



Prevalence of body dysmorphic disorder in patients who are candidates and/or are submitted to aesthetic procedures in the specialty of plastic surgery: a systematic review with meta-analysis

Prevalência do transtorno dismórfico corporal em pacientes candidatos e/ou submetidos a procedimentos estéticos na especialidade da cirurgia plástica: uma revisão sistemática com meta-análise

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■ ABSTRACT

This study aimed at showing the prevalence of body dysmorphic disorder (BDD) in patients who are candidates and/or are submitted to aesthetic procedures in the specialty of plastic surgery via a systematic review of the literature and a meta-analysis. To comply with the proposed objective, we analyzed the most relevant studies originally published in any language that were available in the National Library of Medicine (MEDLINE), Cochrane, and SciELO databases. Searches were performed using keywords associated with the theme and inclusion and exclusion criteria. Thus, the final sample of this study was composed of 15 publications, which were submitted to a meta-analysis. It can be confirmed that 12.5% of the patients who were candidates/submitted to aesthetic procedures in the specialty of plastic surgery had BDD. Of these, the majority were women (75.7%) with a mean age of 30 (\pm 10.5) years. Given the high number of patients with BDD attended to in the specialty, it is important that plastic surgeons focus on providing patients with adequate care to identify individuals who potentially have BDD and consequently conduct an interdisciplinary follow-up with the participation of psychologists and psychiatrists.

Keywords: Plastic surgery; Body dysmorphic disorder; Aesthetics; Prevalence.

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■ RESUMO

Este estudo objetivou verificar, por meio de uma revisão sistemática da literatura e da realização de uma meta-análise, a prevalência do transtorno dismórfico corporal em pacientes candidatos e/ou submetidos a procedimentos estéticos na especialidade da Cirurgia Plástica. Para cumprir com o objetivo proposto, foram analisados os mais relevantes estudos publicados originalmente em qualquer idioma, porém, que estivessem indexados às bases de dados *National Library of Medicine* (MEDLINE), Cochrane e Scielo, nas quais as buscas foram realizadas, por meio do uso de descritores associados ao tema e de critérios de inclusão e exclusão. Sendo assim, a amostra final deste estudo foi composta por 15 publicações, as quais foram submetidas a uma meta-análise, podendo-se verificar que 12,5% dos pacientes que são candidatos/submetidos a procedimentos estéticos na especialidade da Cirurgia Plástica possuem transtorno dismórfico corporal. Destes, a maioria é do gênero feminino (75,7%) e possui média de idade de 30 ($\pm 10,5$) anos. Devido ao alto índice de pacientes com transtorno dismórfico corporal atendidos na especialidade, ressalta-se a importância de os cirurgiões plásticos atentarem-se para o adequado atendimento dos pacientes, com vistas à identificação dos indivíduos potencialmente portadores desse transtorno e, conseqüentemente, à solicitação de um acompanhamento interdisciplinar com a participação de psicólogos e psiquiatras.

Descritores: Cirurgia plástica; Transtornos dismórficos corporais; Estética; Prevalência.

INTRODUCTION

Aesthetic procedures have become considerably popular over the last two decades¹. In 2000, more than 1.3 million aesthetic surgeries were performed in the United States alone, showing an increase of 198% in relation to that in 1992². In 2013, 1,452,356 aesthetic surgeries were performed in the United States, placing Brazil, where 1,491,721 surgeries were performed, in first place in the ranking of this type of procedure³.

Owing to the increased demand for aesthetic plastic surgery procedures, there is an increased interest in aspects related to this specialty and its patients. As an example, we can cite studies that seek to characterize the psychiatric disorders that these patients experience⁴⁻⁸, i.e., body dysmorphic disorder (BDD).

In general, individuals who feel that their physical characteristics do not conform to ideal standards of beauty have an increased risk of body dissatisfaction⁹; however, this dissatisfaction is extremely high in patients with BDD¹⁰.

In the current list of psychiatric disorders (fifth edition of the Diagnostic and Statistical Manual of Mental Disorders [DSM-5]¹¹), the only category of diagnosis that

directly addresses concerns regarding body image is BDD. Therefore, knowledge regarding this psychiatric disorder is particularly relevant to specialists in plastic surgery, considering the approach to body dissatisfaction often identified in individuals seeking exclusively aesthetic procedures.

According to the DSM-5, BDD is described as a concern with one or more defects or flaws in physical appearance that are not observable or are perceived subtly by others. In addition, BDD is characterized by repetitive behaviors and results in a clinically significant distress. These behaviors cannot be explained on the basis of normal concerns regarding physical appearance, such as body weight or shape, whether or not they are associated with muscular dysmorphia, and occur at different levels of perception¹¹. In patients with BDD, the perception of mild physical deformities tends to be exaggerated due to underlying psychiatric or psychological problems¹².

Different studies show that in the general population, the prevalence of BDD ranges from 0.7% to 2.4%, affecting mostly women, with no defined mean age¹³⁻¹⁶. However, there is a gap in the literature regarding this value in the population that is a candidate/is submitted to aesthetic procedures in the specialty of plastic surgery.

OBJECTIVE

Considering that the relationship between BDD and the specialty of plastic surgery is still poorly understood and researched, this study aimed at verifying the prevalence of BDD in patients who are candidates and/or are submitted to aesthetic procedures in plastic surgery via a systematic review of the literature and a meta-analysis.

METHODS

Search Strategy

To comply with the proposed objective, we analyzed the most relevant studies published originally in any language until January 2016 (when the search was performed), which were indexed to the *United States National Library of Medicine* (PubMed), *Cochrane Central Register of Controlled Trials* (CENTRAL), and *SciELO* databases, where the searches were performed.

Aiming at selecting quality scientific evidence studies, we sought publications related to meta-analyses and randomized controlled clinical trials (RCTs). The period of public publication was not initially established owing to the lack of knowledge on the number of publications on the subject available in the scientific literature.

The following combinations of keywords in Portuguese were used for the search procedure: “*transtorno dismórfico corporal*,” “*dismorfofobia*,” “*dismorfismo corporal*,” “*cirurgia plástica*,” “*cirurgia estética*,” “*cirurgia cosmética*,” “*candidatos à cirurgia*

estética,” and “*prevalência*.” It is worth mentioning that the same terms were used in English in the international databases: “*body dysmorphic disorder*,” “*dysmorphophobia*,” “*body dysmorphism*,” “*plastic surgery*,” “*aesthetic surgery*,” “*cosmetic surgery*,” “*aesthetic candidates*,” and “*prevalence*.”

To identify the study designs, the terms “*randomized controlled trial*,” “*humans*,” and “*meta-analysis*” were used. Filters were not used in relation to publication dates.

Inclusion and exclusion criteria are applied as shown in Chart 1.

RESULTS

Although we initially searched for RCTs or meta-analyses, no meta-analyses on the subject were found in the databases during the search. Therefore, only RCTs were analyzed in this study.

In addition, it is important to state that no study published in Brazil was found on the topic during the searches. However, although published in an international journal, it was possible to verify the performance of a national survey¹⁰, which is a part of the sample used in this meta-analysis.

In total, 17 publications were found that would initially be used as the basis for the data collection of this study; however, two had to be eliminated after further analysis of their methodologies owing to non-compliance with the adopted inclusion criteria. The first study that was eliminated was that of Javo and Sorlie¹⁷; despite investigating the prevalence of BDD in patients who were candidates for aesthetic procedures, they did so by sending questionnaires by e-mail to the patients,

Chart 1. Inclusion and exclusion criteria and main results.

Inclusion Criteria	
Study Design	<ul style="list-style-type: none"> • RCT • Meta-analysis
Patients	<ul style="list-style-type: none"> • Candidates of/submitted to aesthetic procedures exclusively • With/without BDD
Intervention	<ul style="list-style-type: none"> • Aesthetic procedures • BDD diagnostic
Language	<ul style="list-style-type: none"> • Not defined
Exclusion Criteria	
Study Design	<ul style="list-style-type: none"> • Poorly explained/incomprehensible methodology • Diagnosis performed in a non-standardized/recommended way
Patients	<ul style="list-style-type: none"> • Candidates of/submitted to functional surgery • Not related to the specialization of plastic surgery
Type of Publication	<ul style="list-style-type: none"> • Only abstract
Main results	<ul style="list-style-type: none"> • Prevalence of BDD in patients from the specialty of plastic surgery

RCT: Randomized controlled clinical trial; BDD: Body dysmorphic disorder.

which invalidated the diagnostic method used by the authors for this study. The second excluded study was that of Metcalfe et al.¹⁸, which analyzed 188 patients (32 of whom had BDD [17.02%]), but only analyzed women who underwent breast reconstruction after mastectomy

due to breast cancer; the objective of this research was related to purely aesthetic procedures.

Thus, the final sample of this study was composed of 15 publications (Chart 2).

Chart 2. Publications included in the meta-analysis.

Author	Year	Title	Language	Objective
Ishigooka et al. ⁶	1998	Demographic features of patients seeking cosmetic surgery	English	To describe the demographic characteristics of a large population of patients who seek cosmetic surgery from a psychiatric point of view.
Sarwer et al. ¹⁹	1998	Body image dissatisfaction and body dysmorphic disorder in 100 cosmetic surgery patients	English	To investigate dissatisfaction with body image and BDD in potential plastic surgery patients.
Altamura et al. ²⁰	2001	Clinical and subclinical body dysmorphic disorder	English	To define the main demographic and clinical characteristics of BDD in individuals who sought aesthetic plastic surgery services.
Vargel & Ulusahin ⁷	2001	Psychopathology and body image in cosmetic surgery patients	English	To investigate the presence of psychiatric symptoms and to evaluate perceptual, cognitive, and behavioral aspects related to body image in plastic surgery patients.
Vindigni et al. ²¹	2002	The importance of recognizing body dysmorphic disorder in cosmetic surgery patients: do our patients need a preoperative psychiatric evaluation?	English	To assist in the recognition of BDD in patients who are candidates for aesthetic procedures, besides analyzing the psychopathological comorbidities of these patients.
Aouizerate et al. ²²	2003	Body dysmorphic disorder in a sample of cosmetic surgery applicants	English	To prepare the first European report on the prevalence and clinical and functional characteristics of patients with BDD in the field of plastic surgery.
Crerand ²³	2003	Rate of body dysmorphic disorder among patients seeking facial cosmetic procedures	English	To stipulate the prevalence of BDD among patients seeking cosmetic procedures.
Bellino et al. ⁴	2006	Dysmorphic concern symptoms and personality disorders: A clinical investigation in patients seeking cosmetic surgery	English	To investigate the relationship between personality disorders and dysmorphic symptoms in patients who are candidates for plastic surgery.
Vulink et al. ²⁴	2006	Stoornis in de lichaamsbeleving bij 3-8% van de patiënten op de poliklinieken Dermatologie en Plastische Chirurgie	Dutch	To determine, comparatively, the prevalence of BDD in a university medical center in the specialties of dermatology and plastic surgery.
Hayashi et al. ⁵	2007	Importance of a psychiatric approach in Cosmetic Surgery	English	To evaluate the importance of a psychiatric approach in plastic surgery patients.
Lai et al. ²⁵	2010	Body dysmorphic disorder in patients with cosmetic surgery	English	To calculate the number of patients with BDD among plastic surgery patients pre-and postoperatively.
Alavi et al. ²⁶	2011	Body dysmorphic disorder and other psychiatric morbidity in aesthetic rhinoplasty candidates	English	To investigate the prevalence of BDD among patients seeking cosmetic surgery.
Picavet et al. ²⁷	2011	High prevalence of body dysmorphic disorder symptoms in patients seeking rhinoplasty	English	To determine the prevalence of BDD and its symptoms in patients seeking rhinoplasty, in addition to assessing the clinical profile of these patients
Fatholoolomi et al. ²⁸	2013	Body dysmorphic disorder in aesthetic rhinoplasty candidates	English	To determine the prevalence of BDD among patients seeking rhinoplasty procedures
Felix et al. ¹⁰	2014	Patients with mild to moderate body dysmorphic disorder may benefit from rhinoplasty	English	To investigate prospectively whether patients with mild and moderate BDD are suitable for rhinoplasty and to assess the severity of BDD and patient satisfaction with surgical outcome 1 year after the intervention

BDD: Body dysmorphic disorder.

It should be noted that of those studies that made comparisons between the prevalence of BDD in patients of plastic surgery and dermatology or other specialties, only the data related to the patients who were candidates and/or were submitted to procedures of plastic surgery were collected to comply with the objective proposed in this research.

To identify the prevalence of BDD, the data regarding the number of patients included in the samples and the number of patients diagnosed with BDD were collected. In addition, we sought data regarding sex and age group, as well as the number of aesthetic procedures that the patients affected by BDD in the field of plastic surgery underwent to draw their profiles accordingly.

However, it can be reported that the data collected from the study by Felix et al.¹⁰ refer to those presented in the methodology used by the authors, considering that at a certain point, they excluded patients with severe BDD, who were included in the analysis performed in this study.

Table 1 shows the data obtained in the publications included in this meta-analysis.

As previously mentioned, this study aimed at verifying the prevalence and establishing a profile of patients with BDD in the field of plastic surgery; however, it was not possible to estimate the number of aesthetic procedures to which the patients were submitted owing to the fact that the publications did not provide these data. In addition, two studies^{5,25} did not present the standard deviation despite presenting the mean age of the patients

with BDD, which led to the elimination of their data in the quantification of the patients' age group (as shown in Table 1).

Based on the meta-analysis performed in the 15 publications that met the inclusion and exclusion criteria established in this study, it was verified that 12.5% of the patients who were candidates and/or submitted to aesthetic procedures in the specialty of plastic surgery had BDD. Of these, the majority were women (75.7%) with a mean age of 30 (\pm 10.5) years.

DISCUSSION

After conducting a systematic review of the literature, it was possible to observe the lack of research conducted worldwide on the involvement of BDD in patients who were candidates for/submitted to aesthetic procedures in the specialty of plastic surgery. More specifically, it should be noted that there is no national publication on the subject, and there is only one study in Brazil that measured the prevalence of BDD in these patients¹⁰.

In the literature, a study verified the prevalence of BDD in patients who were candidates and/or were submitted to aesthetic procedures, comparing those associated with the specialty of plastic surgery with those who sought the specialty of dermatology; such a study reported that the prevalence of BDD is higher in dermatology patients (8.5%) than in plastic surgery

Table 1. Data obtained in the publications used in this meta-analysis.

STUDY	SAMPLE ¹		BDD		Sex			MEAN AGE
	n	%	n	%	Male		Female	
					n	%	n	
Ishigooka et al. ⁶	415	14.94%	62	69%	43	31%	19	35 \pm 13.7
Sarwer et al. ¹⁹	100	7.00%	7	0%	0	100%	7	44.06 \pm 14.56
Altamura et al. ²⁰	478	6.28%	30	13%	4	87%	26	25.8 \pm 9.0
Vargel & Ulusahin ⁷	40	10.00%	4	50%	2	50%	2	19, 25, 26, and 34
Vindigni et al. ²¹	56	53.57%	30	17%	5	83%	25	36 \pm 13
Aouizerate et al. ²²	132	9.09%	12	17%	2	83%	10	35 \pm 10.8
Crerand ²³	91	7.69%	7	29%	2	71%	5	34.6 \pm 15.99
Bellino et al. ⁴	66	16.67%	11	27%	3	73%	8	23.45 \pm 14.03
Vulink et al. ²⁴	475	3.16%	15	13%	2	87%	13	34 \pm 14.7
Hayashi et al. ⁵	140	7.86%	11	27%	3	73%	8	38.4*
Lai et al. ²⁵	817	7.71%	63	13%	8	87%	55	47*
Alavi et al. ²⁶	306	24.51%	75	19%	14	81%	61	23 \pm 4.9
Picavet et al. ²⁷	226	2.21%	5	40%	2	60%	3	33 \pm 16
Fatholoomi et al. ²⁸	130	31.54%	41	20%	8	80%	33	25.9 \pm 6.05
Felix et al. ¹⁰	151	52.98%	80	15%	12	85%	68	32 \pm 10

* Data removed from the meta-analysis. BDD: Body dysmorphic disorder.

patients (3.16%)²⁴. However, the percentage of 3.16% found by the authors is considerably lower than the 12.5% found in this study when the meta-analysis was composed of 15 studies.

It is possible to state that the prevalence of 12.5% of the patients affected by BDD who were submitted to aesthetic procedures in plastic surgery can be considered quite high when compared with the findings of studies that analyzed the prevalence in the general population (between 0.7% and 2.4%)¹³⁻¹⁶. Even when analyzing the data of the 15 publications that were used in this meta-analysis separately, none presented a percentage within the margin found for the general population. The study that found the lowest percentage of BDD in the plastic surgery patients was that of Vulink et al.²⁴, with a value of 3.16%, while the highest percentage was reported in the study by Vindigni et al.²¹ (53.57%).

It is very important for professionals to be aware of the possibility that plastic surgery patients may have BDD, not only owing to the high prevalence found in this study and the comparison of this rate with that of the general population, but also because of the findings of Biraben-Gotzamanis et al.⁸, which showed that six of the seven patients with BDD who underwent aesthetic plastic surgery continued to present the disorder, even 5 years after the procedure. Although the patients reported satisfaction with the results of the surgeries, their performance was not effective in reducing the symptoms of BDD, thus requiring psychological and psychiatric treatment.

Therefore, it is believed that the correct diagnosis and treatment of BDD can improve patients' self-esteem and quality of life more effectively than aesthetic procedures of plastic surgery that were not efficient based on the survey findings by Biraben-Gotzamanis et al.⁸. A multidisciplinary follow-up of patients who are candidates for aesthetic procedures of plastic surgery is necessary to assist them better and obtain excellent results both for the patients and professionals involved.

In addition, we emphasize that further research studies with different methodologies are required to explain better the prevalence of BDD in plastic surgery patients, mainly in Brazil, where the subject is still poorly studied.

CONCLUSION

Based on the meta-analysis, it was concluded that 12.5% of the patients who were candidates and/or submitted to exclusively aesthetic procedures of plastic surgery had BDD, with a dominance of women with a mean age of 30 years.

Considering the high number of patients with BDD attended to in the specialty, it is important that plastic

surgeons focus on providing patients with adequate care to identify individuals who potentially have BDD and consequently conduct an interdisciplinary follow-up with the participation of psychologists and psychiatrists.

COLLABORATIONS

- RVER** Analysis and/or interpretation of data; final approval of the manuscript; conception and design of the study; completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.
- GBS** Final approval of the manuscript; writing the manuscript or critical review of its contents.
- FVA** Final approval of the manuscript.

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