indicates that among patients requesting cosmetic treatments 2.9% to 53.6% may have BDD (Castle 2004, Vindigni 2002, respectively). This vast discrepancy in the prevalence rates underlines the need for further research to investigate the prevalence rates of BDD in cosmetic surgery settings. Furthermore, additional study is required to investigate the prevalence rate of BDD among other types of cosmetic surgery beyond rhinoplasty, for example in chin augmentation but also in body procedures as it is currently unknown whether there is a difference in the rate of BDD in patients requesting facial procedures to those requesting body procedures.

Consistent prevalence rates of BDD in cosmetic surgery populations are necessary in order to confirm the validity of current diagnostic criteria but also the usefulness of treatment methods. Carrying out further research on the prevalence of BDD would also increase awareness on this often secretive disorder.

This literature review also highlights that current screening instruments for BDD are limited in their applicability. New screening techniques need to be developed that can be employed in more than one

setting, for example can be used in psychiatry, primary care, and cosmetic surgery.

The effectiveness of cosmetic surgery as a treatment for BDD also warrants further research. As stated above, the current literature on BDD is controversial. Some retrospective studies have contraindicated cosmetic surgery for individuals diagnosed with BDD (Phillips 2001, Crerand 2005). Cosmetic surgeons, however, do not seem convinced with this finding, and indeed only 30% of surgeons support that cosmetic surgery should always be contraindicated in BDD patients (Sarwer 2002). Indeed, more recent research has shown that cosmetic treatment can improve the appearance concerns of individuals with mild to moderate BDD.

Future research should focus on larger-scale and long-term prospective outcome studies which would investigate the post-operative effect of cosmetic surgery on patients with BDD. Studies such as this could help establish the guidelines used when selecting which patients are appropriate for aesthetic surgery. Furthermore, they could also potentially enhance the clinical care for people suffering with this often debilitating disorder.

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