Breast Aesthetic Preferences: Analysis of 1294 Surveys

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Abstract

Background Aesthetic breast perceptions could be variable among cultures. Fullness, superior/inferior pole proportion and orientation and size of the nipple areolar complex are key elements in patient post-operative satisfaction and should be considered when planning breast aesthetic surgery.

Methods A descriptive study was designed, using an online survey, sent via social media. Standardized software modified images of breasts with different pole proportions, areolar nipple complex orientation and size were used.

Results From 1294 surveys collected, 1291 were analysed (969 women and 322 men). Significant differences in preferences of upper/lower pole breast proportions were found among groups of different age, gender, level of education and previous history of breast surgery.

Conclusions In the studied population, we found several variations in aesthetic breast preferences related to their demographic characteristics and for this reason we believe that this research may serve as a "macro" guide for both patient and surgeon in primary and secondary breast surgery. To our knowledge, this is the largest survey study concerning breast aesthetic preferences done in Colombia and second largest in the world.

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Introduction

According to 2018 statistics report of the International Society of Aesthetic Plastic Surgery (ISAPS), 1.862.506 breast augmentations and 710.014 breast lifts were performed worldwide in 2018. The same year, this survey reported 42.744 breast augmentations and 17.124 breast lifts in Colombia. These statistics suggest that breast augmentation is not only one of the most frequent surgeries in the world but in Colombia as well. Although breast surgery satisfaction is high, this issue becomes an increasing concern in some types of breast aesthetic and reconstructive surgeries, as secondary breast augmentations, breast lifts and breast reductions. Patient desire of better shape or volume, and implant-related complications could explain the majority of late reoperations [1].

Codner et al. reported a 14.2% reoperation rate during the first post-operative year in breast augmentation patients after a 15-year experience review. Surgical complications and patient non-satisfaction were the main reasons for returning to surgical room [2]. Beauty breast shape canons among patients and surgeons could be geographic dependent and patient´s satisfaction achievement involve variation of surgical techniques to accomplish desired standards [3, 4].

Several studies have shown ideal breast patients' perception in different countries. Natural looking breasts with more fullness of inferior pole have been reported in some countries [5–9]. In 2003, Hsia y Thomson published data

Table 1 Population demographic

Variable	No. (%)
Age	
18–30	393 (30.4)
31–50	778 (60.3)
>50	120 (9.3)
Gender	
Female	969 (75.1)
Male	322 (24.9)
Education	
None	0 (0)
Elementary	1 (0.1)
High school	51 (4.0)
College or technique school	107 (8.3)
University	519 (40.2)
Doctorate or master's degree	613 (47.5)
Plastic Surgeon or resident	
No	1242 (96.2)
Yes	49 (3.8)
History of breast surgery	
Breast implants	299 (23.2)
Reduction mammoplasty or breast reconstruction	45 (3.5)
None of the above/does not apply	947 (73.4)

collected by surveys of patients and plastic surgeons which showed that in USA, plastic surgeons preferred more natural looking breast, but patients preferred a fuller upper pole. However, these studies are all based on pictures and images of breasts without any kind of surgical intervention [4]. A recent study in Colombia using computer modified breasts concluded that the 50:50 proportion (upper pole:-lower pole) in large- and small-sized breasts were the aesthetic preference of a small group of patients in Bogota [10].

The aim of this study was to identify current tendencies in breast aesthetic preferences in Medellin, Colombia. At present, there is scarce statistical data on this matter,

considering that Colombia is ranked as the 8th country in the world, by number of breast surgeries performed (this accounts for 2.3% of all worldwide breast surgery).

Methods

An exploratory, descriptive, transverse study was designed. Data were collected for 10 months using an online survey (https://docs.google.com/forms/d/e/1FAIpQLSdIYqj_yowMyU1jbGoqqzBdocoFbmNae24vWUvYDmiEErpDhQ/viewform?usp=sf) which was sent via social media. After answering demographic questions, people chose which picture they found more attractive between images of breasts, which were originally of one volunteer model and then digitally modified with different proportions in superior/inferior pole (Figure 1) and areola nipple complex orientation (Figure 2) and size (Figure 3). The collection and evaluation of patient information conformed to the principles of the Declaration of Helsinki. All patients provided informed consent to view nude pictures, answer the survey and publish the results.

Population studied was defined as people who resided in Medellin (Colombia) at the time of the survey. Inclusion criteria were men and women over 18 (legal age limit in Colombia) and agreement of informed consent at the beginning of the survey. Due to the exploratory design of the study, we did not claim to have statistical inference or hypothesis, and because there were no indicators about the quantity of social media users in Medellin, we did not present a sample size to begin with.

Anatomical boundaries of the upper and lower poles of the breast were defined as described by Branford and Malluci [11] in Figure 4.

Proportion 45:55 (upper pole: lower pole). Anatomical references are as follows: superior pole (SP), inferior pole (IP), superior pole line (SPL), inferior pole line (IPL), and nipple meridian (NM).

Fig. 1 Superior/inferior pole modifications

Fig. 2 Areola nipple complex orientation modifications

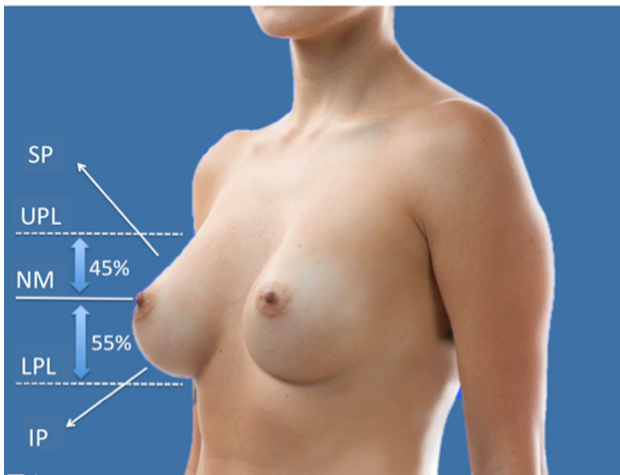

Fig. 3 Size modification

Fig. 4 Anatomical boundaries of the upper and lower poles of the breast as described by Branford and Malluci [11]

Statistical Analysis

Database was collected on Microsoft Excel® and processed with software R version 3.4.3 (2017-11-30) "Kite-Eating Tree". Shapiro-Wilk test was applied for quantitative variables, percentages were reported and plotted for qualitative variables and chi-square test was used to report associations between qualitative variables with statistical significance assuming alfa<0.05%.

Results

During 10 months, 1294 surveys were collected. 3 were excluded because unapproved informed consent. 969 valid surveys were submitted by women and 322 by men. Demographic data are shown in Table 1.

Throughout the time of data recollection, 8.3% of people made mistakes filling the year of birth and therefore it was impossible to calculate their age. To compensate this error, 80 ages of women and 28 ages of men had to be imputed using the age median (34.841 for men and 34.842 for women).

The majority of participants had a high educational level, with 87.7% of university, doctorate or master's degree, and 4% of high school graduates.

Age was categorized in 3 groups to analyse preferences between generations. 778 (60.3%) of participants were between 31 and 50 years old, 393 (30.4%) were in the 18–30 age group and 120 (9.3%) were older than 50 years.

Survey asked about surgical background of breast augmentation, reconstruction, or none. This query was made to avoid any kind of selection bias. 299 (23.2%) of participants have had breast augmentation, 43 (3.5%) have had breast reconstruction due to cancer or other conditions and 947 (73.4%) did not have any kind of surgical breast history or the question did not apply to them (most cases of men).

Age group differences

We found that people between 18 and 30 years preferred the 50/50 proportion, while the 31–50 group and older showed a slight predilection for a more natural looking breast (40/60). The 60/40 proportion was clearly not among the preferences of this population and in neither group had more than a 7.5% positive response. Chi2 = 4.152, df = 4, $p = 0.385$

Regarding NAC location, all groups preferred a central mound position. In our opinion, this is not a strictly natural look for a NAC. When analysing plastic surgeons and
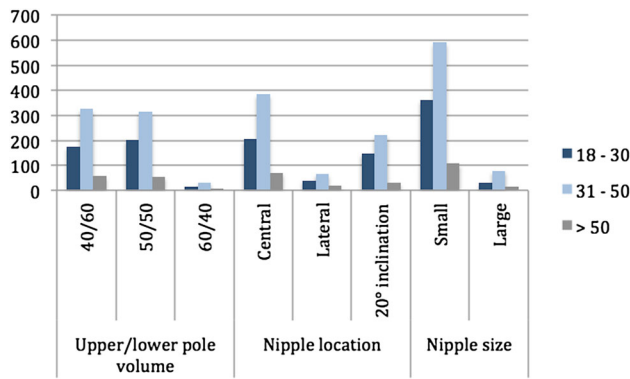
Fig. 5 Summary of preferences according to age groups

residents answers, the preference was a NAC with a 20° inclination. Chi2 = 12.092, df = 4, p = 0.016

Preference for size had a constant tendency in all groups, more than 86% of participants preferred a smaller sized nipple areolar complex. Chi2=4.814, df = 2, p = 0.090 Figure 5.

Preferences between genders

Among the 969 women who answered the survey, 52.1% preferred an equally full superior and lower pole and 43.4% preferred the 40/60 proportion. The majority of men in our study preferred natural looking breasts by choosing the 40/60 proportion (58.4%). In both genders, the 60/40 proportion was selected in less than 6% of the time. Chi2=26.048, df =2, p = 2.207e-06

The most chosen location for nipple areola complex was central (58.9% in women and 47.5% in men). Lateralized NAC was the least chosen in both genders (9.4% in women and 14.3% in men). Chi2 = 14.149, df=2, p = 0.0008

Different gender analysis showed that preferred size for the NAC continued to be the smaller one, 90.4% and 86%

in women and men, respectively. Chi2 = 4.403, df=1, p = 0.035. Figure 6.

Preferences among plastic surgeons and residents

When we made comparisons between general population and plastic surgeons or residents, a difference in preferences of proportions of upper and lower pole and the NAC location was found. Plastic surgeons chose the 50/50 proportion 59.6% of times, while the general populations preferences were very similar between the 50/50 and 40/60 proportions. Chi2 = 2.890, df = 2, p = 0.235

The central NAC location, as described earlier was the most chosen by all participants, except when analysing the plastic surgeon population which chose the 20° inclination. Chi2 = 7.525, df = 2, p = 0.023

The small-sized NAC remains the favourite among this subgroup as well as the general population (87.8% and 89.4%). Chi2 =7.525, df =2, p = 0.023

Figures 7 show a summary of preferences among plastic surgeons or residents and general population.

Other subgroup analysis

An interesting finding was seen when analysing preferences and educational level of participants. There was an increasing tendency to prefer the 40/60 proportions at higher level of education. Chi2=12.739, df = 8, p = 0.121

Women with medical history of breast augmentation preferred the 50/50 proportion 60.2% of times, central NAC location 59.9% and small NAC as observed in other subgroup analysis (92.6%). Participants with medical history of breast reconstruction preferred the 40/60 proportions, which is the more natural looking breast proportion (48.9%). Unfortunately, breast surgery satisfaction of survey participants with breast augmentation is unknown. It would have been interesting to explore if there is some

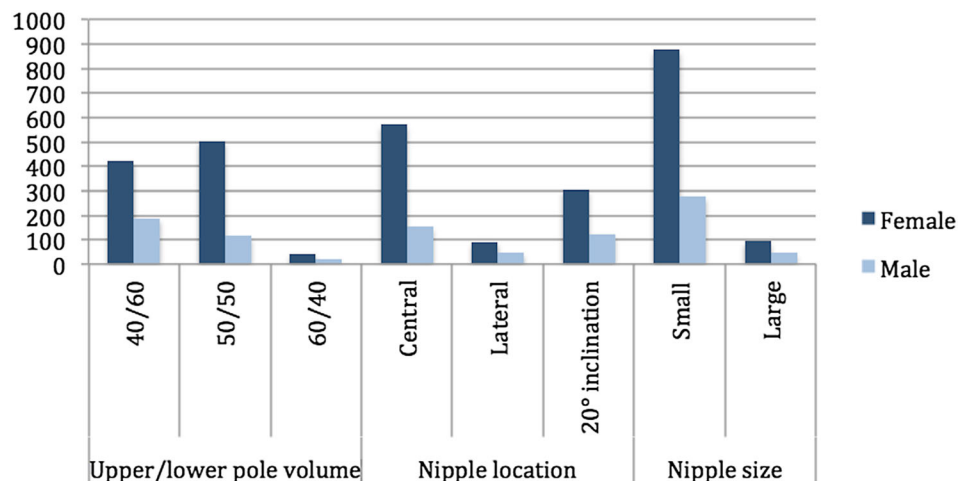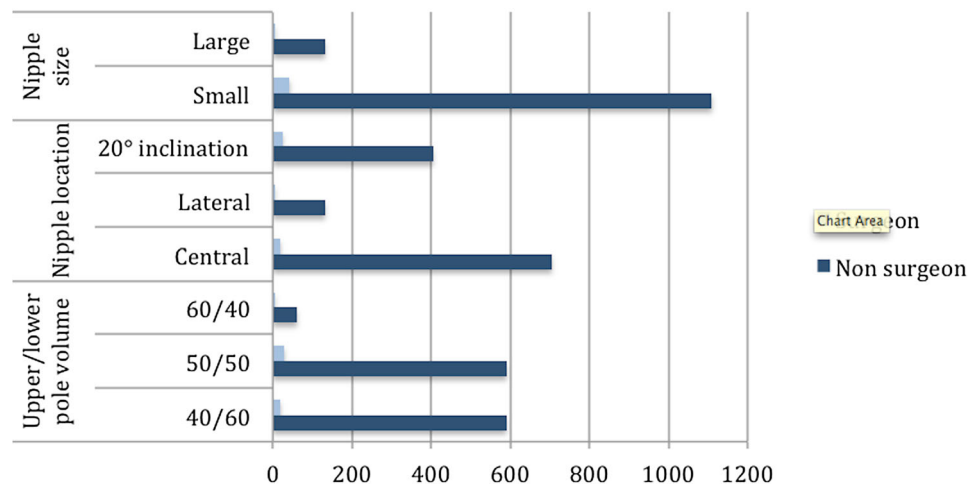**Fig. 6** Summary of preferences in both genders

Fig. 7 Summary of preferences among plastic surgeons or residents and general population

relation between their preferences and proportion of their own breast augmentation.

Discussion

The results of this study show patterns of preferred breast proportion and NAC characteristics across different population groups. The authors do not pretend to set an aesthetic template to plan an aesthetic breast surgery, but only report a unique local statistical aesthetic breast baseline.

Ideal breast shape varies among cultures. However, inside country boundaries, people sharing same cultural background could have slightly different views of breast beauty. This study reveals variations of ideal breast perception among population subgroups in the same geographic area. For people, the concept of natural and beautiful is not always identical. As we have shown, demographic conditions could influence these perceptions. In this study, the educational level, age, gender, and even career modified beauty beliefs. For younger population, a natural appearance may not be considered a beautiful one. Penn's beauty pattern seems to be unfit for the millennial generation [12]. As breast surgery is performed in different ages and educational level groups, surgeons must understand these subtle variations and consider them in patient assessment before surgery, to prevent dissatisfaction issues resulting from perception's discrepancies. Some differences in NAC location preference between general population and plastic surgeons could be associated to a more detailed knowledge of breast anatomy variations in this group.

We strongly believe that growing surgical tourism and internationalization of cultural patterns make this study of interest in a globalized world. Although other authors have published studies that reported a more natural looking breast preference, we believe that this aesthetic concept does not apply to all population groups or countries. In fact, we have observed that it could be different among several regions in the same country.

To our knowledge, this is the first aesthetic breast preference investigation in Medellin, being the largest survey completed in Colombia, and the second largest in the world. Furthermore, present analysis exceeds the number of female surveys applied on Mallucci´s research [9, 11, 13]. In addition, this study is limited to Latin American non-Caucasian population, reflecting strong differences in cultural viewpoints of ideal breast shape.

Study limitations were due to the method chosen for the study that was a survey sent via internet (patients with a higher income). Therefore, our results should be interpreted carefully in other socio-demographic groups.

Conclusions

In the studied population, we found several variations in aesthetic breast preferences. Older than 31 years preferred an upper/lower pole breast with 40/60 proportion while younger groups favoured 50/50 proportion. Men preferred a more natural looking breast (40/60) while women chose a 50/50 upper/lower pole proportion. In addition, there was a tendency to select a more natural looking breast with a higher educational level. The majority of local plastic surgeons chose a 50/50 proportion and a small NAC with a 20° angle inclination. Women with history of breast augmentation preferred the 50/50 proportion and almost all the population selected a central location for the NAC.

Further aesthetic breast pattern preferences research is needed. Cultural interpretation of ideal breast is beyond the scope of this article. This research may serve as a "macro" guide for both patient and surgeon in primary and secondary breast surgery.

Declaration

Conflict of interest The authors declare that they have no conflicts of interest to disclose.

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