Prevalence of female reduction mammoplasty in Brazil from 2015 to 2019

Prevalência de mamoplastia redutora feminina no Brasil de 2015 a 2019

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■ **ABSTRACT**

Introduction: Female reducing mammoplasty aims to restore the physiological volume of the breasts in cases of breast hypertrophy, to maintain symmetry and with a minimum number of complications. Although such a procedure is usual, the literature lacks epidemiological and descriptive data on breast reduction surgery. Thus, this study aims to describe the prevalence of reducing mammoplasty in Brazil from 2015 to 2019; to compare the prevalence of reducing mammoplasty among the regions of Brazil from 2015-2018 with that of 2019, and to evaluate the relationship between regional family income and the prevalence of female reduction mammoplasty in the country of 2015-2019. **Methods:** Population-based ecological study whose data were collected through Informatics Department of the Unified Health System and Brazilian Institute of Geography and Statistics demographic censuses. Data were collected from 2015 to 2019. **Results:** The prevalence of reducing mammoplasty in Brazil in 2019 was 0.08%, while from 2015 to 2018, this prevalence was 0.07%. There was no statistically significant difference compared to the regional prevalence from 2015 to 2018 with the prevalence of 2019. The prevalence of reducing mammoplasty in the regions of Brazil from 2015-2019 showed a moderate positive correlation with average household income per capita. **Conclusion:** The prevalence of female reduction mammoplasty in Brazil shows a trend of temporal stability over the years 2015-2019 at national and regional levels. A positive correlation between regional per capita family income and the prevalence of this procedure is suggested.

Keywords: Mammoplasty; Prevalence; Per capita income; Epidemiology; Plastic surgery.

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■ **RESUMO**

Introdução: A mamoplastia redutora feminina visa restaurar o volume fisiológico das mamas em casos de hipertrofia mamária, de modo a manter a simetria e com um número mínimo de complicações. Embora tal procedimento seja usual, a literatura carece de dados epidemiológicos e descritivos acerca da cirurgia de redução de mama. Desse modo, esse estudo tem como objetivo descrever a prevalência da mamoplastia redutora no Brasil dos anos de 2015 a 2019; comparar a prevalência de mamoplastia redutora entre as regiões do Brasil de 2015-2018 com a do ano de 2019; e avaliar a relação entre a renda familiar regional e a prevalência da mamoplastia redutora feminina no país de 2015-2019. **Métodos:** Estudo ecológico de base populacional cujos dados foram coletados por meio do Departamento de Informática do Sistema Único de Saúde e censos demográficos do Instituto Brasileiro de Geografia e Estatística. Foram coletados dados de 2015 a 2019. **Resultados:** A prevalência de mamoplastia redutora no Brasil no ano de 2019 foi de 0.08%, enquanto que nos anos de 2015 a 2018, essa prevalência foi de 0.07%. Não houve diferença estatisticamente significante quando comparadas as prevalências regionais dos anos de 2015 a 2018 com a prevalência de 2019. As prevalências de mamoplastia redutora nas regiões do Brasil de 2015-2019 apresentaram correlação positiva moderada com renda domiciliar média per capita. **Conclusão:** A prevalência de mamoplastia redutora feminina no Brasil apresenta uma tendência de estabilidade temporal ao longo dos anos de 2015-2019 e-m âmbito nacional e regional. Sugere-se uma correlação positiva entre a renda familiar per capita regional e a prevalência desse procedimento.

Descritores: Mamoplastia; Prevalência; Renda per capita; Epidemiologia; Cirurgia plástica.

INTRODUCTION

According to the census conducted by the *Sociedade Brasileira de Cirurgia Plástica* in 2018, breast reduction surgery is one of the five most performed cosmetic surgeries in Brazil[1]. This surgery aims to reduce breast volume in cases of breast hypertrophy to maintain symmetry and have a minimum number of complications[2].

Breast hypertrophy is a condition characterized by gradual breast enlargement beyond anatomical limits when in the absence of other causative conditions such as pregnancy, tumors, hemorrhages, among others[3]. Back pain, dermatological changes in the mammary grooves and shoulders, postural vices, breast tenderness, and psychological, aesthetic, and functional impairment are some morbidity factors commonly associated with this pathology[4-6]. In this sense, female reduction mammoplasty has a function beyond aesthetics since it restores the physiological volume of the breasts, significantly impacting the patient's quality of life with gigantomastia[7].

Although reducing mammoplasty is one of the most common surgeries in the daily life of plastic surgeons, Brazil still lacks analytical studies conducted on a population basis. Therefore, the epidemiological data available on this procedure are still limited in the literature.

OBJECTIVES

The present study aims to describe the prevalence of reducing mammoplasty in Brazil from 2015 to 2019. Furthermore, as secondary objectives, the study aims to compare the prevalence of reducing mammoplasty between the regions of Brazil from 2015-2018 with the year 2019, in addition to evaluating the relationship between regional family income and the prevalence of female reducing mammoplasty in the country of 2015-2019.

METHODS

This is a retrospective ecological study, carried out from data provided by the Informatics Department of the Unified Health System (DATASUS) originated

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from the "Hospital Production Authorization" (AIH). The AIH is a mandatory filling document for the medical team responsible at the time of hospitalization. Electronic data collection was performed between July and August 2020.

The variables of interest selected for the study were: the total number of hospitalizations and the estimated female population. Each of these variables was collected by region/federative unit from 2015 to 2019, including hospital units from all legal spheres (public administration, business entities and non-profit entities). Therefore, both hospitalization regimes (public and private). In addition, estimates of average household income per capita were obtained through the Brazilian Institute of Geography and Statistics (IBGE) demographic censuses.

Exploratory analyses of the numerical variables collected were performed, which were described in absolute simple frequencies. Prevalence calculation was obtained by dividing the total number of hospitalizations multiplied by 1,000 by the estimated female population. For comparison between the variables, the Student's t-test and Pearson's correlation were used. A statistically significant p<0.05 value was considered. The data was organized into charts and tables through the SPSS program (Version 25, SPSS Inc., Chicago, Illinois, USA) and Tableau Public© (2020 Tableau Software, LLC, Salesforce Company).

Because it is a public domain database, the present study dispenses with the need to submit the project to the ethics and research committee.

RESULTS

The prevalence of reducing mammoplasty in Brazil in 2019 was 0.08%, while in 2015 to 2018, this prevalence was 0.07%, demonstrating similar values over the last five years (Figure 1).

The Brazilian region with the highest prevalence of female reduction mammoplasty in the period was the Southeast, with prevalence of 0.10% (2015), 0.11%
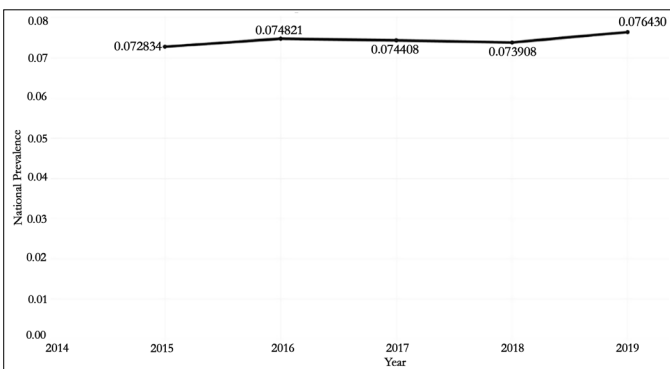
(2016), 0.10% (2017), 0.10% (2018) and 0.11% (2019), which exceeded the national prevalence for the same year under analysis. In contrast, the region with the lowest prevalence of this procedure was the North, which was: 0.02% (2015), 0.01% (2016), 0.02% (2017), 0.03% (2018), and 0.03% (2019), significantly lower than the prevalence observed nationally. The prevalence of all regions of Brazil, broken down by year, is explained in Figure 2.
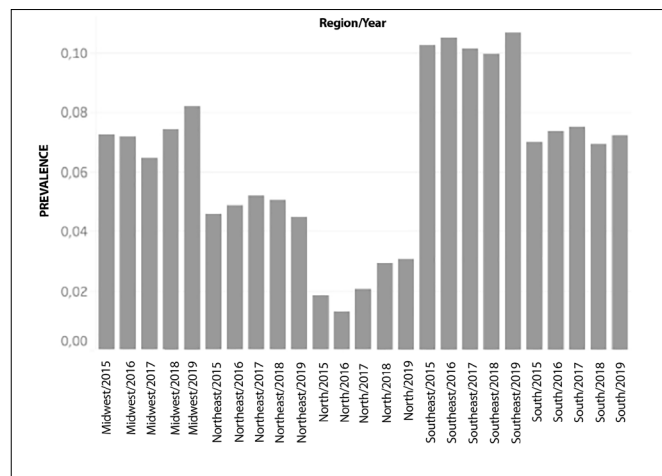

Figure 2. Prevalence of reducing mammoplasty in regions of Brazil from 2015 to 2019 by region/year.

In 2019, when the Brazilian prevalence of reducing mammoplasty was 0.08%, the Southeast region exceeded this, with a prevalence of 0.11%; the Midwest region presented a prevalence coincident with the national region, while the other Brazilian regions did present lower prevalence (Figure 3).
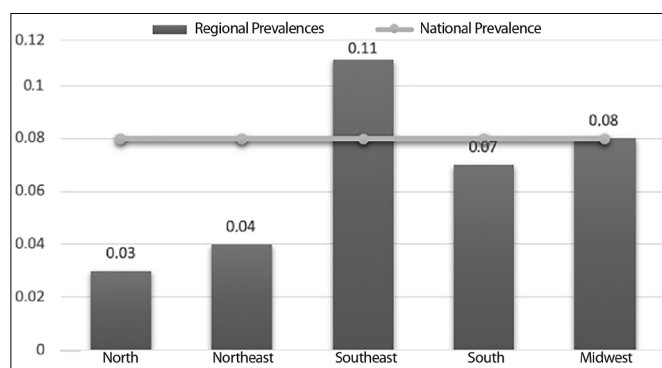

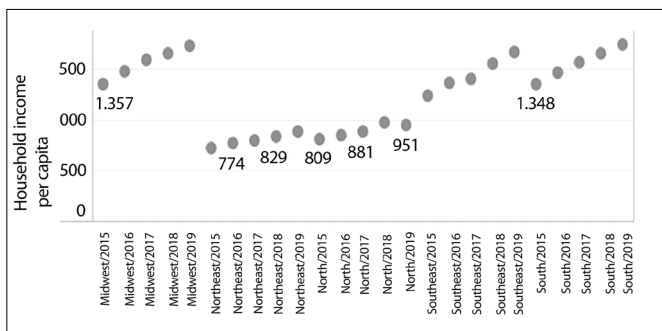**Figure 3.** National prevalence of female reduction mammoplasty.

There was no statistically significant difference compared to the regional prevalence from 2015 to 2018 with the prevalence of 2019, demonstrating that the Brazilian prevalence of reducing mammoplasty presents a stable temporal trend over the years (p=0.79; p=0.82; p=0.82; p=0.89, respectively) (Table1).

The average household income per capita is described by region/year in Table 2, and this data was graphically demonstrated in Figure 4. The prevalence of

Figure 1. National prevalence of female reduction mammoplasty (2015-2019).

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Table 1. Comparison between regional prevalence for 2015, 2016, 2017 and 2018 with regional prevalence for 2019.

Regions	Prevalence/2019	Prevalence/2015	p
North	0.03	0.02	0.79
Northeast	0.04	0.05	
Southeast	0.11	0.10	
South	0.07	0.07	
Midwest	0.08	0.07	
Regions	**Prevalence/2019**	**Prevalence/2016**	**p**
North	0.03	0.01	0.82
Northeast	0.04	0.05	
Southeast	0.11	0.11	
South	0.07	0.07	
Midwest	0.08	0.07	
Regions	**Prevalence/2019**	**Prevalence/2017**	**p**
North	0.03	0.02	0.82
Northeast	0.04	0.05	
Southeast	0.11	0.10	
South	0.07	0.08	
Midwest	0.08	0.06	
Regions	**Prevalence/2019**	**Prevalence/2018**	**p**
North	0.03	0.03	0.89
Northeast	0.04	0.05	
Southeast	0.11	0.10	
South	0.07	0.07	
Midwest	0.08	0.07	

reducing mammoplasty in the regions of Brazil over five years (2015-2019) showed a moderate positive correlation with mean household income per capita (r=0.74).

Figure 4. Average per capita family income from 2015 to 2019 by region/year.

DISCUSSION

This is the first national study to describe the national and regional prevalence of female reduction mammoplasty in Brazil. This procedure is well addressed in the literature regarding the technique employed [2,5], post-surgical outcomes[8,9] and impact on quality of life [4,10] of patients after mammoplasty, but still lacks epidemiological population data.

The analysis of the results demonstrated in the national and regional prevalence graph of reducing mammoplasty (2015-2019) (Figure 1 and Table 1) allows us

to observe temporal stability concerning the prevalence of reducing mammoplasty in Brazil (p=0.79; p=0.82; p=0.82; p=0.89 for the comparison of regional prevalence for 2015-2018 with the 2019 regional prevalence). Furthermore, this stability was also found in the census conducted by the *Sociedade Brasileira de Cirurgia Plástica* (SBCP), which showed that, in 2014, reducing mammoplasty represented 11.7% of all cosmetic surgeries performed that year, with this number falling to 9.6% in 2016 and in the last census conducted in 2018 it was 9.9%.

This slight variation in the rate may have a relationship with the per capita income of the Brazilian population, which between 2016 and 2018 ranged from R$ 1,187 to R$1,326 (Table 2). The per capita income of the population can be closely related to the prevalence of aesthetic procedures in general, since in 2018, for example, 61% of plastic surgeries performed were of a private nature, with 18% derived from a health insurance and only 2% from SUS[1]. In the Unified Health System, mammoplasty is only possible in cases of patients with breast hypertrophy. In the Unified Health System, mammoplasty is only possible in patients who have breast hypertrophy or asymmetry. These will result in functional changes, such as chronic back pain, pain or skin lesion in the shoulders, postural disorders, dermatitis, or changes in the spine[11].

In addition, the National Agency for Supplementary Health (ANS) issued a technical opinion in 2019.

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Table 2. Average household income per capita per region/year.

Regions	2015	2016	2017	2018	2019
North	809.00	845.86	881.43	968.86	950.71
Northeast	716.89	774.11	794.44	829.22	887.22
Southeast	1,242.00	1369.25	1396.50	1551.00	1665.75
South	1347.67	1470.00	1568.00	1657.33	1744.33
Midwest	1357.25	1478.25	1590.75	1652.00	1727.25

It stated that the procedure for correcting mammary hypertrophy is not included in the list of procedures and events in health. Furthermore, it does not have mandatory coverage by health plans[12]. Therefore, reducing mammoplasty is an inaccessible procedure for most of the population. This small accessibility to breast reduction surgery is also perceived in other countries around the globe, including in more developed countries such as the United States of America, where in 2016, 43,591 reducing mammoplasties were performed in the country, according to the American Society of Plastic Surgery (ASPS), in a universe of more than 164 million women[13,14].

The results of Figures 2 and 3 address the prevalence of female reduction mammoplasty in different regions of Brazil. Figure 2 shows a stable temporal trend over the years in different regions of Brazil. This is consistent with the result of Figure 1 regarding the national prevalence. However, in figure 3, there was an overlap between national and regional prevalence in 2019. Thus, by making a more detailed analysis, it is possible to notice that the Southeast, Midwest, and South regions presented the values closest to the national prevalence. Again, this observation refers to the relationship between per capita income and the prevalence of surgery since these regions had the highest income in 2019 (Table 2).

In addition, a survey conducted in 2016 on the spatial distribution of plastic surgeries in Brazil recorded data provided by the SBCP on the number of surgeons registered that year. The results showed a predominance of surgeons in the Southeast region, which presented 2,856 registered surgeons (highlighted in the state of São Paulo with 1,587), in contrast to the region of the North region that presented 122 surgeons in total (the state of Acre presented a single registered professional)[15].

This data strengthens the hypothesis that the prevalence of surgical procedures in general, and also for reducing mammoplasty, is intrinsically linked to the socio-economic condition of the Brazilian region in question, illustrating the moderate positive correlation found between the prevalence of female reduction mammoplasty in 2019 with per capita family income (r=0.74; p<0.001).

Because it is a study conducted through data collection by DATASUS, it was impossible to characterize the sample studied in detail since this database, for hospital production related to reducing mammoplasty, lacks qualitative data such as age, schooling comorbidities, among others.

CONCLUSION

Female reduction mammoplasty surgery is an expanding theme, but it lacks epidemiological and descriptive data in Brazil. Nevertheless, the national prevalence of female reduction mammoplasty in Brazil was 0.08% in 2019 and 0.07% from 2015 to 2018, demonstrating a trend of temporal stability over the years at the national and regional levels. In addition, it is suggested that the national prevalence has a positive correlation with the average regional per capita family income.

COLLABORATIONS

MEBS	Analysis and/or data interpretation, Conception and design study, Conceptualization, Data Curation, Formal Analysis, Methodology, Project Administration, Writing - Original Draft Preparation, Writing - Review & Editing.
TSS	Analysis and/or data interpretation, Conception and design study, Conceptualization, Data Curation, Methodology, Project Administration, Writing - Original Draft Preparation, Writing - Review & Editing.
DMLV	Supervision, Writing - Review & Editing.
HC	Supervision, Writing - Review & Editing.

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