Aesthetic plastic surgery is a personal choice that appeals to a growing population of individuals. The American Society of Plastic Surgeons reported that in 2017, nearly 17.5 million cosmetic procedures were performed, representing an increase of 137 percent compared with 2010. Not only is the number of patients pursuing cosmetic procedures expanding, but the patient profile is also evolving over time. While the majority of cosmetic plastic surgery patients were white (70 percent), 30 percent of patients were ethnic minorities: 10 percent were Hispanic, 8 percent were African American, 7 percent were Asian American, and 5 percent identified as “other.” With the continued popularity of cosmetic surgery, plastic and reconstructive surgeons should aspire to

Background: Aesthetic surgery is a personal choice that appeals to a wide population of individuals. The authors investigated how race and ethnicity, age, gender, income, and education level affect patient motivation to pursue cosmetic surgery and selection of a plastic surgeon.

Methods: One hundred seventy-two consecutive patients from two surgeons (an African American man and a Caucasian woman) completed surveys from 2016 to 2017 that assessed their decision to pursue cosmetic surgery. Univariable cumulative logit models with odds ratios and 95 percent confidence intervals were calculated with the survey data.

Results: African American patients were more likely to be willing to travel greater than 100 miles for a surgeon who shared the same ethnicity or race, to consider international surgery, to report that social standards did not influence their decision for surgery, and to view the buttocks as the female feature that best defines attractiveness within their race or ethnicity. Patients with incomes over $125,000 and those over the age of 50 years were more likely to seek a surgeon of the same gender, think a same-gender surgeon could provide better results, be influenced by societal standards to pursue surgery, and view the face as the defining attractive female feature within their race or ethnicity. Patients with college or graduate degrees were more likely to believe a gender- and racially concordant surgeon would provide them with better a result and believed societal standards were unrealistic to obtain with diet and exercise.

Conclusions: Plastic surgeons encounter patients of varying demographics, all of whom have differing perspectives about cosmetic surgery and motivations for its pursuit. Recognizing and defining these differences could enable surgeons to provide a more individualized cosmetic experience and inform future marketing strategies to attract a diverse patient population. (Plast. Reconstr. Surg. 145: 932e, 2020.)

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understand the complexity of factors that underlie the decision to pursue aesthetic surgery to deliver personalized care to a diverse patient population.

Previous studies have repeatedly correlated psychosocial improvements such as self-esteem, depressive symptoms, body image, and overall patient satisfaction among patients who elect to undergo cosmetic plastic surgery.4–11 Although it is universally accepted that the cosmetic surgery population is continuing to evolve as the U.S. population diversifies, there is limited information on how demographics such as race and ethnicity, gender, age, income, and education level affect patient motivation to pursue cosmetic surgery and selection of a plastic surgeon.

In this study, we examined cosmetic surgery patients at our own institution to elucidate the factors and perceptions that influence patients to pursue cosmetic surgery and how they select the plastic surgeons who provide care for them.

METHODS

Survey Administration

To examine the perception and accessibility of cosmetic plastic surgery, a 23-item survey was administered to patients seeking cosmetic procedures from two surgeons in the University of Pennsylvania Health System. In this academic practice, patients can choose which surgeon they see in consultation. All patient calls are received by a divisional call center and transferred to each surgeon’s administrative assistant as needed. The time to consultations is equivalent between the surgeons. For 22 of the 23 survey items, participants responded on a five-point Likert Scale, with “strongly agree,” “agree,” “neutral,” “disagree,” and “strongly disagree” as options. The last survey item asked participants to select body parts that define female beauty in their race or ethnicity from a list that included the face, breasts, abdomen, buttocks/hips, shoulders/arms, and legs. Information on participant demographics was also captured to examine the association between patient characteristics and survey item responses in statistical analyses.

One hundred seventy-two consecutive patients of two surgeons were enrolled in the study. They received the written survey while waiting for consultation with their surgeon and did not receive any form of compensation for their participation.

Statistical Analyses

We examined the relationship between race and income with responses to each survey item, and adjusted for sex, age, educational attainment, and marital status as potential confounders. For analyses, age was dichotomized at patients older than 50 years or younger than or equal to 50 years old. Similarly, annual income was dichotomized at less than or equal to $125,000 or greater than $125,000, and educational background was dichotomized as individuals with a college or graduate degree and those without.

The original survey solicited data with categorical rather than continuous entries for age and race. The categories used for age were 18 to 21, 22 to 30, 31 to 40, 41 to 50, 51 to 60, and 61 to 70 years. Because of the limitations of sample size, to reduce the number of variables needed in the adjusted models, we chose to dichotomize the categories. In sensitivity analyses, changing the boundary to 40 or 60, the effect estimates were consistent with the results presented in the final analysis.

With respect to race, most of the patient population was African American (n = 65) or Caucasian (n = 92), with only eight people selecting Hispanic or Latino, five selecting Asian, and two selecting “other.” Small cell counts such as these are not supported in regression models, so to conduct our analyses, we excluded them from the analysis.

For the 22 survey items scored on a Likert scale, ordinal logistic regression (also known as proportional odds or cumulative logistic regression) was used to evaluate the association of participant characteristics and responses. We developed unadjusted ordered logit models for agreement with each survey item based on race and income, and report odds ratios and corresponding 95 percent confidence intervals below. For race, indicator variables for African American and “other” were included in the regression models, and odds ratios and confidence intervals are reported with Caucasian as the reference group. For income, odds ratios and confidence intervals are reported with annual income less than or equal $125,000 as the reference. For item 23, binary logistic regression was used to examine the likelihood of participants selecting buttocks/hips, breasts, and face, modeled separately. Shoulders/arms, legs, and abdomen were excluded from the analyses because too few respondents selected those body parts to support model building. Multivariable ordinal (items 1 through 22) and binary (item 23) logistic regression models were used to adjust for sex, age, educational attainment, and
marital status. In addition, we compared race and sex across the two providers using Fisher’s exact test.

**RESULTS**

**Demographics**

Table 1 shows the demographics of the 172 survey respondents. Sixty-two percent were 50 years old or younger, and the remainder were over 50 years of age. The majority (85 percent) of respondents were women. Most respondents were Caucasian (54 percent), followed by African American (38 percent). Due to the low frequency of participants who identified as Latino/Hispanic or Asian, these racial or ethnic categories were collapsed into the “other” group (8.14 percent). Of the respondents, 23 percent had annual incomes greater $125,000, 62 percent had a college or graduate degree, and 40 percent were married.

Table 2 shows the results of adjusted logistic regression models for the association between race and agreement with survey items. For brevity, only the questions with statistically significant associations are shown. Estimated odds ratios and confidence intervals are shown from the ordinal logistic regression, and confidence intervals that do not include 1 are statistically significant with p values less than 0.05. For race, Caucasian was the reference category, and the odds ratio represents the odds of agreement with the survey item for African American respondents relative to Caucasian respondents or individuals grouped into “other” relative to Caucasian respondents.

**Race**

After adjusting for age, sex, education, and marital status (Table 2), African Americans had statistically significantly lower odds of reporting that societal standards influenced their decision to pursue cosmetic surgery (OR, 0.4; 95 percent CI, 0.19 to 0.83), lower odds of being more open to the idea of cosmetic surgery after knowing that people they respect or look up to have undergone plastic surgery (OR, 0.43; 95 percent CI, 0.2 to 0.89), and lower odds of thinking that a plastic surgeon who shares the same gender can better address their concerns and provide a more desired result (OR, 0.69; 95 percent CI, 0.33 to 1.43). African Americans were also found to have greater odds of considering international plastic surgeons (OR, 4.92; 95 percent CI, 2.15 to 11.68), being willing to travel 100 miles or more to seek consultation from a plastic surgeon who shares the same gender or race or ethnicity (OR, 3.41; 95 percent CI, 1.59 to 7.46), and perceiving cost of cosmetic surgery as a barrier to pursuing cosmetic surgery (OR, 2.17; 95 percent CI, 1.04 to 4.54). In adjusted models, African Americans also had greater odds of reporting that they believe people of different races have different attitudes regarding cosmetic surgery (OR, 2.37; 95 percent CI, 1.08 to 5.31), and that a plastic surgeon of the same race or ethnicity can better address their concerns and provide a more desired result (OR, 2.31; 95 percent CI, 1.06 to 5.11).

Individuals in the “other” racial category, relative to Caucasians, had greater odds of considering international plastic surgeons (OR, 10.28; 95 percent CI, 3.25 to 11.68). When adjusting for age, sex, education, and marital status, “other” race was also associated with decreased odds of family support for plastic surgery (OR, 0.25; 95 percent CI, 0.08 to 0.79).

Lastly, African Americans had decreased odds of identifying the face as the female body part that best defines attractiveness within their race or ethnicity (OR, 0.25; 95 percent CI, 0.09 to 0.67) and increased odds of reporting buttocks/hips as the defining body part (OR, 7.4; 95 percent CI, 2.58 to 23.06).

**Income**

Table 3 shows the results of the unadjusted and adjusted logistic regression models for the association of income with agreement for survey

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**Table 1. Sociodemographic Characteristics of Survey Respondents (N = 172)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>≤50 years</td>
<td>107 (62.21)</td>
</tr>
<tr>
<td>&gt;50 years</td>
<td>62 (36.05)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23 (13.37)</td>
</tr>
<tr>
<td>Female</td>
<td>147 (85.47)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>93 (54.07)</td>
</tr>
<tr>
<td>African American</td>
<td>65 (37.79)</td>
</tr>
<tr>
<td>Other</td>
<td>14 (8.14)</td>
</tr>
<tr>
<td>Annual income</td>
<td></td>
</tr>
<tr>
<td>≤$125,000</td>
<td>112 (65.12)</td>
</tr>
<tr>
<td>&gt;$125,000</td>
<td>40 (23.26)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>No college or graduate degree</td>
<td>63 (36.63)</td>
</tr>
<tr>
<td>College or graduate degree</td>
<td>106 (61.63)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>102 (59.3)</td>
</tr>
<tr>
<td>Married</td>
<td>68 (39.53)</td>
</tr>
</tbody>
</table>

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Individuals with higher incomes had greater than two times the odds of responding that societal standards influenced their decision to pursue cosmetic surgery (OR, 2.21; 95 percent CI, 1.01 to 4.84) after adjusting for age, sex, education, and marital status. Similarly, individuals with higher incomes had greater odds of reporting that they believed a plastic surgeon of the same gender or race/ethnicity as me. Individuals with higher incomes had greater odds of reporting that the face was the female body part that defines attractiveness within their race or ethnicity (OR, 4.47; 95 percent CI, 1.39 to 16.65).

### Income and Race: Combined and Adjusted

Table 4 shows the results of logistic regression models for race and income adjusted for age, sex, education, and marital status. Only survey items that were statistically significant in adjusted models for race and income alone were included in the combined models. After including income in adjusted models, African American race was still significantly associated with odds of considering international plastic surgeons (OR, 4.33; 95 percent CI, 1.75 to 11.13), seeking plastic surgeons of...
the same race or ethnicity (OR, 3.11; 95 percent CI, 1.31 to 7.64), thinking that a plastic surgeon of the same race or ethnicity could provide better results (OR, 2.9; 95 percent CI, 1.25 to 6.85), and willingness to travel 100 miles or more to consult a plastic surgeon of the same gender or race or ethnicity (OR, 3.31; 95 percent CI, 1.46 to 7.69) relative to Caucasian respondents. Similarly, after adjusting for income along with other covariates, African American race was still associated with greater odds of responding that the buttocks/hips represent beauty (OR, 5.78; 95 percent CI, 1.88 to 19.55) and lower odds of responding that the face represents beauty in their race or ethnicity (OR, 0.29; 95 percent CI, 0.1 to 0.85) relative to Caucasian respondents. Individuals in the “other” race group had increased odds of considering international plastic surgeons (OR, 6.93; 95 percent CI, 1.98 to 24.94) and decreased odds of family support for their plastic surgery (OR, 0.14; 95 percent CI, 0.04 to 0.51), after adjusting for income among other covariates. In models also including race, individuals with higher incomes had significantly increased odds of reporting that a plastic surgeon of the same gender can provide better results (OR, 2.84; 95 percent CI, 1.23 to 6.68).

**Differences in Patient Race or Ethnicity between Surgeons**

Table 5 shows patient demographic differences between the cohorts that sought consultations by each individual surgeon. Eighty-eight percent of the African American patients in the survey were seen by the African American plastic surgeon (surgeon

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**Table 5. Racial Distribution of Patients among Participating Surgeons**

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Participating Surgeon, no. (%)</th>
<th>Surgeon 1</th>
<th>Surgeon 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>33 (36)</td>
<td>60 (65)</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>57 (88)</td>
<td>8 (12)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>12 (86)</td>
<td>2 (14)</td>
<td></td>
</tr>
<tr>
<td><strong>p</strong></td>
<td></td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>
1), while 12 percent were seen by the Caucasian surgeon (surgeon 2, \( p < 0.001 \)). Sixty-five percent of the Caucasian patients elected to be seen by the Caucasian physician, while 35 percent were seen by the African American surgeon (\( p < 0.001 \)).

**DISCUSSION**

According to the 2017 American Society of Plastic Surgeons report, the popularity of cosmetic plastic surgery has continued to grow, with nearly 17.5 million cosmetic procedures performed, representing an increase of 137 percent compared with 2010.1–3 Mirroring the changes in the U.S. population, there is a continuously evolving cohort that is seeking cosmetic plastic surgery. While the majority of cosmetic patients were Caucasian (70 percent), recent publications describe a growing population among ethnic minorities.12–14 This is further supported in the 2017 American Society of Plastic Surgeons report, in which 30 percent of patients were ethnic minorities: 11 percent were Hispanic, 9 percent were African American, 7 percent were Asian American, and 5 percent identified as “other.”2,3 When comparing 2016 to 2017, there was a significant increase in the number of ethnic patients seeking cosmetic surgery. While there was an 8 percent increase seen in the Caucasian population, there was a greater increase seen among the Hispanic community (16 percent) and among African Americans (17 percent). The goal of our study was to educate current and future generations of plastic and reconstructive surgeons on how patients’ race, gender, age, income, and level of education contribute to differences in attitudes and motivations surrounding cosmetic surgery.

The results of our study highlight that there is a complex combination of factors underlying an individual’s decision to pursue aesthetic surgery. We discovered that income and race made a statistically significant difference in how patients perceive attractiveness within society and their general perception of plastic surgery. What is most interesting is that race and income affected not only how patients decided to pursue plastic surgery but also how they chose their surgeon.

In the last two decades, published studies have confirmed that patients choosing to undergo aesthetic procedures have higher rates of satisfaction in overall appearance and body image in the short-term postoperative phase, as well as the long term.1–11,13,16 However, this study adds to the available cosmetic surgery literature, as it is the first that investigates individual attitudes and motivations for surgery based on patients’ self-identified demographic information. In addition, it provides some information regarding the factors they deem critical when choosing a plastic surgeon.

In the medical literature, it has been described that patient satisfaction scores and patient compliance are improved when patients are cared for by an ethnically concordant physician. There is no evidence that ethnic or gender concordance impacts outcomes, but level of patient comfort and ease of navigating the health system have been described.17–19 This study is novel because no one has investigated physician ethnicity or gender preference in the cosmetic surgery sector.

This survey was written with the category of gender being limited to male and female, and we acknowledge that we did not adequately capture the full breadth of gender identities in our study due to how this was originally written. In subsequent iterations of this survey, this will be corrected to be more inclusive of all gender identities.

The ethnic minority cohorts, African American and other, identified the buttock as the part of the body that defined attractiveness within their self-identified ethnic community, while the Caucasian group answered that the face represented the most attractive body part within their community. In contrast to Caucasians, the ethnic minority populations more actively sought a surgeon of the same ethnicity, would be willing to travel greater than 100 miles for a surgeon of the same ethnicity or gender, and believed that a surgeon of the same ethnicity would be able to address their concerns better. Also interesting was that individuals with annual income levels greater than $125,000 were more likely to believe a plastic surgeon of the same gender could better address their concerns and provide a more desired result, which was a category not impacted by ethnicity.

The two plastic surgeons included in this study were an African American man and a Caucasian woman. Both plastic surgeons carry the same rank and are core faculty members at the same academic medical center. They both utilize the same marketing team, advertising resources (website), and consultation fees; yet interestingly, there was a statistically significant difference in the distribution of the patients who elected to see each surgeon. The data revealed that 88 percent of the African American patients in the survey elected to be seen by the African American plastic surgeon, compared with 12 percent who visited the Caucasian surgeon (\( p < 0.001 \)). This difference was also observed in Caucasian patients, as 65 percent of
the Caucasian patients elected to see the Caucasian physician, while only 35 percent were seen by the African American surgeon ($p < 0.001$).

As the U.S. population grows and the demographics continue to change, so too will the plastic surgery patient population. The newest American Society of Plastic Surgeons data show the percentage of minority populations seeking cosmetic surgery is continuing to grow, which highlights that we may be missing out on many potential patients by marketing to solely the Caucasian community.

This study also suggests that plastic surgery practices, regardless of whether they are academic, community, or private practice, can appeal to a wider range of patients by welcoming a greater diversity among their providers. The trends of gender and ethnic representation in plastic surgery have recently been published and further emphasize our belief that improving diversity within our specialty can result in greater delivery of care to a greater diversity of patients. This point was illustrated with our results, as patients were shown to seek consultation with surgeons who they identified with, either by gender or ethnic group.

Our results dispel any myths suggesting that minority populations are less interested in plastic surgery or that they do not pursue plastic surgery due to affordability based on income status. The majority of our patients were found to make less than $125,000 per year. Our group strongly believes that if practices appropriately cater to all patients, they will be successful in reaching a larger, growing population of potential patients.

In this study, we enrolled patients who sought cosmetic consultations by two of our plastic surgeons: an African American man and a Caucasian woman. While we believe that our findings paint a broader picture of a growing diversity of patients pursuing cosmetic procedures, we also recognize the limitations of our study. First, our sample size was limited to 172 consecutive patients. As a result of our small sample size, we did not have large enough ethnic subgroups, such as Asian American, Middle Eastern, or Hispanic, to analyze these populations separately. Ultimately, we combined the ethnic minorities (excluding African American) into an “other” category that we acknowledge is an unfair grouping of these diverse and different cohorts. We included the combined “other” cohort because we determined the data set to be unfairly represented if we did not include the other ethnic minority responses in our findings. These small numbers may reflect regional differences in minority populations or could reflect the fact that our cosmetic faculty is not representative of all ethnic minorities.

Despite these limitations, our group believes that the results are representative of the differences that exist in a diversifying population. Our hope is that our study will offer more understanding into the differences in motivations to pursue plastic surgery that will allow physicians to provide more personalized care to all patients, regardless of race, age, income, and level of education.

CONCLUSIONS

Plastic surgeons encounter patients of varying race and ethnicity, gender, age, income, and education level, all of whom have differing attitudes about cosmetic surgery and motivations for its pursuit. Understanding these differences will enable surgeons to provide a more individualized cosmetic experience.

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REFERENCES


