



Official reprint from UpToDate®

[www.uptodate.com](http://www.uptodate.com) © 2023 UpToDate, Inc. and/or its affiliates. All Rights Reserved.

Wolters Kluwer

# Body dysmorphic disorder: Epidemiology and pathogenesis

**AUTHOR:** [Katharine A Phillips, MD](#)**SECTION EDITOR:** [Joel Dimsdale, MD](#)**DEPUTY EDITOR:** [David Solomon, MD](#)

---

All topics are updated as new evidence becomes available and our [peer review process](#) is complete.

Literature review current through: **Oct 2023**.

This topic last updated: **Dec 15, 2021**.

---

## INTRODUCTION

Body dysmorphic disorder (BDD) is characterized by preoccupation with nonexistent or slight defects in physical appearance, such that patients believe that they look abnormal, unattractive, ugly, or deformed, when in reality they look normal. The preoccupation with perceived flaws leads to repetitive behaviors (eg, checking their appearance in mirrors), which are usually difficult to control and are not pleasurable. BDD is common but usually underrecognized, causes clinically significant distress and/or impaired functioning, and is often associated with suicidal ideation and behavior.

Patients with BDD may present to mental health professionals as well as other clinicians, such as dermatologists, plastic surgeons, otolaryngologists, primary care clinicians, pediatricians, gynecologists, and dentists. Most patients seek nonpsychiatric cosmetic treatment (most commonly dermatologic and surgical) for their perceived physical defects; this treatment appears to be ineffective for most patients and can be risky for clinicians to provide. By contrast, pharmacotherapy (selective serotonin reuptake inhibitors or [clomipramine](#)) and/or cognitive-behavioral therapy tailored specifically to BDD are often efficacious.

This topic reviews the epidemiology and pathogenesis of BDD. The clinical features, assessment, diagnosis, differential diagnosis, treatment, and prognosis of BDD are discussed separately.

- (See ["Body dysmorphic disorder: Clinical features"](#).)
  - (See ["Body dysmorphic disorder: Assessment, diagnosis, and differential diagnosis"](#).)
  - (See ["Body dysmorphic disorder: General principles of treatment"](#).)
  - (See ["Body dysmorphic disorder: Choosing treatment and prognosis"](#).)
- 

## EPIDEMIOLOGY

Body dysmorphic disorder (BDD) has been reported in many countries. The point prevalence of BDD in the adult general population is approximately 2 to 3 percent [1-4], and the prevalence in females and males appears to be comparable or slightly higher in females [2-6]. In clinical settings, the point prevalence is generally higher, ranging from about 3 to 40 percent, depending upon the study sample [7-10]. Mean age of onset is approximately 16 to 17 years [11], with onset before age 18 in two-thirds of cases. Onset is usually gradual rather than abrupt [12].

**General population** — The estimated point prevalence of BDD in the general population, based upon community studies from Australia, China, Germany, Italy, Pakistan, Sweden, Turkey, and the United States, is as follows [1,2,4,13,14]:

- Adolescents – 2 to 5 percent
- College/university students – 3 percent
- Adults – 2 to 3 percent

**Clinical settings** — BDD is common in clinical settings; however, it usually goes undiagnosed [7]. In six studies, none of the patients identified as having BDD by researchers had the diagnosis recorded in their clinical records [8-10]. Thus, it is important to screen for BDD in clinical settings. (See ["Body dysmorphic disorder: Assessment, diagnosis, and differential diagnosis"](#), section on 'Screening instruments'.)

**Psychiatric** — The prevalence of BDD in psychiatric settings is as follows:

- **Inpatients** – A meta-analysis pooled four studies in adult psychiatric inpatients (total n = 788), who were diagnosed with anxiety, bipolar, depressive, psychotic, substance use, and other mental disorders. The point prevalence of comorbid BDD was approximately 7 percent [2].
- **Outpatients** – A meta-analysis of three studies in adult psychiatric outpatients (total n = 765) found that the point prevalence of BDD was approximately 6 percent [2]. BDD was often comorbid with other disorders, such as anxiety, depressive, and substance use

disorders. Even higher rates of BDD are found in certain psychiatric subgroups, including patients with anxiety disorders, obsessive-compulsive disorder, atypical major depressive disorder, and eating disorders [1].

**Cosmetic surgery** — A meta-analysis of 11 studies in general cosmetic surgery clinics (total n = 2291 patients) found that the point prevalence of BDD was approximately 13 percent [2]. However, heterogeneity across studies was large. Although females outnumber males in most clinical settings, the prevalence of BDD in general cosmetic surgery settings was higher in males.

- **Rhinoplasty** – A meta-analysis of seven studies in patients seeking rhinoplasty surgery (total n = 1001) found that the point prevalence of BDD was approximately 20 percent [2]. However, heterogeneity across studies was large. Thus, BDD appears more common in rhinoplasty settings than in general cosmetic surgery settings, which is consistent with findings that the nose is one of the most common body areas of concern in patients with BDD.
- **Orthognathic surgery** – A meta-analysis of two studies in patients seeking orthognathic surgery (total n = 259) found that the point prevalence of BDD was approximately 11 percent [2].
- **Orthodontic/cosmetic dentistry** – Based upon multiple reviews, the point prevalence of BDD in orthodontic and cosmetic dentistry patients is approximately 5 to 10 percent [2,15].

**Dermatology** — A meta-analysis of five studies in general dermatology outpatient clinics (total n = 914 patients) estimated that the point prevalence of BDD was 11 percent [2]. However, heterogeneity across studies was large, and one review found that the prevalence of BDD ranged from 7 to 42 percent of the dermatology patients [15].

---

## PATHOGENESIS

Although the pathogenesis of body dysmorphic disorder (BDD) remains largely unknown, our understanding continues to advance. The etiology may involve evolutionary factors, and it likely also involves biologic, psychological, and social factors [16-18]. Studies of the pathogenesis have used a cross-sectional design, making it unclear whether abnormalities (eg, neuroimaging findings) represent etiologic causes, sequelae, neither, or both. In addition, the studies are usually small.

**Heritability/genetics** — Based upon multiple twin studies, the heritability of BDD is moderate [19]:

- A study of monozygotic and dizygotic female twin pairs (total n >5400) found that the relative contribution of genetic factors (heritability) to BDD was 43 percent, and the remaining contribution was attributable to environmental factors [19]. In addition, the risk of developing BDD involved genetic factors that were shared with obsessive-compulsive disorder, as well as other factors that were unique to BDD.
- Another study of monozygotic and dizygotic female twin pairs (total n >3500) examined “dysmorphic concern” (excessive preoccupations with a perceived or slight flaw in physical appearance), which differs from but substantially overlaps with the diagnosis of BDD. The results indicated that dysmorphic concern was a heritable trait, such that 44 percent of the variance in dysmorphic concern was due to genetic factors and 56 percent to nonshared (unique) environmental factors [20]. Also, the association between dysmorphic concern and obsessive-compulsive symptoms appeared to be primarily due to shared genetic factors [21].
- In a registry study of twin individuals (n >15,000), the heritability of clinically significant BDD symptoms in adolescents and young adults was as follows [22]:
  - Age 15 years – 49 percent
  - Age 18 years – 39 percent
  - Age 20 to 28 years – 37 percent

The remaining variance was due to nonshared environmental factors.

One preliminary candidate gene study detected an association between BDD and the GABA-A-gamma-2 (5q31.1-q33.2) receptor gene [23].

**Visual processing** — Enhanced detail-oriented (“local”) visual processing and impaired global (holistic) visual processing has been observed in visuospatial and psychophysical studies of BDD, using tasks such as the Rey-Osterrieth Complex Figure Test, the inverted faces task, and the embedded figures task [17,24].

Functional magnetic resonance imaging studies also suggest that BDD is associated with abnormal visual processing, with a bias for encoding and analyzing details of faces, as well as nonfacial objects, rather than using holistic visual processing strategies (ie, seeing “the big picture”) [25,26]. As an example, one study compared patients with BDD with healthy controls and found that patients had abnormal brain activation patterns, including hyperactivity in the

left orbitofrontal cortex and bilateral head of the caudate as well as hypoactivity in the occipital cortex (a visual processing area) when viewing certain faces [27]. The orbitofrontal and caudate findings overlap with those observed in patients with obsessive compulsive disorder.

Other functional magnetic resonance imaging studies have examined activation and connectivity in BDD and anorexia nervosa, which both involve distorted perception of appearance [12]. One study that compared visual information processing of faces in BDD and in anorexia nervosa found similar abnormal functional connectivity within higher-order systems, but distinct abnormal connectivity patterns within occipito-temporal visual networks [28]. A subsequent study found partially overlapping as well as distinct patterns of connectivity when viewing bodies (rather than faces); in both groups of patients, abnormal activity and connectivity were directly related to symptom severity and perception of others' bodies [29].

**Anatomic abnormalities** — Magnetic resonance imaging has been used to compare brain structure in BDD patients with that in healthy controls, but findings have varied, and the literature is regarded as preliminary [30]. As an example, two structural magnetic resonance imaging studies indicated that total white matter volume was larger in patients with BDD compared with control subjects [31,32], but other studies failed to replicate this finding [33].

Studies of white matter integrity in patients and controls have also yielded inconsistent results [34,35]. One study of neural networks found that white matter network organization was abnormal in BDD [36], whereas another study did not [35]. However, the latter study found correlations between fiber disorganization and poorer BDD-related insight in white matter tracts that facilitate communication between visual and emotion/memory systems as well as interhemispheric communication [35].

**Neurocognitive dysfunction** — Multiple studies suggest that executive function, which involves cognitive processes such as planning, making decisions, and response inhibition, is impaired in BDD [37-39]. As an example, a study that compared patients (n = 14) with controls who had no psychiatric history (n = 14) found that the ability to plan and to manipulate and organize information was inferior in BDD patients [40].

Deficits in executive function may represent frontal lobe dysfunction and help explain why patients with BDD focus on specific details of their body rather than the entirety of their appearance [40]. Findings from neuroimaging studies are consistent with this hypothesis.

**Emotional processing deficits** — Patients with BDD may also have deficits in recognizing emotions conveyed by the facial expressions of other people [39]. One study of patients with BDD (n = 18) and healthy controls (n = 18) found that patients were more likely to misinterpret neutral facial expressions in photographs as contemptuous and angry [41]. A second study

suggested that patients have a bias toward interpreting neutral scenarios as threatening [42]. The results of these studies are consistent with the belief among patients that they are ridiculed and mocked because they look “ugly.”

**Neglect and abuse** — Studies indicate that compared with published norms, patients with BDD report lower than average levels of perceived parental care during childhood, greater teasing by peers, and more maltreatment during childhood (neglect and abuse) [43,44]. As an example, one study found that a history of emotional, physical, and/or sexual abuse was reported by more patients with BDD (n = 50) than patients with obsessive-compulsive disorder (n = 50; 38 versus 14 percent) [45], and another study found that self-reports of early life traumatic events were greater in patients with BDD than healthy controls [46]. However, the accuracy of reports of childhood maltreatment in the studies was not confirmed.

---

## INFORMATION FOR PATIENTS

Many patients can benefit from reading about their illness at websites such as those maintained by the [International OCD Foundation](#) and the author of this topic at [her website](#).

---

## SUMMARY

- Body dysmorphic disorder (BDD) is diagnosed according to DSM-5 criteria ( [table 1](#)). (See "[Body dysmorphic disorder: Assessment, diagnosis, and differential diagnosis](#)", section on 'Diagnosis'.)
- The estimated point prevalence of BDD in different populations is as follows:
  - Adult general population – 2 to 3 percent.
  - Psychiatric patients with other mental disorders (eg, depression) – 6 to 7 percent. The rate is even higher in certain subgroups, such as patients with anxiety disorders, obsessive-compulsive disorder, atypical major depressive disorder, and eating disorders.
  - Cosmetic surgery (including rhinoplasty) patients – 11 to 20 percent.
  - Dermatology patients – 11 percent.

(See '[Epidemiology](#)' above.)

- The pathogenesis of BDD is not known. Neuroimaging and other studies suggest that BDD is associated with abnormal visual processing, with a bias for encoding and analyzing details of faces, as well as nonfacial objects, rather than using holistic visual processing strategies (ie, seeing “the big picture”). Other studies suggest that genetic factors are involved, and perceived neglect, abuse, and teasing may also play a role. (See ['Pathogenesis'](#) above.)

Use of UpToDate is subject to the [Terms of Use](#).

Topic 118989 Version 5.0

→