

Psychosocial impact of aesthetic neuromodulator injections: insights from a longitudinal study in Brazilian population

Impacto psicossocial das aplicações estéticas de neuromoduladores: insights de um estudo longitudinal na população brasileira

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ABSTRACT

Objective: This study aimed to evaluate the impact of neuromodulator treatment on the psychosocial well-being of Brazilian women using the FACE-Q assessment tool. **Material and Methods:** The sample included women seeking facial aesthetic treatment with neuromodulators. Participants completed four questionnaires from the Health-Related Quality of Life domain of FACE-Q at two time points: before treatment (T0, baseline) and 14 days after application (T1). The assessed domains included Aging Appraisal, Appearance Distress, Psychological Well-Being, and Social Well-Being. Statistical analysis was conducted using the Shapiro-Wilk test, paired Student's t-test, and Wilcoxon test, with a significance level set at 5% ($p < 0.05$). **Results:** A total of 53 participants were included, with the most common age being 46–60 years (43.4%). A total of 84.9% were currently employed, and the most frequent monthly income range was between R\$ 5,000-10,000 (34.0%). Psychological and social well-being improved significantly after treatment ($p < 0.001$). Notably, the following individual items showed significant increases: I accept myself as I am ($p = 0.011$); I feel good about myself ($p = 0.046$); I feel confident ($p = 0.012$); I feel attractive ($p = 0.023$), I feel confident when meeting someone new ($p = 0.012$); I feel confident when participating in group situations ($p = 0.035$). A significant positive correlation was found between age and both psychological ($p = 0.039$) and social well-being ($p = 0.022$). Additionally, higher education levels and income were associated with greater social well-being ($p < 0.05$). **Conclusion:** Facial treatment with neuromodulators has a positive impact on the psychological and social well-being of Brazilian women, particularly in areas related to self-confidence and interpersonal comfort.

KEYWORDS

Facial aesthetic procedures; Neuromodulators; Psychological well-being; Satisfaction level; Social well-being.

RESUMO

Objetivo: Este estudo teve como objetivo avaliar o impacto do tratamento com neuromoduladores no bem-estar psicossocial de mulheres brasileiras, utilizando o instrumento de avaliação FACE-Q. **Material e Métodos:** A amostra incluiu mulheres que buscaram tratamento estético facial com neuromoduladores. As participantes responderam a quatro questionários do domínio Qualidade de Vida Relacionada à Saúde do FACE-Q em dois momentos: antes do tratamento (T0, baseline) e 14 dias após a aplicação (T1). Os domínios avaliados foram Avaliação do Envelhecimento, Sofrimento com a Aparência, Bem-Estar Psicológico e Bem-Estar Social. A análise estatística foi realizada por meio do teste de Shapiro-Wilk, teste t de Student pareado e teste de Wilcoxon, adotando um nível de significância de 5% ($p < 0,05$). **Resultados:** Um total de 53 participantes foi incluído, com a faixa etária mais

comum sendo de 46-60 anos (43,4%). No total, 84,9% estavam empregadas, e a faixa de renda mensal mais frequente foi entre R\$ 5.000-10.000 (34,0%). O bem-estar psicológico e social melhorou significativamente após o tratamento ($p < 0,001$). Notavelmente, os seguintes itens apresentaram aumentos significativos: Eu me aceito como sou ($p = 0,011$); Eu me sinto bem comigo mesma ($p = 0,046$); Eu me sinto confiante ($p = 0,012$); Eu me sinto atraente ($p = 0,023$); Eu me sinto confiante ao conhecer alguém novo ($p = 0,012$); Eu me sinto confiante ao participar de situações em grupo ($p = 0,035$). Houve uma correlação positiva significativa entre idade e bem-estar psicológico ($p = 0,039$) e social ($p = 0,022$). Além disso, níveis mais altos de escolaridade e renda foram associados a um maior bem-estar social ($p < 0,05$). **Conclusão:** O tratamento facial com neuromoduladores tem um impacto positivo no bem-estar psicológico e social de mulheres brasileiras, especialmente em aspectos relacionados à autoconfiança e conforto em interações interpessoais.

PALAVRAS-CHAVE

Procedimentos estéticos faciais; Neuromoduladores; Bem-estar psicológico; Grau de satisfação; Bem-estar social.

INTRODUCTION

The use of neuromodulators for aesthetic purposes is a well-established minimally invasive treatment considered effective and safe in clinical practice. According to data from the International Society of Aesthetic Plastic Surgery, neuromodulator injections remain the most performed non-surgical aesthetic procedure worldwide, with approximately 8,877,991 treatments conducted in 2023. Brazil ranks as the second-leading country in the number of neuromodulator procedures, with 571,117 injections performed in the same year [1].

This highlights the increasing demand for neuromodulators in facial aesthetics and their prevalent role in the management of facial wrinkles and tissue repositioning. Moreover, this growth is directly linked to the increasing recognition of aesthetic interventions as essential components of quality of life [2-5]. Multiple factors motivate individuals to seek these treatments, including the desire to appear more attractive and youthful, to be perceived positively by society, to feel more accepted and competitive in the job market, to overcome low self-esteem and social challenges, and to feel more appealing to friends and family [6-8].

It is evident that self-esteem is deeply connected not only to physical aspects but also to psychological and social dimensions, emphasizing the importance of a multidimensional perspective when assessing aesthetic outcomes [9]. Understanding patients' expectations, preferences, and, most importantly, their emotions is fundamental for achieving satisfactory clinical outcomes and high levels of patient satisfaction [5,6,9]. Moreover, this understanding is crucial to promote treatment

acceptance and repetition, ultimately enhancing patient retention [10,11].

Validated instruments, such as the FACE-Q questionnaire, are now available for use across diverse populations and clinical contexts. The FACE-Q [12-14] is designed to assess multiple dimensions of the patient experience with facial aesthetic procedures. It offers valuable insights into patient expectations, satisfaction with outcomes, and quality-of-life impacts. It is structured into three main domains: "Facial Appearance," "Health-Related Quality of Life," and "Adverse Effects", each comprising specific modules that allow for a detailed and patient-centered evaluation [15].

While many studies have reported high levels of satisfaction following neuromodulator treatments [3,4,14], there are still gaps in understanding the psychosocial relevance of these outcomes [2]. Therefore, the present study aimed to evaluate the impact of neuromodulator treatment on the psychological and social well-being of Brazilian women using the FACE-Q assessment tool.

MATERIAL AND METHODS

Study design

This longitudinal, interventional study was approved by the Research Ethics Committee under protocol number CAAE: 81668724.0.0000.5086 and conducted in accordance with Resolution No. 466/2012 of the Brazilian National Health Council.

The study was designed to evaluate the psychological and social well-being of women undergoing aesthetic treatment with

neuromodulators in the upper third of the face and followed established clinical protocols conducted in accordance with Good Clinical Practice guidelines. All participants provided written informed consent prior to their inclusion, authorizing the use of their clinical and photographic data for research purposes.

Volunteers

A total of 53 female volunteers were included in this study. All participants were recruited between March and November 2024 at the postgraduate clinical programs in Orofacial Harmonization located in São Luís, Brazil. Only individuals who sought aesthetic treatment with botulinum toxin type A (BTX-A) in the upper third of the face were considered for inclusion.

Women aged 18 years or older, in good general health, and with visible dynamic wrinkles in the upper third of the face were considered eligible. Individuals were excluded if they were pregnant or breastfeeding, had undergone facial surgery, were using medications that could interfere with inflammatory mediators, presented with local infections or neuromuscular conditions (such as myasthenia gravis or motor neuron disease), had undergone facial laser therapy, chemotherapy or radiotherapy within the past two years, or reported smoking more than 10 cigarettes per day, alcohol abuse, or illicit drug use. Additional exclusion criteria included hypersensitivity or allergy to neuromodulators, failure to complete all study phases, undergoing other aesthetic treatments during the study period, or refusal to sign the informed consent form.

Neuromodulator treatments

All neuromodulator injections were performed by properly trained aesthetic practitioner with more than 5 years of experience in facial aesthetics. Prior to the procedure, the skin was cleansed using a facial soap and disinfected with sterile gauze soaked in 2% aqueous chlorhexidine solution to ensure aseptic conditions.

For injections, a vial containing 500 speywood units (=200 IU) of AbobotulinumtoxinA (Dysport®, Galderma, Lausanne, Switzerland) was reconstituted with 2.0 cc of sterile saline solution (Samtec, Ribeirão Preto, Brazil), following the manufacturer's recommendations. Topical

anesthesia (lidocaine 4%, Dermomax, Aché Laboratorios Farmacêuticos, Guarulhos, Brazil) was applied at each injection point and the product was administered using a 31G-6mm syringe (Becton Dickinson, Franklin Lakes, NJ, USA) through slow, intramuscular injections into the muscles of facial expression in the upper third of the face.

Dosages were personalized based on the individual muscular anatomy and dynamic contraction patterns observed during the clinical assessment. All procedures adhered to safety standards and aimed to deliver natural, balanced outcomes aligned with patient-specific needs.

FACE-Q questionnaires

Patient-reported outcomes were assessed using four validated instruments from the "Health-Related Quality of Life" domain of the FACE-Q: aging appraisal, appearance-related psychosocial distress, psychological function, and social function. These instruments were selected for their ability to capture multidimensional aspects of patient experiences before and after aesthetic facial treatments.

Each questionnaire consists of multiple items rated on a 4-point Likert scale: 1 = "Strongly disagree / Very dissatisfied", 2 = "Somewhat disagree / Dissatisfied", 3 = "Somewhat agree / Satisfied", and 4 = "Strongly agree / Very satisfied." Raw scores were converted to a 0–100 scale using the official FACE-Q conversion table. Higher scores indicated better outcomes, except for Aging appraisal and Appearance-related psychosocial distress, where higher scores reflect greater concern with aging or dissatisfaction with appearance.

At baseline (T0), patients completed the questionnaires in a private room using a tablet device with digital access via Google Forms. Fourteen days after neuromodulator treatment (T1), patients received the same questionnaires via a secure WhatsApp link and were instructed to complete them independently without external influence.

Statistical analysis

All statistical analyses were performed using the open-source Jamovi statistical software (version 2.3.24, The Jamovi Project, Sydney, Australia). Graphical representations of the

results were generated using GraphPad Prism software (version 11.0.2, GraphPad Software, San Diego, USA). Descriptive analysis was initially conducted to characterize the study population. Sociodemographic data (including age, education level, household income, and previous experience with neuromodulator treatments) were analyzed using absolute and relative frequencies for categorical variables and mean $\pm$ SD for continuous variables.

Responses from the FACE-Q questionnaires were recorded in a Microsoft Excel spreadsheet and subsequently transformed into a 0–100 scale using Rasch measurement methods, as recommended by the FACE-Q scoring manual. In this scoring system, higher values reflect more favorable outcomes in the psychological and social function domains, and greater dissatisfaction or concern in the Aging appraisal and Appearance-related psychosocial distress domains.

Normality of the continuous data was assessed using the Shapiro–Wilk test. For comparisons between the two assessment time points (baseline and 14 days post-treatment), paired t-tests were used for variables with normal distribution. When normality was not confirmed, the Wilcoxon signed-rank test was applied. Pearson's correlation coefficient (*r*) was used to evaluate relationships between continuous sociodemographic variables (age, income, education level) and FACE-Q outcomes. When appropriate, multivariate linear regression models were performed to investigate the combined influence of these variables on post-treatment scores. A significance level of 5% was adopted for all analyses.

Furthermore, a post hoc power calculation was performed using G*Power software (version 3.1.9.7) based on the mean and standard deviation of the differences between baseline and post-treatment scores for each FACE-Q domain. The observed statistical power was 0.31 for Aging Appraisal, 0.08 for Appearance-Related Psychosocial Distress, 0.99 for Psychological Function, and 0.90 for Social Function.

RESULTS

Demographics

A total of 53 female participants were included in the study. The majority were between 31 and 60 years of age, with 34.0% aged 31–45 years and 43.4% aged 46–60 years. In terms of marital status, 54.7% of the women were single or divorced, while 45.3% reported being married or in a stable relationship. Regarding education level, more than half of the participants (52.8%) had completed postgraduate studies and 30.2% had higher education. Most of the participants (84.9%) were currently employed at the time of the study. As for monthly household income, 34.0% reported earnings between R\$ 5,000 and R\$ 10,000, 26.4% earned between R\$ 10,000 and R\$ 20,000, and 22.6% reported income between R\$ 2,000 and R\$ 5,000. When asked about previous neuromodulator experience, 75.5% had previously undergone neuromodulator treatments, while 24.5% were first-time users (Table I).

FACE-Q outcomes

Figure 1 shows that scores in psychological and social well-being were statistically higher

Table I - Sociodemographic characteristics of the women evaluated

Variables	n	(%)
Age		
18–30	8	(15.1)
31–45	18	(34.0)
46–60	23	(43.4)
> 60	4	(7.5)
Marital status		
Married/Stable union	24	(45.3)
Single/Divorced	29	(54.7)
Educational level		
Incomplete high school	2	(3.8)

R\$ = Brazilian currency (BRL 1.00 equivalent to USD 0.16 as of 11/29/2024).

Table I - Continued...

Variables	n	(%)
High school	7	(13.2)
Undergraduate	16	(30.2)
Postgraduate	28	(52.8)
<i>Currently Employed</i>		
Yes	45	(84.9)
No	8	(15.1)
<i>Income (R\$)</i>		
Until 2.000	8	(15.1)
2.000–5.000	12	(22.6)
5.001–10.000	18	(34.00)
10.001–20.000	14	(26.4)
>20.000	1	(1.9)
<i>Previous neuromodulator experience</i>		
Yes	40	(75.5)
No	13	(24.5)

R\$ = Brazilian currency (BRL 1.00 equivalent to USD 0.16 as of 11/29/2024).

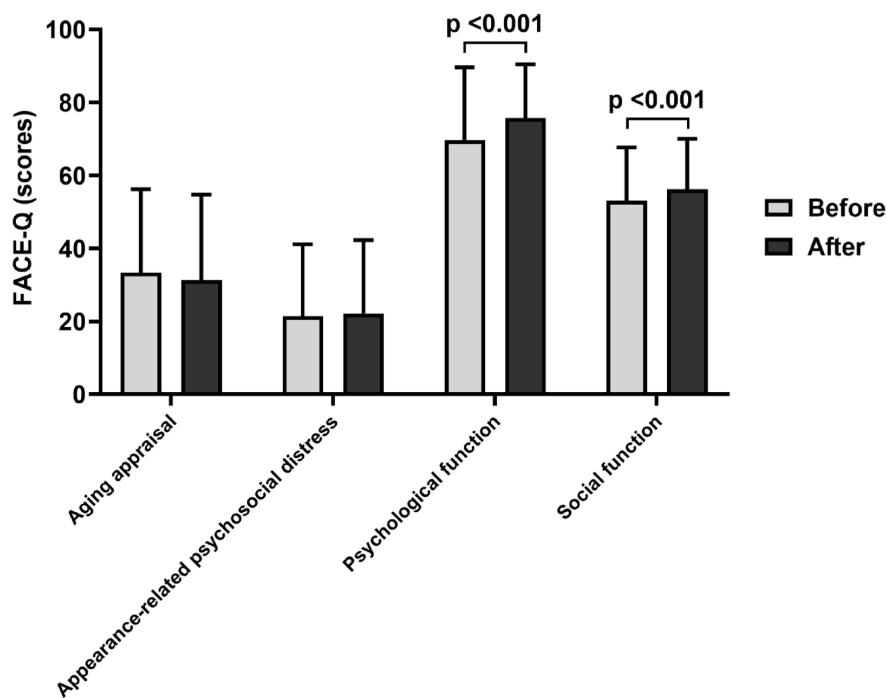


Figure 1. Comparative analysis of the FACE-Q outcomes before and after the neuromodulator application (n = 53). Higher scores indicate better outcomes, except in the "Aging Appraisal" scale, where higher scores reflect greater discomfort with aging, and in the "Appearance Distress" scale, where higher scores indicate unrealistic expectations or distress. Statistics were performed using a paired t-test or a Wilcoxon signed-rank test.

after the neuromodulator was applied. The mean score for psychological functioning increased from 69.67 ± 19.95 to 75.71 ± 14.73 between the two time points ($p < 0.001$). The social function domain also showed meaningful enhancement. The mean score increased from 52.97 ± 14.73 to 56.16 ± 13.84 ($p < 0.001$) between the two time points.

Table II shows the comparative analysis of specific items from the psychological and social function domains before and after treatment. Notably, the following items in the psychological function domain showed statistically significant increases in scores after treatment: I accept myself as I am ($p = 0.011$), I feel good about myself ($p = 0.046$), I feel confident ($p = 0.012$), and I feel

Table II - Evaluation of the questions from the "Psychological function" and "Social function" questionnaires before and after the neuromodulator application

Group/Scale FACE-Q (Scale 0–4)	Before		After		Effect size	p
	mean	±SD	mean	±SD		
Psychological function						
I like myself	3.63	0.61	3.61	0.57	-0.01	1.000
I feel positive	3.49	0.60	3.53	0.62	0.04	0.712
I feel "okay" with myself	3.43	0.70	3.48	0.62	0.05	0.423
I feel happy	3.56	0.60	3.53	0.60	-0.03	0.712
I feel comfortable	3.27	0.72	3.27	0.74	0.00	0.745
I accept myself as I am	2.97	0.97	3.32	0.72	0.35	0.011*
I feel good about myself	3.37	0.67	3.57	0.55	0.20	0.046*
I feel confident	3.19	0.62	3.40	0.68	0.21	0.012*
I feel attractive	3.09	0.79	3.36	0.71	0.25	0.023*
I feel great	3.13	0.78	3.36	0.69	0.23	0.068
Social function						
I make a good first impression	3.19	0.71	3.19	0.67	0.00	0.972
I feel confident when meeting someone new	3.03	0.69	3.24	0.63	0.21	0.012*
It is easy to make new friends	3.04	0.95	3.08	0.93	0.04	0.786
I feel confident when participating in group situations	3.17	0.78	3.43	0.62	0.25	0.035*
I feel confident in new social situations	3.15	0.75	3.19	0.80	0.04	0.803
I feel relaxed around people I don't know well	2.88	0.88	2.96	0.88	0.08	0.662
I feel confident when I walk into a room full of people I don't know	2.73	0.89	2.83	0.88	0.09	0.484

±SD = standard deviation. Effect size (Cohen's d). The (*) symbol indicates statistically significant differences ($p < 0.05$). Statistics were performed using a paired t-test

attractive ($p = 0.023$). Two specific items from the social function domain showed significant increases after treatment: "I feel confident when meeting someone new" ($p = 0.012$) and "I feel confident when participating in group situations" ($p = 0.035$).

When stratifying by age group, participants over 60 years old did not show significant gains in Psychological Well-Being scores when compared to younger age groups (Figure 2A). Participants over 60 years of age exhibited the greatest enhancement (before-after) in social functioning scores when compared to the other age groups (Figure 2B).

Correlation between sociodemographic factors and FACE-Q domains

The correlation analysis between sociodemographic variables and FACE-Q domains after neuromodulator treatment revealed distinct patterns of association (Table III).

No statistically significant correlations were found between age, education level, or income and the domains Aging appraisal or Appearance-related psychosocial distress ($p > 0.05$). However, Psychological Well-Being was positively correlated with age ($r = 0.253$, $p = 0.039$), with older participants reporting smaller psychological benefits following treatment. No significant associations were observed between this domain and education ($r = 0.015$, $p = 0.903$) or income ($r = 0.187$, $p = 0.129$).

In contrast, Social Functioning was significantly correlated with all three sociodemographic variables: age ($r = 0.279$, $p = 0.022$), education level ($r = 0.349$, $p = 0.004$), and income ($r = 0.295$, $p = 0.015$). These results indicate that older participants, as well as those with higher education and income levels, tended to experience greater improvements in social confidence and interpersonal functioning after neuromodulator treatment.

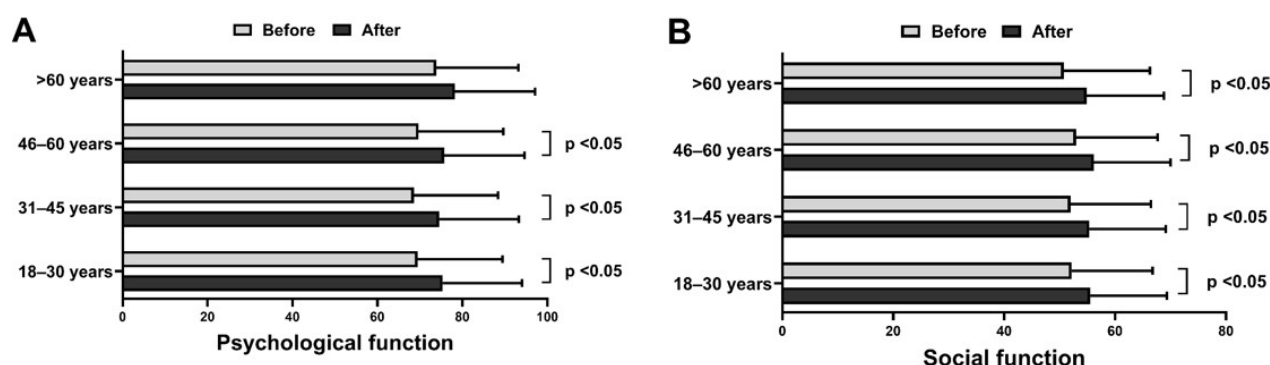


Figure 2. Comparative analysis of the difference in scores before and after the neuromodulator application in psychological function (A) and social function (B) across different age groups. Statistics were performed using a paired t-test or a Wilcoxon signed-rank test.

Table III - Correlation between sociodemographic factors and FACE-Q domains after neuromodulator application

	Age	Educational level	Income
Aging appraisal	$r = 0.148$	$r = -0.056$	$r = 0.047$
	$p = 0.232$	$p = 0.650$	$p = 0.708$
Appearance-related psychosocial distress	$r = -0.102$	$r = -0.102$	$r = -0.167$
	$p = 0.412$	$p = 0.412$	$p = 0.178$
Psychological well-being	$r = 0.253$	$r = 0.015$	$r = 0.187$
	$p = 0.039^*$	$p = 0.903$	$p = 0.129$
Social well-being	$r = 0.279$	$r = 0.349$	$r = 0.295$
	$p = 0.022^*$	$p = 0.004^*$	$p = 0.015^*$

r = Pearson's correlation coefficient. The (*) symbol indicates statistically significant differences between age groups ($p < 0.05$). Pearson's correlation analysis was used to perform the statistics.

DISCUSSION

This study findings suggest that the application of neuromodulators to the face had a positive impact on the psychological and social well-being of Brazilian women across different age groups, also highlighting the relevance of sociodemographic factors in the perception of outcomes. The use of the FACE-Q tool proved essential for a robust and standardized analysis, allowing for meaningful comparisons before and after the procedure [15].

Neuromodulators effectively reduce dynamic facial wrinkles by temporarily inhibiting muscle contractions, resulting in smoother skin and a more youthful appearance. Beyond wrinkle treatment, strategic injections into depressor muscles can produce a lifting effect by enhancing the action of elevator muscles. This rebalancing leads to soft tissue repositioning and visible midface elevation. Previous studies using 3D stereophotogrammetry have quantitatively confirmed volume gains in the cheek area and upward tissue displacement after treatment,

supporting the role of neuromodulators in non-surgical facial rejuvenation [16–18].

Several studies have already demonstrated that patients tend to show enhancements in the psychosocial dimensions of health following injectable facial procedures [19,20]. For example, a study involving facial fat grafting combined with platelet-rich plasma showed enhanced psychological and social well-being after treatment [20]. Similarly, the use of hyaluronic acid to improve jawline contour was associated with improvements in psychological functioning [19]. Another study reported improvements in both psychological and social functioning following a combination of neuromodulators and dermal filler treatments [21]. However, few studies have attempted to define the isolated impact of neuromodulators, evaluating patients at distinct time points before and after the perceived results. Considering that neuromodulators, collagen biostimulators, and dermal fillers yield distinct clinical outcomes, understanding the perception of each procedure individually represents a

significant advantage, especially given that neuromodulators are among the most performed aesthetic treatments worldwide [5].

The sociodemographic data in this study reflect characteristics similar to those reported in previous research [7,8], which identified middle-aged women, single or divorced, and with higher education levels as the primary users of minimally invasive aesthetic treatments. The predominance of participants with postgraduate education and monthly incomes between R\$ 5,000 and R\$ 10,000 reinforces the association between higher educational and financial status and the demand for such procedures.

Some divergences from the literature were observed. Regarding age, previous studies have suggested that the psychological benefits of neuromodulators are more evident in younger patients (<40 years old), whereas the data from the present study showed no statistically significant differences among women aged 18 to 60 years [22]. Interestingly, participants over 60 years old demonstrated the highest gains in social well-being but also the lowest scores in psychological well-being compared to the other age groups. However, it is important to emphasize that all age groups experienced improvement when comparing scores before and after treatment. These differences may be related to the sample profile and to cultural or social factors that influence patient expectations at different life stages, as well as greater social acceptance among older women, as observed in this study.

When analyzing individual items from the psychosocial domains, specific enhancements were observed in self-confidence and personal acceptance. This finding suggests that the primary motivations for undergoing aesthetic procedures are more closely related to being socially well-perceived, feeling accepted, and enhancing social interactions [6-8]. The present study documented significant improvements at 14 days post-treatment, which represents a short-term follow-up. However, previous evidence has demonstrated that higher FACE-Q psychological scores achieved after AbobotulinumtoxinA treatment for moderate-to-severe glabellar lines in adults can be sustained over the long term [23], suggesting that the psychosocial benefits observed in the present study may also extend beyond the acute post-treatment phase.

The present study found significant improvements after treatment for the following items in the FACE-Q psychological well-being domain: "I accept myself as I am," "I feel good about myself," "I feel confident," and "I feel attractive." These findings are largely consistent with those of a previous multicenter study conducted in France and Germany, in which it was reported that the most pronounced effects following AbobotulinumtoxinA treatment in glabellar lines were for "I feel okay about myself" and "I feel attractive," in addition to improvements in "I accept myself as I am," "I am comfortable with myself," "I feel good about myself," and "I feel confident" [23]. More than simply "becoming more attractive," the pursuit of these procedures is directly connected to well-being across multiple dimensions, underscoring the importance of a multidimensional perspective when assessing aesthetic outcomes [9].

Overall, the results obtained are largely positive and consistent with previous literature [17-20], but they also reveal nuances that differ from other studies, particularly regarding age-related outcomes. These differences highlight the importance of considering the specific characteristics of each sample and context when interpreting the effects of aesthetic interventions. Each patient has unique priorities and expectations, which must be taken into account when evaluating treatment outcomes [12,13].

It should not be assumed, however, that every individual will necessarily experience these benefits from treatment. It is particularly important that practitioners take the time to understand not only what new patients want to change, but also why they wish to make these changes and what their expectations are regarding the treatment. Caution should be exercised with patients who appear to be heavily influenced by trends or social media. There has been a substantial increase in the number of individuals seeking treatment with the goal of imitating celebrities or influencers, often reflecting an unrealistic perception of what can be achieved through aesthetic interventions. Such patients are more likely to feel dissatisfied with the outcomes [2].

This study has some limitations of this study that warrant consideration. First, the sample size was small, the study was conducted at a single center, and the participants were

exclusively women of high socioeconomic status in Brazil. Power calculations indicate that the study was sufficiently powered to detect changes in the psychological and social function domains. However, the lower power for the other two domains highlights the need for cautious interpretation and future confirmation with larger sample sizes. These limitations can restrict the generalizability of our findings to broader populations, including men, individuals from lower-income backgrounds, and diverse clinical settings. Second, the clinical follow-up period was limited to 14 days post-treatment. While this period was sufficient to capture the acute onset of neuromodulator effects, it was insufficient to assess the durability of the observed psychosocial improvements. Since the physical effects of neuromodulators typically last three to six months [24], it is unclear whether the gains in psychological and social well-being described here persist in the medium to long term or diminish as the cosmetic effects begin to fade. It would be valuable to assess the long-term impact of injectable treatments on psychological functioning, particularly with repeated sessions over time. Therefore, we strongly recommend that future studies employ larger, more heterogeneous samples that include diverse socioeconomic, educational, and gender groups and incorporate extended follow-up periods to evaluate the longevity of psychosocial benefits.

CONCLUSION

The findings of this study demonstrate that facial treatment with neuromodulators has a positive impact on the psychological and social well-being of Brazilian women, as reflected in improvements in specific domains of the FACE-Q. Significant gains were observed in psychological well-being and social functioning, particularly in areas related to self-confidence and interpersonal comfort. These benefits were evident across all age groups, with distinct patterns linked to sociodemographic variables such as age, education, and income. Although the physical effects of neuromodulators are temporary, the short-term psychosocial enhancements observed suggest meaningful value beyond aesthetic enhancement. Future studies with larger and more diverse populations, along with extended follow-up periods, are recommended to better understand the longevity and generalizability of these outcomes.

Data availability

Research data is available in the body of the article.

Author's Contributions

FCC, LMGS: Conceptualization. FCC, LMGS, VPR: Data Curation. FCC, LMGS, RSD, VRML: Writing – Original Draft Preparation. FCC, LMGS, VPR, RSD, VRML: Writing – Review & Editing.

Conflict of Interest

No conflicts of interest declared concerning the publication of this article.

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Regulatory Statement

This study was conducted in accordance with all the provisions of the human subjects' oversight committee guidelines and policies. The protocol was reviewed and approved by Research Ethics Committee of the University Hospital (CEP-HUUFMA), number CAAE 81668724.0.0000.5086, and conducted in accordance with Resolution No. 466/2012 of the Brazilian National Health Council.

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