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Breast

Prevalence of Depressive Symptoms in Patients Requesting Cosmetic Breast Surgery in Midwestern Brazil

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Background: The prevalence of depressive symptoms (DS) before cosmetic breast surgery was analyzed in the public (PbI) and private (PrI) institutions, comparing types of surgery and patients' sociodemographic characteristics.
Methods: A cross-sectional, observational, analytical study to evaluate the prevalence of DS in 185 patients of 18–71 years of age requesting 4 different cosmetic breast surgeries (with and without implants) at public and private institutions. Patients were assessed using the Beck Depression Inventory and analyzed for statistical comparison.
Results: The most common surgical procedures were reduction mammoplasty in the PbI and augmentation mammoplasty in the PrI. The prevalence of the positive risk for depressive disorder (≥15 points in Beck Depression Inventory) in the PbI was 25.8%, whereas in the PrI: 11.4% ($P = 0.012$). Moderate and severe DS were, respectively, 120% and 242% higher in the PbI than in the PrI. No patients requesting mastopexy without implants had DS. The highest prevalence (51.4%) of DS occurred in patients with breast implants indications (augmentation mammoplasty and mastopexy with implants). The presence ($P = 0.12$) or absence ($P = 0.33$) of implant did not demonstrate a higher risk of DS. Among all patients, 7% answered positively to the statements on suicide ideation, with predominance within the group of implants (54.5%). There were significant differences between the PbI and PrI.
Conclusions: The prevalence of DS was high (18.9%), with the risk being 2.3 times greater in the PbI. Patients from PbI and PrI showed significant different profiles. Patients for breast implants showed a higher score for suicide ideation. *(Plast Reconstr Surg Glob Open 2018;6:e1899; doi: 10.1097/GOX.0000000000001899; Published online 2 October 2018.)*

The popularity of cosmetic surgery has grown dramatically over the past 10 years.[1] According to the International Society of Aesthetic Plastic Surgery (ISAPS), over 20 million cosmetic procedures (surgical and nonsurgical) were performed in 2014.[2] In the vast majority of cases, cosmetic surgery confers benefits that include individual/social well-being, self-confidence, and favorable psychological consequences.[3]

Nevertheless, psychological disorders are more common in patients seeking cosmetic surgery compared with the general population,[4,5] with depression being the most common disorder encountered.[6–8] Some patients request surgery under the illusion that they will achieve their idealized body image, thus reducing their anguish and feelings of constant dissatisfaction.[9]

The auxiliary use of scales and questionnaires such as the Beck Depression Inventory (BDI-II) has proven effective for screening and recognizing patients with depressive symptoms (DS).[10] This tool serves to filter and select patients, referring them, as appropriate, to a psychiatrist for evaluation and counseling, and then deciding whether or not the patient should be operated on and, if appropriate, the optimal moment at which to perform the surgery.[11]

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The objective of this study was to identify the prevalence of DS before surgery by applying the BDI-II to patients requesting different cosmetic breast procedures, to compare the groups of patients with each other according to the type of surgery to be scheduled, and to compare the 2 different institutions evaluated, one operating in the public sector and the other in the private sector.

PATIENTS AND METHODS

This was a cross-sectional, observational, analytical study on the prevalence of indicators of depressive disorder in patients seeking cosmetic breast surgery in 2 different institutions, 1 public (PbI) and 1 private (PrI). The study received the approval of the internal review board of the University of Goiás Teaching Hospital under reference number 119/2011. The patients signed an informed consent form in compliance with the requirements of resolution 466/12 of the National Health Council (Brazil, 2012).

Data were collected at 1 public institution (Federal University of Goiás' Teaching Hospital) and in 1 private clinic (VIVRE Institute of Plastic Surgery and Dermatology), during initial consultations conducted between September 2011 and January 2013. A total of 185 patients were included. Patients completed the BDI-II,[12] previously translated into Portuguese, adapted, and validated for use in Brazil.[13,14]

The inclusion criteria consisted of 18- to 71-year-old women routinely consulting at the plastic surgery outpatient department of the public institution and at the private clinic, who agreed to participate in the study and signed the informed consent form. Based on surgeon's recommendation, the patients were requesting the following cosmetic breast procedures: (1) augmentation mammoplasty (consisting of the simple insertion of breast implants for hypomastia); (2) mastopexy with implants (for breast ptosis and hypomastia); (3) mastopexy without implants (to correct breast ptosis); and (4) reduction mammoplasty (for breast hypertrophy/gigantomastia). The exclusion criteria consisted of patients with difficulty in completing the questionnaire, those who were already participating in a research study, and those who declined the invitation to participate.

The BDI-II is a self-administered scale consisting of 21 sets of statements, each containing 4 items. Each item describes symptoms and attitudes with a different degree of intensity. Scores vary from 0 to 3, with higher scores suggesting greater severity of DS (Table 1). The final score corresponds to the sum of all answers. Answers refer to how the individual has felt "this week, including today" and could be affected by various factors.[10,12] The investigator, a nursing technician, or a resident in plastic surgery, all previously trained for the purpose, provided assistance as required during completion of the BDI-II at the patient's initial consultation.

The cut-off points established for the BDI-II score may vary in accordance with the examiner's objective.[13–15] Within the context of this sample, a cut-off point of 15 positive answers was established because this defines the boundary between mild and moderate DS. This definition was believed to result in good sensitivity and fewer false negatives.

The variables analyzed consisted of age at entry to the study, marital status, education, positive risk for depressive disorder (DDR+ = ≥15 positive responses).

Statistical Analysis

An Excel (2010) database was constructed. The BDI-II score was analyzed and medians were calculated. Psychometric properties of the BDI-II were analyzed with application of internal consistency reliability analysis (Cronbach's alpha) test and discriminant analysis with defined cut-off point of 15 points. The Poisson regression, chi-square test, Kruskal–Wallis test, Pearson's linear (r) correlation, and the Mann–Whitney test were used too. *P* values < 0.05 were considered significant. The Statistical Package for the Social Sciences (SPSS) for Windows 10 and the BioEstat program, version 3.0, were used throughout the statistical analysis.

RESULTS

Of the 185 patients, 97 (52.4%) consulted at the public institution and 88 (47.6%) at the private clinic. The most common procedure requested in the PbI was reduction mammoplasty (39.2%), whereas augmentation mammoplasty was more common in the PrI (40.9%). There was no significant difference between the groups with respect to the distribution of the 4 types of surgery ($P = 0.38$). A significant difference was found in the distribution of the different types of surgery within each institution: public ($P < 0.001$) and private ($P = 0.001$) according to the Kruskal–Wallis test (Fig. 1).

Pearson's linear correlation showed a strong ($r = 0.90$), significant ($P < 0.0001$) association in the distribution of the individual BDI-II scores between the 2 institutions (Fig. 2). There was a significant difference ($P = 0.03$) in the distribution of the individual BDI-II scores as a function of the location at which surgery was performed (Fig. 3).

Comparing both institutions, the sociodemographic characteristics (Table 2) were significantly different with respect to age ($P = 0.001$), skin color ($P < 0.001$), marital status ($P = 0.029$), education level ($P = 0.023$), and income ($P = 0.023$). The overall BDI-II score was similar between both institutions ($P = 0.60$) (Table 3). A significant difference was found ($P = 0.01$) in the frequency distribution of BDI-II scores ≥15 between the 2 institutions, with the patients in the public having a 2.3 times greater relative risk (RR) than the patients in the private institution (Table 4). The variables associated with the likelihood of risk for a BDI-II score ≥15 (Positive Risk for Depressive Disorder: DDR+) was public institution (RR, 2.3; 95% CI, 1.16–4.45; $P < 0.001$), education level less than 8 years (RR, 2.9; 95% CI, 1.50–5.50; $P < 0.001$), and a mensal income ≤5 minimal salaries (RR, 2.3; 95% CI, 1.00–5.53; $P = 0.042$) (Table 5).

An analysis of the risk for depressive disorder (negative or positive) showed no significant difference between the 2 institutions, either for a positive ($P = 0.44$) or negative risk ($P = 0.20$) (Fig. 4). No significant difference was found between the risk of a depressive disorder and the type of surgery requested or between those women who received ($P = 0.12$) or did not receive ($P = 0.33$) breast implants at either of the 2 institutions (Table 6). Table 7 shows the number of positive responses on item number 9

Table 1. Beck Depression Inventory IIBeck Depression Inventory (Beck et al., 1961), revised version (Beck et al., 1979 and 1996).

Name: _____ Date: _____

Instructions: This questionnaire consists of 21 sets of statements. After carefully reading all the sets, circle the number (0, 1, 2, or 3) beside the statement in each set that best describes how you have felt in the previous week, including today. If several statements in the set seem to apply equally well, circle the highest number for that set. Take care to read all the items in each set before making your choice.

1	0	I do not feel sad.	8	0	I don't feel I am any worse than anybody else.
	1	I feel sad.		1	I am critical of myself for my weaknesses or mistakes.
	2	I am sad all the time and I can't snap out of it.		2	I blame myself all the time for my faults.
	3	I am so sad and unhappy that I can't stand it.		3	I blame myself for everything bad that happens.
2	0	I am not particularly discouraged about the future.	9	0	I don't have any thoughts of killing myself.
	1	I feel discouraged about the future.		1	I have thoughts of killing myself, but I would not carry them out.
	2	I feel I have nothing to look forward to.		2	I would like to kill myself.
	3	I feel the future is hopeless and that things cannot improve.		3	I would kill myself if I had the chance.
3	0	I do not feel like a failure.	10	0	I don't cry any more than usual.
	1	I feel I have failed more than the average person.		1	I cry more now than I used to.
	2	As I look back on my life, all I can see is a lot of failures.		2	I cry all the time now.
	3	I feel I am a complete failure as a person.		3	I used to be able to cry, but now I can't cry even though I want to.
4	0	I get as much satisfaction out of things as I used to.	11	0	I am no more irritated by things than I ever was.
	1	I don't enjoy things the way I used to.		1	I am slightly more irritated now than usual.
	2	I don't get real satisfaction out of anything anymore.		2	I am quite annoyed or irritated a good deal of the time.
	3	I am dissatisfied or bored with everything.		3	I feel irritated all the time.
5	0	I don't feel particularly guilty.	12	0	I have not lost interest in other people.
	1	I feel guilty a good part of the time.		1	I am less interested in other people than I used to be.
	2	I feel guilty most of the time.		2	I have lost most of my interest in other people.
	3	I feel guilty all of the time.		3	I have lost all my interest in other people.
6	0	I don't feel I am being punished.	13	0	I make decisions about as well as I ever could.
	1	I feel I may be punished.		1	I put off making decisions more than I used to
	2	I expect to be punished.		2	I have greater difficulty in making decisions more than I used to.
	3	I feel I am being punished.		3	I can't make decisions at all anymore.
7	0	I don't feel disappointed in myself.	18	0	My appetite is no worse than usual.
	1	I am disappointed in myself.		1	My appetite is not as good as it used to be.
	2	I am disgusted with myself.		2	My appetite is much worse now.
	3	I hate myself.		3	I have no appetite at all anymore.
14	0	I don't feel that I look any worse than I used to.	19	0	I haven't lost much weight, if any, lately.
	1	I am worried that I am looking old or unattractive.		1	I have lost more than five pounds.
	2	I feel there are permanent changes in my appearance that make me look unattractive.		2	I have lost more than ten pounds.
	3	I believe I look ugly.		3	I have lost more than fifteen pounds.
15	0	I can work about as well as before.			I am trying deliberately to lose weight, eating less: Yes___No___
	1	It takes an extra effort to get started doing something.	20	0	I am no more worried about my health than usual.
	2	I have to push myself very hard to do anything.		1	I am worried about physical problems like aches, pains, upset stomach or constipation.
	3	I can't do any work at all.		2	I am very worried about physical problems, and it's hard to think of much else.
16	0	I can sleep as well as usual.		3	I am so worried about my physical problems that I cannot think of anything else.
	1	I don't sleep as well as I used to.	21	0	I have not noticed any recent change in my interest in sex.
	2	I wake up 1–2 hours earlier than usual and find it hard to get back to sleep.		1	I am less interested in sex than I used to be.
	3	I wake up several hours earlier than I used to and cannot get back to sleep.		2	I have almost no interest in sex.
17	0	I don't get more tired than usual.		3	I have lost interest in sex completely.
	1	I get tired more easily than I used to.			
	2	I get tired from doing almost anything.			
	3	I am too tired to do anything.			

Subtotal of Page 1
Subtotal of Page 2
Total

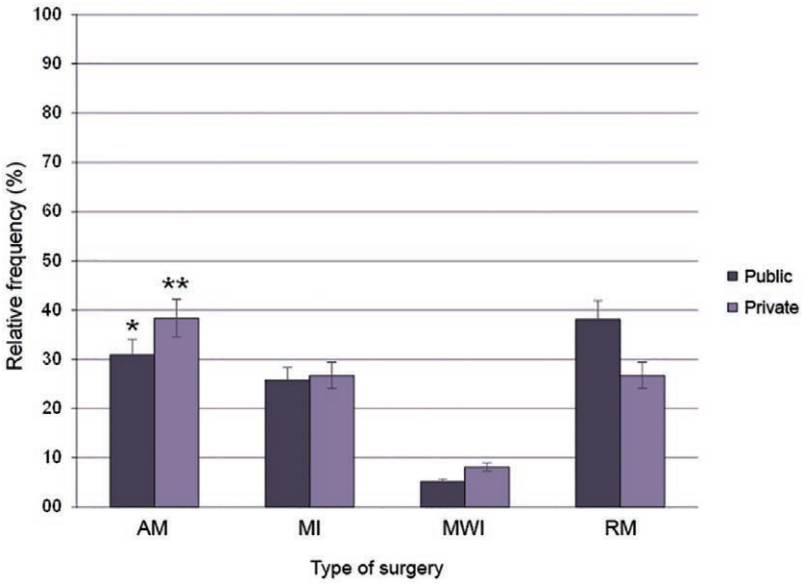

Fig. 1. Distribution of patients requesting mammoplasty or mastopexy according to the type of surgery, Goiânia, Goiás, 2013 (P = 0.38). AM: Augmentation Mammoplasty; MI: Mastopexy with Implants; MWI: Mastopexy Without Implants; RM: Reduction Mammoplasty. *Significant difference between types of surgery in the public Institution (P<0.001). **Significant difference between types of surgery in the private Institution (P=0.001).

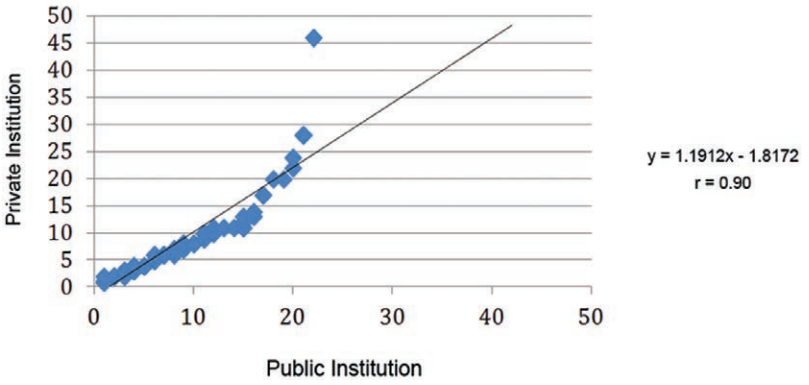

Fig. 2. Graph showing the dispersion of the individual BDI-II scores according to the clinic at which the patient consulted for breast surgery with and without breast implants, Goiânia, Goiás, 2013.

and that deals explicitly with suicidal ideation. Question 2 was answered positively 34 times (18.4%) and question 9 was answered positively 13 times, meaning 7.0% of all patients.

DISCUSSION

Cosmetic plastic surgery is an essential component of plastic surgery and has grown to be extremely popular in several countries as a result of the improvements offered by the procedures in various realms.[16,17]

Depression (or depressive disorder) can be considered one of the major challenges in medicine in view of their high and steadily increasing prevalence, their chronicity, and their implications for populations worldwide.[18,19] Depression currently affects over 350 million individuals around the world and is the second cause of disease in terms of disability-adjusted life years in the 15–44 year age group for both sexes.[20] It is estimated that in 2020, depressive disorders will be the principal cause of disability in both sexes in any age group in developing countries and the second most common cause in developed countries, followed by ischemic heart disease. By 2030, depression is projected to be the most common disease worldwide, in any age and sex.[18–20]

Various studies have shown that the prevalence of DD is greater in cosmetic surgery patients than in the general population.[1,3,5–9,18–22] In some patients, the DD develops in response to a genuine dissatisfaction with their body image, and such individuals may benefit from surgery.[23–30] Nevertheless, in some patients, the DD is the result of some personal dissatisfaction, sadness, or emptiness. In these cases, the frustrated expectation that the surgery would solve their problems and make them feel better about themselves may be catastrophic, in extreme cases resulting even in suicide. The suicide rate in individuals with depression is 30-fold that of the general population.[31–34]

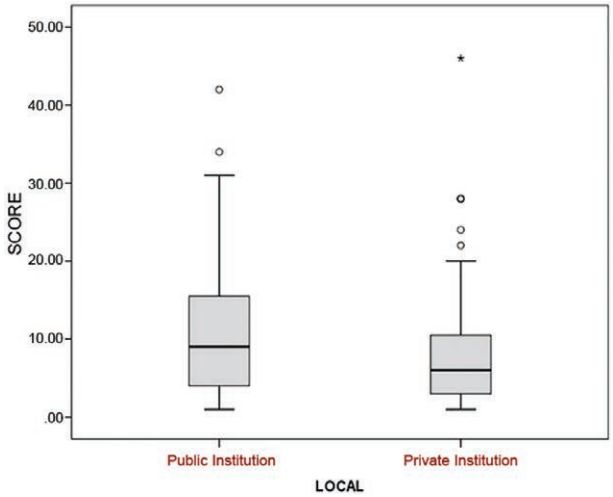

Fig. 3. Distribution of patients' individual scores according to the clinic at which they consulted, Goiânia, Goiás, 2013. * outlier.

An exponential increase has been seen in the number of patients with this profile in plastic surgeons' offices. The key to a successful cosmetic surgery procedure lies in the selection of the patients.[9,11,16,17] In view of the widespread use of the BDI-II in research, and the practicality, good acceptability, and accuracy of the instrument, it was chosen in this study to screen patients before surgery for possible indicators of DD.[7,8,26,29,30,35]

Although the sociodemographic data of the patients at the 2 institutions were heterogeneous, the distribution of the 4 types of cosmetic surgery was homogenous. There were differences, however, in the distribution of the BDI-II scores within both, with the pattern at the private clinic being more homogeneous.

Although outliers may lead to errors and generate misleading results,[36] a patient with a high BDI-II score (46 points) and positive responses to the statements on suicidal ideation was maintained in the analysis, because this is exactly the profile of patient that professionals seek to identify before surgery. They represent potential risks of postoperative dissatisfaction and of aggression against the surgeon, leading in numerous cases to legal suits.[37–40] Extreme cases have been reported in which patients with psychosomatic disorders have threatened their doctors[40,41] and indeed of doctors having been killed by patients.[39–41]

The possible association between suicide and breast implants has led to a number of investigations into the alarming suicide rates in this population for whom the relative risk of suicide is up to 4 times greater than that of the general population.[42–48] Some authors[17,49–51] attribute it, to the demographic and lifestyle traits of this population that could potentially alter their risk for suicide. Although this study was not conducted with this specific objective, the BDI-II statements on the suicide ideation of were answered positively alarmingly by 7% of the women evaluated, with a greater prevalence in patients with an indication for breast implants (augmentation mammoplasty and mastopexy with implants).

There were statistically significant differences between the 2 institutions for all the sociodemographic variables. The profile of the patients consulting at the public institution was of predominantly older, non-white, with no steady partner, 9–12 years of schooling, and income between 1 and 5 minimum salaries/mo. In the private clinic, the pa-

Table 2. Sociodemographic Data of Patients Requesting Cosmetic Breast Surgery, Goiânia, Goiás, 2013

Variable	Public Institution, n (%)	Private Clinic, n (%)	*P*
Age (y)			
Mean y (SD)	36.6 (24.9–49.1)	33.2 (20.7–45.7)	**0.034**
<20 y	05 (5.2)	06 (6.8)	0.648
>20–40 y	55 (56.7)	56 (63.2)	0.868
>40–60 y	33 (34.0)	24 (27.3)	0.470
>60 y	04 (04.1)	02 (02.3)	0.462
Skin color/race			
White	39 (40.2)	66 (75.0)	<0.001
Black	08 (08.3)	03 (03.4)	<0.001
Others (yellow/ brown/mulatto)	50 (51.5)	19 (21.6)	<0.001
Marital status			
Single	37 (38.1)	44 (50.0)	0.108
Married	33 (34.0)	35 (39.8)	0.732
Cohabiting	09 (09.3)	02 (02.3)	**0.029**
Widowed	03 (03.1)	01 (01.1)	0.310
Divorced	15 (15.5)	06 (06.8)	**0.039**
Education level (y of schooling)			
≤8	14 (14.4)	4 (4.5)	0.023
9–12	43 (44.4)	19 (21.6)	0.514
>13	40 (41.2)	65 (73.9)	0.002
Income: number of minimum salaries (per mo)			
<1.0	08 (08.3)	01 (1.1)	0.002
1.0–5	69 (71.1)	10 (11.4)	0.970
>5–10	10 (10.3)	19 (21.6)	0.006
>10	04 (04.1)	32 (36.4)	<0.001
No register	06 (06.2)	26 (29.5)	<0.001

Table 3. BDI-II Score Distribution in Patients Requesting Cosmetic Breast Surgery, Goiânia, Goiás, 2013

Score	Risk of DD	Public Institution, n (%)	Private Clinic, n (%)	Total, n (%)	*P**
1–9	Minimal	43 (44.3)	50 (56.8)	93(50.3)	0.615
10–14	Slight	15 (15.5)	15 (17.0)	30 (16.2)	0.893
15–29	Moderate	21 (21.6)	09 (10.2)	30 (16.2)	0.175
30–63	Severe	04 (04.1)	01 (01.1)	05 (02.7)	0.298
Subtotal		83 (85.6)	75 (85.2)	158 (86.9)	—
Zero	No depressive symptoms	14 (14.4)	13 (14.8)	27 (14.6)	0.947
Total		97	88	185	—

*Kruskal–Wallis test.
DD, depressive disorder.

Table 4. Distribution of Patients Requesting Cosmetic Breast Surgery at the 2 Institutions as a Function of Their BDI-II Score, Based on a Cut-off Limit of 15 as Being Indicative of the Presence of a Depressive Disorder, Goiânia, Goiás, 2013

BDI-II Score	Public Institution, n (%)	Private Clinic, n (%)	RR	95% CI	*P*
DDR+ (≥15)	25 (25.8)	10 (11.4)	2.3	1.16–4.45	0.012
DDR– (<15)	72 (74.2)	78 (88.6)	—	—	—
Total	97 (100.0)	88 (100.0)	—	—	—

RR, Relative risk; 95% CI, 95% confidence interval; DDR+, Positive Risk for Depressive Disorder; DDR–, Negative Risk for Depressive Disorder.

tients were younger, predominantly white, with a steady partner, >13 years of schooling, and an income >10 minimum salaries/mo.

Breiting et al.,[52] however, found no significant difference in the sociodemographic data of patients consulting at a private and a public institution. Our data are similar to the sociodemographic profiles described in some studies[4,6,53] but diverge from others.[4,6,54,55] This may be due to differences in evaluation moments, study populations, or socioeconomic and cultural conditions. In Brazil, the aforementioned data are similar to those published by Beraldo-Cardoso.[30]

Poorer education levels may offer fewer opportunities for professional growth, resulting in lower income.[56,57] Patients with less education and lower income are more likely to seek public institutions where they will not have to pay for the surgical procedure. In agreement with other reports in the literature, the frequency of patients with a university education in this study was lower in the public sector and higher in the private, whereas income was also significantly lower in the public sector ($P < 0.001$).

The finding that 86.9% of the patients requesting cosmetic surgery had some possible sign of DD at their presurgical evaluation is concerning, but it is in agreement with other studies.[1,4,6–9,17,20–22,26,27,30,52,55] The DDR+ was much higher in the patients consulting at the public hospital (25.8%) than at the private clinic (11.4%), with a relative risk of 2.3. The prevalence rates of moderate and severe DS were, respectively, 120% and 242% higher in the patients consulting at the public institution, than the clientele at the private clinic.

With the objective of evaluating the factors involved in the greater number of positive responses in the BDI-II questionnaire at the public institution, the variables age, skin color/race, marital status, type of surgery, education level, and income were dichotomized and compared with DDR+ at each institution. The variable found to be statistically significant was institution, education, and income. Women with low education level and incoming were 2.9 and 2.3 times, respectively, more likely to have a DD. Less schooling and incoming suggest the possible influence of this factor as a predictor of DS. Nevertheless, this cannot be stated categorically because stratification resulted in an insufficient number of patients and data on income were partial, with no information available on the number of individuals in the household, thus rendering calculation of the per capita income impossible. Furthermore, some of the patients (29.5% of those in the private clinic and 6.2% of those in the public institution) failed to provide any answer to the question on income.

Individuals who live alone are up to 80% more likely to suffer from depression,[4,6,16–21,58] whereas those who live with another person are more tranquil, more self-assured, and more self-confident, hence less likely to suffer from

Table 5. Sociodemographic and Clinical Data of the Patients Requesting Mammoplasty or Mastopexy Who Scored 15 or More in the BDI-II, According to the Clinic at Which They Consulted, Goiânia, Goiás, 2013

	Score < 15, n (%)	Score ≥ 15, n (%)	RR (95% CI)	*P*
Institution			2.3 (1.16–4.45)	**0.015**
Public	72 (48.0)	25 (71.4)	—	—
Private	78 (52.0)	10 (28.6)	—	—
Age (y)			1.8 (1.00–3.24)	0.069
≤40	107 (71.3)	19 (54.3)	—	—
>40	43 (28.7)	16 (45.7)	—	—
Skin color/race			0.8 (0.45–1.48)	0.571
White	87 (58.0)	18 (51.4)	—	—
Non-white	63 (42.0)	17 (48.6)	—	—
Marital status			1.1 (0.62–2.05)	0.708
With steady partner*	63 (42.0)	16 (45.7)	—	—
Without steady partner†	87 (58.0)	19 (54.3)	—	—
Type of surgery			1.4 (0.78–2.57)	0.257
With breast implant‡	93 (62.0)	18 (51.4)	—	—
Without breast implant§	57 (38.0)	17 (48.6)	—	—
Education level (y)			2.9 (1.50–5.50)	**0.001**
≤8	56 (37.3)	24 (68.6)	—	—
>8	94 (62.7)	11 (31.4)	—	—
Mensal income¶			2.3 (1.00–5.53)	**0.042**
<5 MS	69 (53.9)	19 (76.0)	—	—
≥5 MS	59 (46.1)	06 (24.0)	—	—

MS, minimal salaries; *P*, Qui-square test.
*With steady partner: married and cohabiting.
†Without steady partner: singles, widowed, and divorced.
‡With breast implant: augmentation mammoplasty and mastopexy with implant.
§Without breast implant: mastopexy with implant and breast reduction.
¶Mensal income in MS in Brazil (source: IBGE), between 2011 and 2013.

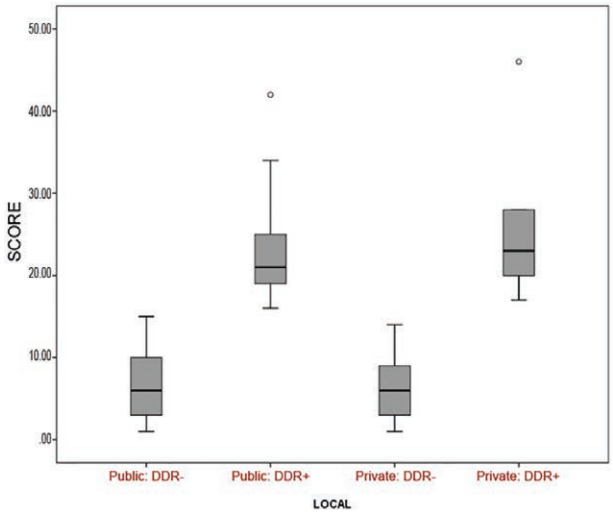

Fig. 4. Distribution of patients' individual scores according to their risk of depressive disorder and the clinic at which they consulted (public or private), Goiânia, Goiás, 2013.

depression.[4,6,16–22] Analyzing only the cases with DDR+ (BDI-II score ≥15), 54.3% of those were shown to have no steady partner, although this difference was not significant.

Various investigators[1,4,6,16,17,26,27,52–55] have reported that patients requesting breast implants are more likely to present with more DD. In this study, a separate analysis of the type of surgery in each institution showed no significant association between any specific type of surgery and the development of DD. Likewise, when the presence of DD was analyzed separately, no statistically significant association was found between the patients with or without DD and implants, in either of the institutions.

The 4 types of aesthetic breast surgery conducted in the 2 clinics were reexamined in an attempt to verify whether any certain type of surgery involved a DDR+, with no statistically significant differences being found in the groups evaluated; however, of the 35 patients with DDR+, 17 (48.6%) were reduction mammoplasty and 18 patients (51.4%) were candidates for breast implant surgery augmentation mammoplasty and mastopexy with breast implants. There was no case of positive risk for depressive disorder in mastopexy without implant (both public and private). When all the patients scheduled for surgery that included breast implants (augmentation mammoplasty and mastopexy with breast implants) were grouped together and all the patients scheduled for surgery that did not involve breast implants (reduction mammoplasty and mastopexy without breast implants) were grouped together, their distribution was found to be homogenous, with no significant association being found that would confirm that the presence ($P = 0.12$) or absence ($P = 0.33$) of breast implants as part of the surgical procedure was a predictive factor for DD.

There is no doubt with respect to the usefulness and efficacy of cosmetic surgery or to the genuine benefits resulting from it in view of the capacity of these techniques to change an individual's body image, conferring positive changes, both physical and emotional, and improving the patient's quality of life. Nevertheless, in some patients requesting the procedure, there may be a considerable likelihood of psychiatric problems.

Cosmetic surgery patients with minor psychological alterations appear to experience greater positive changes after surgery,[3,5,9,24,26,27,59] whereas patients identified as having signs of depression before surgery are around 5 times more likely to be dissatisfied with the surgical outcome,[1,3–7,20,24,26,59–62] with all the possible consequences that may result from that dissatisfaction.

The literature shows that there is a greater likelihood of a poor psychosocial outcome after surgery when patients have unreal expectations regarding the procedure; when deformities are minimal; when the patient is unhappy with the results of a previous, otherwise successful cosmetic surgery; when the motivation for the surgery was based on relationship problems; or when surgery was scheduled at the request of others. Other factors include low self-esteem; a history of depression; prior admission to a psychiatric hospital; previous/present use of antidepressants; history of suicide; high BDI-II scores; an anxiety or personality disorder; no steady partner; poor education level; and low income.[1,3–8,11,17,18,20,21,23–26,32–34,58–62] Some of these factors were present in patients in this study. The difficulty, therefore, lies in recognizing which of the patients requesting cosmetic surgery are stable from a psychological viewpoint and which are not, in which cases, a psychiatric disorder is already present (controlled or uncontrolled) or even close to being triggered and whether the psychiatric symptoms of these individuals are more likely to be exacerbated after surgery.

Any patient presenting with those possible predictive factors for depressive disorder described above or suspi-

Table 6. Analysis of the BDI-II Result According to the Type of Surgery to be Performed, in Patients to Be Submitted to Cosmetic Breast Surgery, Goiânia, Goiás, 2013

Variable	No Risk for DD, n (%)	Risk for DD, n (%)	PR	95% CI	*P*
Type of surgery					
Augmentation mammoplasty	56 (37.3)	10 (28.6)	0.8	0.38–1.47	0.410
Mastopexy with breast implants	37 (24.7)	8 (22.8)	0.9	0.36–2.00	0.716
Mastopexy without breast implants	13 (08.7)	0 (0.0)	NA	NA	NA
Reduction mammoplasty	44 (29.3)	17 (48.6)	0.6	0.28–1.17	0.131
Surgery with breast implants	93 (62.0)	18 (51.4)	0.82	0.70–0.94	0.12
Surgery without breast implants	57 (38.0)	17 (48.6)	1.28	1.10–1.46	0.33
Total	150 (100.0)	35 (100.0)	—	—	—

PR, prevalence ratio; NA, Not Applicable.

Table 7. Analysis of Frequency and Percentage of Response of Item Number 9 (Suicidal Ideation) of BDI-II in Patients Seeking Cosmetic Breast Plastic Surgeries, Goiânia, Goiás, 2013

		Frequency (n)	Percentage (%)	Valid Percentage	Accumulative Percentage
Valid	0	172	93.0	93.0	93.0
	1	**10**	05.4	05.4	98.4
	2	**01**	0.50	0.50	98.9
	3	**02**	01.1	01.1	100.0
	Total	185	100.0	100.0	—

cious circumstances, should be referred to a psychiatrist before surgery, for further investigation and evaluation regarding whether or not they should be submitted to the proposed surgical treatment and the ideal moment for surgery.

Further studies should increase the understanding and definition of these patients to avoid unfavorable outcome.

CONCLUSIONS

The profile of patients requesting cosmetic breast surgery in the public sector is significantly different from that of patients consulting in the private sector. The prevalence of indicators of depressive disorder in this population is high (18.9%), with the patients consulting at the public clinic being 2.3 times more likely to develop a possible DD. Age, low income, and schooling were a possible risk factors for a depressive disorder. Patients for breast implants showed a higher score for suicide ideation.

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