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# Body Image and Self-esteem in Botulinumtoxin A and Dermal Filler Patients

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## Abstract

**Background:** The demand for minimally invasive cosmetic procedures has continued to rise especially in Germany, yet few studies have examined this patient population. The literature in Germany has repeatedly voiced the speculation that users of minimally invasive, skin-rejuvenating procedures displayed a higher tendency toward dysmorphic behavior patterns or respectively less self-esteem.

**Objectives:** Aim of this study was to investigate body image, self-esteem and socioeconomic parameters in users of BoNTA and/or facial fillers.

**Methods:** One hundred forty five females presented for botulinum toxin and/or soft tissue filler injections, completed demographic and standardized psychometric questionnaires such as Rosenberg Self-Esteem Scale and Body Dysmorphic Disorder Questionnaire before treatment.

**Results:** Patients undergoing injectable aesthetic treatments in an urban dermatology practice were woman, middle-aged, highly educated and mostly employed. Furthermore, patients who undergo minimally facial rejuvenation procedures showed a normal sense of self-esteem, and have a lower body mass index than controls. Participants also had a normal body image and no signs for a body image disturbance were found.

**Conclusions:** This study helps to better understand the psychosocial factors characterizing this patient population. No signs of body dysmorphic pattern or less self-esteem were found.

**Keywords:** Botulinum toxin; Dermal filler; Body image; Self-esteem

## Introduction

Globally, the treatment with Botulinumtoxin A (BoNT-A) is the most common minimally invasive cosmetic surgery procedure, followed by dermal fillers. In 2017, the 1700 members of the German Society for Plastic, Reconstructive, and Aesthetic Surgery performed more than 310.616 minimally invasive cosmetic procedures.

A large amount of psychosocial research suggests that physical appearance influences most aspects of life, not only quality of life, self-esteem, and body image, but also interpersonal relationships, and employment opportunities [1-4]. According to these researches the presence of a certain degree of body image dissatisfaction is believed to be a key motivation for seeking minimally invasive rejuvenation procedures. In contrast, excessive body image dissatisfaction is a symptom of body dysmorphic disorder which is a contraindication for cosmetic surgery [5] and minimally invasive cosmetic procedures as well.

So far, studies on body image and self-esteem of patients requesting minimally invasive facial rejuvenation procedures are rare. In the German publication, it was repeatedly speculated that users of minimally invasive rejuvenating procedures displayed a higher tendency toward dysmorphic behavior patterns [6] and less self-esteem. To date, there are only a few studies available from non-German-speaking countries about experienced self-esteem changes that occur as the result of a combination treatment with BoNT-A and hyaluronic acid fillers. De Aquino, Haddad and Ferreira [7] was able to show, with the help of the Brazilian version of the Rosenberg Self-Esteem Scale, that the patient's experienced self-esteem sustainably improves after a BoNT-A and dermal filler treatment. Dayan, Arkins, Patel and Gal [8] showed in their double-blinded, randomized, and placebo-controlled outcome study as well, that the treatment with BoNT-A leads to a significant improvement in quality of life and an increase of the overall experienced self-esteem, as well as self-worth based on looks. It must be assumed that the high patient satisfaction is the result of, not only very good aesthetic results, but also a direct, positive influence on the patients' mood caused by the BoNT-A treatment [9]. Lewis and Bowler

[9] were able, for example, to show that a treatment of the Glabella frown lines with BoNT-A has a positive influence on the patient's mood regardless of whether the patient felt more attractive after the treatment [9]. This positive influence on the mood and the experienced self-worth occurred in patients suffering from depression as well [10], whereas the control group, whose members did not suffer from depression, did not show an increase of the experienced self-worth over the course of the treatment. The control group's experienced self-worth was, however, quite high even before the treatment. The improved depression can, in all likelihood, be explained by the correlation between the mimic musculature and emotional state (facial feedback). Facial expressions therefore, not only express a mood, but can, conversely, affect the mood as well. So far, no studies are available on the body image of this patient group that is growing in Germany as well and studies on self-esteem are rare. The traditional conceptualization of Self-Esteem is a global, uni-dimensional construct regarding the personal judgment of one's own worth [11]. Low self-esteem is considered to be an important factor in developing vulnerability to Body Dysmorphic Disorder, and recent studies also underline the link between self-esteem, body dissatisfaction, body image, and depression symptoms [12].

Because little is known about these medical-psychological aspects in users of minimally invasive rejuvenating procedures, we designed our study with the focus on body image, self-esteem, and sociodemographic parameters [11].

## Methods

A prospective, single center cohort study including 200 patients was conducted at a dermatology practice specialized in medical laser and cosmetic minimally invasive procedures (Berlin City Center, Berlin, Germany) from January 2012 to April 2014. Fifteen qualitative patient interviews and three expert interviews were carried out in order to determine the most relevant traits of patients who wanted to undergo a cosmetic treatment with botulinum toxin and/or facial fillers. Based on these interviews, a set of standardized and self-constructed questionnaires was developed. The self-constructed questionnaires contained questions about the type and scope of the desired treatment, the number of previous treatments, the frequency of these treatments, the level of information, and the preferred treatment setting, as well as opinions and motives about body-optimizing. Furthermore, the current study included background data on education (lower/higher), family status, and net income per household (in EUR per month) (Demographic Consulting Company, USUMA, Berlin, Germany), body weight (in kilograms) and body height (in centimeters).

### Standardized questionnaire data

A set of standardized investigations was performed from the study participants. To assess self-esteem, we used the Rosenberg Self-Esteem Scale (RSES) [12]; German version by Ferring and Philipp (1996) [13] because it is well-established in Germany and standard values are available for the German

version [14]. The RSES is a 10-item self-report scale that addresses feelings of global self-worth. All responses are given on a scale ranging from 1 (strongly disagree) to 6 (strongly agree).

The occurrence of Body Dysmorphic Disorder (BDD) was estimated using the Body Dysmorphic Disorder Questionnaire (BDDQ), a validated self-report measure for BDD that uses the DSM-IV-TR diagnostic criteria to screen for BDD as described by Phillips [15].

The study protocol was approved by the institutional Ethics Committee of the Medical Department of the University of Leipzig. All the participants volunteered and received a data protection declaration in agreement with the Helsinki Declaration.

From January 2012 to April 2014, 200 questionnaires were handed out to all participants who received a minimally invasive cosmetic treatment with botulinum toxin and/or facial fillers and who met the inclusion criteria such as adequate knowledge of the German language and age of consent. A total of 151 questionnaires were completed and returned, which corresponds to a return rate of 76%.

## Measures

All variables were measured with established multi-item scales and validated in independent samples. Composite scores were calculated by averaging across the corresponding scale items. Unless stated otherwise, all ratings were recoded so that higher scores indicate higher levels on the relevant dimensions.

## Statistical methods

Student t test was used for comparison between data of the patients and norms. Statistical analyses were done using the SPSS 17.0 (SPSS Inc., Chicago). P values less than 0.05 were considered significant.

## Results

As expected, the majority (96%) of participants were women (n= 145). Only six men completed the questionnaire (4%) which correlated well with the gender distribution of patients who undergo minimally invasive cosmetic procedures. Because predominantly women undergo minimally invasive procedures and since a female majority with 96% responded in this survey, only women were included for further data analysis.

The patients had an average age of 50 (median 49 years), the range of 51 years was remarkable (youngest patient=24 years old, oldest patient=75 years old). The highest percentage (20%) was treated twice, followed by 17% with one previous procedure, 13% with three previous procedures, and 38% with four to 10 previous procedures. 4% of the patients had 11 or more previous procedures, and the highest number of previous procedures documented was 30. While more than ¾ of those surveyed (91%) had a normal weight (on the basis of

the body mass index, BMI), this is the case for less than half of all German women (47%) of the same age (Statistisches Bundesamt, 2013) [16], which indicates that participants are very concerned about their body weight (**Table 1**). 96% of the women surveyed had German citizenship, 4% had a different citizenship.

Sociodemographic and Psychological characteristics of patients undergoing minimally invasive rejuvenation procedures:

Since very little medical-psychological parameters are known about users of minimally invasive facial rejuvenation procedures, sociodemographic data and social characteristics of this German patient population were of particular interest (**Table 1**). In order to obtain valid information about this patient population, the gathered sociodemographic data from patients living in Berlin was also compared with data from the Berlin Gender Report (BGR, 2013) [17]. Historically, the incomes of the households in Berlin are much lower than in the rest of Western Germany. An overview of the characteristics of the study is provided in **Table 1**. With 45% compared to 37%, the surveyed patients were married at a significantly higher percentage in our study. With regard to single persons, the comparison yielded a percentage of 27% (our study) versus 39% (BGR) indicating that the single rate was significantly lower compared to age-matched women in Berlin. The percentage of divorced women among those surveyed was 25%, which is significantly higher than the 13% of women of the same age living in Berlin (cf. Berlin Gender Report, 2013) [17].

**Table 1:** Subject demographics.

Demographics	Patient (%)	Women in Germany (%)
		(age-matched)
Family Status		
Married	45%	37%
Single	27%	39%
Divorced	25%	13%
Education		
Lower than High school	35%	65%
High school	65%	35%
Household net income in € per month		
≥ 2600	36%	4%
> 2000 – 2600	24%	7%
> 1000 – 2000	30%	23%
≤ 1000	6%	46%
No income	4%	20%

Body-Mass-Index (kg/m <sup>2</sup> )		
18,5 – 25	91%	46%

In terms of education, we found that botulinum toxin and/or facial filler patients have a significantly higher education level than age-matched women in Berlin and in Germany as well. As expected from the higher level of education, the net income of participants was significantly higher compared to women of the BGR study (**Table 1**) [17].

### Rosenberg Self-Esteem Scale (RSES):

No differences in global self-esteem were found between users of minimally invasive facial rejuvenation and female controls. The mean of participants was MRSES=38.5, t=36 and correspond to the standard values [18].

### Body Dysmorphic Disorder Questionnaire (BDDQ):

Compared to matched control values available in the literature [19] study participants did not differ significantly (p=0.553, t-value -0.553) with regard to body dysmorphic symptoms measured with the BDDQ (**Table 2**).

**Table 2:** Body Dysmorphic Disorder Questionnaire (BDDQ).

BDDQ					
Patients	Mean	SD	Control Group		Statistics
			Mean	SD	
M1.98		SD ± 0.97	M1.92	SD ± 0.88	t 0.553 p .063

Abbreviations: BDDQ=Body Dysmorphic Disorder Questionnaire M=mean; SD=standard deviation, p=p-Value

Scores compared with age- and sex-matched control values

## Discussion

Aim of this study was to investigate body image, global self-esteem and socioeconomic parameters in patients undergoing a minimally invasive cosmetic treatment with botulinum toxin and/or facial fillers in an urban out-patient clinic in Germany.

It was found that patients undergoing minimally facial rejuvenation procedures generally have a high level of education and dispose of an above-average net monthly income. In addition, almost all participants had a normal body weight, which was surprising since less than half of all age-matched German women are normal weight. As a consequence, this observation could indicate a link between the demand for minimally invasive facial rejuvenation procedures and increased health awareness. The aim to minimize the signs of facial aging is based on the desire to look better and this seems to contribute to a high global self-esteem. No signs for a body image disturbance were found which implies that we could not confirm the most frequently

raised assumption that most botulinum toxin patients display a behavior that indicates body image disturbances. Participants undergoing minimally invasive facial rejuvenation procedures have a normal sense of self-esteem.

## Conclusion

This study provides information to understand the psychosocial factors better that characterize patients who undergo minimally facial rejuvenation procedures in an urban practice in Germany. This patient population was females, middle-aged, highly educated and mostly employed. Furthermore, patients who undergo minimally facial rejuvenation procedures showed a normal sense of self-esteem, and have a lower body mass index than controls. Participants also had a normal body image and no signs for a body image disturbance were found. Since the study was performed in a single urban out-patient clinic in West Berlin, our findings may not entirely be applicable to patients contact in cosmetic physicians in rural, community-based out-patient offices. Therefore, future studies should include multiple centers in urban and rural regions of Germany (e.g. East and West Germany).

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