The Ideal Buttock Size: A Sociodemographic Morphometric Evaluation

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Background: Perception of beauty is influenced by geographic, ethnic, cultural, and demographic factors. However, objective measurements remain the foundation for aesthetic evaluations. In the quest to better define the “ideal” female buttock, this study assumes interdependence among variables such as country of residence, sex, age, occupation, and aesthetic perception, yielding a waist-to-hip ratio that appears most pleasing across most cultures and geographic locations.

Methods: An online survey was designed. Modifiable ranges of buttock sizes were achieved by means of digital alteration, enabling participants to interactively change the size and waist-to-hip ratio of a single model’s buttocks. The questionnaire was translated into multiple languages and sent to more than 9000 plastic surgeons and to the general public worldwide. Demographic data were collected, and analysis of variance was used to elucidate buttock shape preferences.

Results: A total of 1032 responses were gathered from over 40 different countries. Significant differences regarding preferences for buttock size were identified across the respondents. Overall, 404 of 1032 of survey takers (39 percent) chose the 0.7 waist-to-hip ratio to be their ideal. Significant relationships were distilled between sex, age, self-reported ethnicity, plastic surgeons’ country of residence, and ethnic background. For example, surgeons in Latin America preferred the largest buttocks, followed by surgeons in Asia, North America, and Europe, with non-Caucasians preferring larger buttocks than Caucasians.

Conclusion: There seems to exist a global consensus regarding the ideal waist-to-hip ratio; however, multiple other factors impact the aesthetic perception of the buttocks significantly. (Plast. Reconstr. Surg. 140: 20e, 2017.)

The definition of the ideal body has changed tremendously throughout the centuries, and concepts of beauty undergo ever-changing connotations. In today’s world, where Internet and social media influence people’s vision of beauty, new trends emerge on a constant basis. Especially fashion, with an increased focus on body image, has fueled a greater interest in evaluating and defining ideal morphometric proportions.1,2 Although beauty lies in the eyes of the beholder, it is also influenced by the individual’s geographic, ethnic, and cultural background and characteristics.1 However, it remains largely unknown to what extent the aesthetic sense is influenced by these demographic factors.3–10 Such

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knowledge has significant implications for both patients seeking and surgeons performing cosmetic and reconstructive surgery, because cultural differences and international variability must be acknowledged when new techniques and aesthetic outcomes are being defined and published.

Analyzing female physical attractiveness has gained much attention in the past and, besides certain facial features, the focus generally lies on three determinants of beauty: waist-to-hip ratio, body mass index, and curvaceousness. Fisher and Voracek performed a review on the topic and contemplated that the three determinants influence a woman’s attractiveness; however, they interact, and the relative importance of each factor compared with the others is still unknown. The authors also stated that as of yet no stable indicators of bodily attractiveness have been clearly defined and so far no attributes could be identified that have withstood the test of time and cross-cultural applicability, thus noting that despite the long-standing research, explorations into the shapes of beauty are only in their beginning.

Of all body parts, across many cultures and time, the buttocks have endured as a key body element of female beauty, and gluteoplasty is now one of the fastest growing procedures in the field of plastic surgery. In the United States, the number of buttock augmentations (with implants and fat transfer) has increased by more than 20 percent between 2014 and 2015.

Singh has extensively investigated the role of body proportions and waist-to-hip ratios when defining female attractiveness. The author found that ideal female shape is influenced more by the waist-to-hip ratio than by overall body size. Despite what is already known regarding attractive bodily features, there remains no clear standard with respect to ideal female buttock size and form. In the past, different studies have evaluated waist-to-hip ratios and contemplated a ratio between 0.7 and 0.67 to be ideal. However, caution should be exercised when applying such ratios universally, because although objective and validated measures are useful, aesthetics are not defined simply by metrics alone. Consequently, ideal proportions and measurements that define an attractive buttock, as suggested in the plastic surgery literature, might not apply on a cross-cultural basis.

The main hypothesis of the presented study was that despite the known fact that intercultural variables prevail regarding aesthetic preferences, there might still exist a waist-to-hip ratio which appears most pleasing across most cultures and geographic locations. Aim was further to demonstrate that “ideal” dimensions of female buttocks are indeed very different; that depending on ethnic and geographic background, certain preferences can be elucidated across certain groups of plastic surgeons and the general public; and that, as such, in the international plastic surgery literature, often-cited ideal dimensions and measurements of the body have to be interpreted with caution.

MATERIALS AND METHODS

The study was approved by the ethical committee of the Technical University Munich, School of Medicine (Human Investigation Committee number 311/15). An interactive, online survey displaying computerized images of a Caucasian woman’s buttocks was designed. The 27-year-old volunteer model was photographed from anterior and lateral views. Various ranges of buttock volume were achieved by means of digital alteration using imaging software (Adobe Photoshop CS5; Adobe Systems, Inc., San Jose, Calif.).

By choosing one of several images, each of which reduced or augmented buttock size, participants were able to change the shape of the model’s buttocks. Specifically, these modifications allowed the survey taker to, in 10 percent increments, apply augmentation or reduction to the buttocks on a range of either three scales up or three scales down, and to create a waist-to-hip ratio of 0.68, 0.69, 0.70, 0.71, 0.72, 0.73, and 0.74 (Figs. 1 through 7). [See Figure, Supplemental Digital Content 1, which shows the online questionnaire for plastic surgeons, with neutral (0) buttock size, http://links.lww.com/PRS/C194.]

Demographic information including sex, age, country of residence/practice, ethnic background, yearly income (general public), and type of practice (academic versus private practice plastic surgeons) was collected. All respondents were further asked to judge their own selection as appearing rather natural or artificial.

Participant Recruitment

Between December of 2015 and April of 2016, the survey was sent to over 9000 people, including plastic surgeons and the general public, in over 40 countries by using a professional e-mail marketing service (Mailchimp, Atlanta, Ga.). In addition, plastic surgeons were contacted by e-mail correspondence through contact listings in national and international specialty societies (Table 1). To maximize international participation, the questionnaire was designed in English, German, French, Portuguese, and Spanish.
The societies were chosen based on the size of their listed members (>500 members). Societies without public listings of their members were contacted directly to inquire about members and their respective e-mail addresses. The general public was reached out to by means of social networks [LinkedIn (Mountain View, Calif.); Instagram (Menlo Park, Calif.); Facebook (Facebook, Inc., Menlo Park, Calif.); and Twitter (Twitter, Inc., San Francisco, Calif.)]. Three rounds of reminders were sent out during the 5-month period to nonresponders. Data were collected in North and South America, Europe, Oceania, Asia, and Africa (Table 1).

To enhance statistical power, the single countries were grouped by major geographic region based on regional definitions by the United Nations. Only regions from which more than 20 responses were obtained were included in the analysis: North America, Latin America, Europe, and Asia.
The two groups of the general public and plastic surgeons were chosen to evaluate whether a surgeon’s eye and ideas of perfect relations differ from those of the general public. If a surgeon, who has the abilities to change buttock size and shape, has different goals in mind than a patient, this is of importance and could even lead to dissatisfaction on both sides.

**Statistical Analysis**

When processing the data, less than 1 percent were found to be missing. In the interest of data retention, the authors imputed the respective arithmetic means. One-way analysis of variance was used to distill differences of buttock size preferences across countries, sex and age, ethnicity, yearly income (general public), and practice type.
(plastic surgeons). Normality assumptions of buttock shape preferences were met. Statistical analyses were performed using the SPSS Advanced Statistical software package (IBM SPSS Version 24; IBM Corp., Armonk, N.Y.).

RESULTS
A total of 1032 responses were gathered from plastic surgeons (583 responses; 104 women and 479 men) and the general public (449 responses; 246 women and 203 men) living in 35 countries. A total response rate of 11.5 percent was obtained; however, this rate needs to be adjusted because of high bounce rates of the recipients’ e-mail servers of up to 25 percent. Taking the mean bounce rate into consideration, a response rate of approximately 14 percent was achieved. The response rates for each of the four e-mail campaigns were 7, 3, 2, and 2 percent. The age of survey takers ranged

Fig. 5. The third largest (+1) buttock size (frontal and lateral views).

Fig. 6. The second largest (+2) buttock size (frontal and lateral views).
Distribution of waist-to-hip ratio preferences ranged from 0.68 to 0.74. Overall, 404 of 1032 respondents (39 percent) chose the 0.7 waist-to-hip ratio (Fig. 8), 220 of 1032 respondents (21 percent) chose

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries</th>
<th>Contacted Societies</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>United States, Canada, Argentina, Brazil, Mexico, Chile, Venezuela, Mexico, Peru</td>
<td>American Society of Plastic Surgeons Brazilian Society of Plastic Surgery (Sociedade Brasileira da Cirurgia Plastica), Colombian Society of Aesthetic and Reconstructive Plastic Surgery (Sociedad Colombiana de Cirugia Plastica Estetica y Reconstructiva)</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Europe</td>
<td>Austria, Belgium, Luxembourg, France, Germany, Italy, Norway, Portugal, Spain, Sweden, Lithuania, Switzerland, The Netherlands, Ireland, and the United Kingdom</td>
<td>Austrian Society of Aesthetic and Reconstructive Plastic Surgery (Österreichische Gesellschaft für Plastische, Ästhetische und Rekonstruktive Chirurgie), French Society of Aesthetic and Reconstructive Plastic Surgery (La Société Francaise de Chirurgie Plastique Reconstructrice et Esthetique), German Association of Plastic Surgeons (Vereinigung der Deutschen Ästhetisch-Plastischen Chirurgen), Italian Society of Plastic Reconstructive and Aesthetic Surgery (Società Italiana di Chirurgia Plastica Ricostruttiva ed Estetica), Spanish Society of Plastic Reconstructive and Aesthetic Surgery (Sociedad Española de Cirugia Plastica Reparadora y Estetica), Swiss Society of Plastic Reconstructive and Aesthetic Surgery (Schweizerische Gesellschaft für Plastische, Rekonstruktive und Ästhetische Chirurgie), British Association of Plastic Reconstructive and Aesthetic Surgeons</td>
</tr>
<tr>
<td>Oceania</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Asia</td>
<td>India, Thailand, Myanmar, Laos, Singapore, Indonesia, and Malaysia</td>
<td>Oriental Society of Aesthetic Plastic Surgery, Turkish Society of Plastic-Reconstructive and Aesthetic Surgeons</td>
</tr>
<tr>
<td>Southeastern Asia</td>
<td>Israel, Jordan, Lebanon, Turkey, and United Arab Emirates</td>
<td></td>
</tr>
<tr>
<td>Western Asia</td>
<td>Algeria, Egypt, Republic of South Africa</td>
<td></td>
</tr>
<tr>
<td>North Africa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Africa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Africa</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
than 5 percent of all respondents (Fig. 9). Significant differences were found when analyzing the group regarding their preferences of buttock size.

**Total Survey Population**

**Ethnicity**

Buttock size preferences significantly differed across participants’ ethnicity \( (F_{1,1030} = 8.856, \ p = 0.003, \ \eta^2 = 0.009) \), showing that non-Caucasians prefer larger buttocks compared with Caucasians (Table 3).

Regression analysis was also performed with gender, age, ethnicity, and profession (lay people or surgeons) as predictors and buttock size preference as the outcome variable. Overall, the regression was significant \( (F_{5,1026} = 6.678, \ p < 0.001) \), and the predictors accounted for 17.8 percent of the variance. Gender \((b = -0.043, \ p = 0.005)\), age \((b = -0.014, \ p < 0.001)\), and ethnicity \((b = 0.216, \ p = 0.026)\) emerged as the significant predictors, controlling for profession and region. Considered together, these results show that regardless of profession (surgeon or lay person) and region, gender, age, and ethnicity impacted attractiveness perceptions regarding the respective ideal buttock sizes (Table 4). Buttock size preferences did not differ significantly across peoples’ profession (surgeon or lay people), gender, and country of residence.

**Plastic Surgeons**

**Gender**

Buttock size preferences differed marginally significantly across surgeons’ gender \( (F_{1,581} = 3.299, \ p = 0.07, \ \eta^2 = 0.006) \), showing that male surgeons prefer larger buttocks compared with female surgeons (Table 3).

**Age**

Buttock size preferences significantly differed across surgeons’ age groups \( (F_{3,579} = 2.811, \ p = 0.039, \ \eta^2 = 0.014) \). Interestingly, surgeons in their 40s stood out by preferring the largest buttocks, followed by surgeons in their 20s, 30s, 50s, 60s, and older (Table 3).

**Country of Residence**

Buttock size preferences differed significantly across surgeons’ region of practice \( (F_{3,579} = 15.371, \ p < 0.001, \ \eta^2 = 0.074) \). Surgeons in Latin America preferred the largest buttocks, followed by surgeons in Asia, North America, and Europe (Table 3 and Fig. 10).

**Ethnicity**

Buttock size preferences differed significantly across surgeons’ ethnicity \( (F_{1,581} = 5.510, \ p = 0.02)\),

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**Table 2. Demographic Data of the Respondents \((n = 1032)\)**

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Plastic Surgeons</th>
<th>General Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>479</td>
<td>203</td>
</tr>
<tr>
<td>Female</td>
<td>104</td>
<td>246</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20–29 yr</td>
<td>10</td>
<td>213</td>
</tr>
<tr>
<td>30–39 yr</td>
<td>78</td>
<td>184</td>
</tr>
<tr>
<td>40–49 yr</td>
<td>163</td>
<td>28</td>
</tr>
<tr>
<td>50–59 yr</td>
<td>169</td>
<td>14</td>
</tr>
<tr>
<td>60–69 yr</td>
<td>109</td>
<td>7</td>
</tr>
<tr>
<td>&gt;69 yr</td>
<td>54</td>
<td>3</td>
</tr>
<tr>
<td>Geographic origin</td>
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<td></td>
</tr>
<tr>
<td>North America</td>
<td>231</td>
<td>42</td>
</tr>
<tr>
<td>Latin America</td>
<td>98</td>
<td>1</td>
</tr>
<tr>
<td>Europe</td>
<td>206</td>
<td>392</td>
</tr>
<tr>
<td>Asia</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Caucasian</td>
<td>431</td>
<td>371</td>
</tr>
<tr>
<td>Hispanic</td>
<td>54</td>
<td>9</td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>East Asian</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>South Asian</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td>Other*</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>583</td>
<td>449</td>
</tr>
</tbody>
</table>

* Included respondents who identified themselves as “mixed” or “multiracial.”
Perception of Beauty
Interestingly, surgeons who thought their buttock size preference was artificial tended to prefer

Table 3. Impact of the Characteristics of Surgeons and the General Public on Buttock Size Preferences*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total study population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>4.56</td>
<td>1.211</td>
<td>802</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>4.84</td>
<td>1.327</td>
<td>230</td>
</tr>
<tr>
<td>Total</td>
<td>4.62</td>
<td>1.243</td>
<td>1032</td>
</tr>
<tr>
<td>Plastic surgeons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4.61</td>
<td>1.199</td>
<td>479</td>
</tr>
<tr>
<td>Female</td>
<td>4.38</td>
<td>1.286</td>
<td>104</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20s, 30s</td>
<td>4.50</td>
<td>1.174</td>
<td>88</td>
</tr>
<tr>
<td>40s</td>
<td>4.80</td>
<td>1.222</td>
<td>163</td>
</tr>
<tr>
<td>50s</td>
<td>4.49</td>
<td>1.193</td>
<td>170</td>
</tr>
<tr>
<td>&gt;60s</td>
<td>4.46</td>
<td>1.242</td>
<td>162</td>
</tr>
<tr>
<td>Country of residence</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>4.42</td>
<td>1.224</td>
<td>231</td>
</tr>
<tr>
<td>Europe</td>
<td>4.42</td>
<td>1.169</td>
<td>206</td>
</tr>
<tr>
<td>Latin America</td>
<td>5.31</td>
<td>1.030</td>
<td>98</td>
</tr>
<tr>
<td>Asia</td>
<td>4.44</td>
<td>1.256</td>
<td>48</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>4.50</td>
<td>1.197</td>
<td>431</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>4.77</td>
<td>1.258</td>
<td>152</td>
</tr>
<tr>
<td>Perception of beauty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artificial</td>
<td>5.20</td>
<td>.662</td>
<td></td>
</tr>
<tr>
<td>Natural</td>
<td>4.55</td>
<td>1.222</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.57</td>
<td>1.218</td>
<td>583</td>
</tr>
</tbody>
</table>

Table 4. Impact of Buttock Size Preferences of Surgeons and the General Public, Controlling for Covariates

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized Coefficient</th>
<th>Standard Error</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total survey population†</td>
<td>-0.043</td>
<td>0.113</td>
<td>0.705</td>
</tr>
<tr>
<td>Profession*</td>
<td>-0.043</td>
<td>0.088</td>
<td>0.005</td>
</tr>
<tr>
<td>Gender*</td>
<td>-0.014</td>
<td>0.004</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ethnicity*</td>
<td>0.216</td>
<td>0.097</td>
<td>0.026</td>
</tr>
<tr>
<td>Region*</td>
<td>0.171</td>
<td>0.097</td>
<td>0.078</td>
</tr>
<tr>
<td>Plastic surgeons†</td>
<td>0.146</td>
<td>0.060</td>
<td>0.019</td>
</tr>
<tr>
<td>Region of practice*</td>
<td>-0.266</td>
<td>0.133</td>
<td>0.046</td>
</tr>
<tr>
<td>Gender*</td>
<td>-0.004</td>
<td>0.005</td>
<td>0.396</td>
</tr>
<tr>
<td>Ethnicity*</td>
<td>0.122</td>
<td>0.127</td>
<td>0.336</td>
</tr>
<tr>
<td>Practice*</td>
<td>0.062</td>
<td>0.120</td>
<td>0.608</td>
</tr>
<tr>
<td>General public‡</td>
<td>-0.191</td>
<td>0.120</td>
<td>0.114</td>
</tr>
<tr>
<td>Gender*</td>
<td>-0.030</td>
<td>0.007</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ethnicity*</td>
<td>0.361</td>
<td>0.161</td>
<td>0.025</td>
</tr>
<tr>
<td>Region*</td>
<td>-0.139</td>
<td>0.187</td>
<td>0.457</td>
</tr>
<tr>
<td>Income*</td>
<td>0.027</td>
<td>0.037</td>
<td>0.468</td>
</tr>
</tbody>
</table>

*Reference groups for each variable: 1 = lay; 2 = male; 3 = Caucasian; 4 = Europe.
†Reference groups for each variable: 1 = North America; 2 = male; 3 = Caucasian; 4 = academic.
‡Reference groups for each variable: 1 = male; 2 = Caucasian; 3 = Europe; 4 = $15,000/yr or less.

Non-Caucasian surgeons preferred larger buttocks compared with Caucasians (Table 3 and Fig. 11).

Perception of Beauty
Interestingly, surgeons who thought their buttock size preference was artificial tended to prefer

$p = 0.019, \eta^2 = 0.009$.
larger buttocks ($F_{1,581} = 4.129, p = 0.043, \eta^2 = 0.007$) (Table 3).

**Interaction Effects**

There was a significant interaction effect between gender and region of practice on surgeons’ buttock size preferences ($F_{3,575} = 3.375, p = 0.018, \eta^2 = 0.017$). Male and female surgeons espoused different buttock preferences depending on where they were practicing (Table 5 and Fig. 12). In Latin America, North America, and Asia, male surgeons tend to prefer larger buttocks compared with female surgeons. The opposite finding was seen in Europe, where female surgeons prefer larger buttock sizes compared with male surgeons.

Regression analyses were also performed with gender, age, practice type, ethnicity, and region of practice as predictors and buttock size preference as the outcome variable. Overall, the regression was significant ($F_{5,577} = 3.352, p = 0.005$), and the predictors accounted for 17 percent of the variance. Gender ($b = -0.266, p = 0.046$) and region of practice ($b = 0.146, p = 0.019$) emerged as significant predictors, controlling for age, practice type, and ethnicity. Considered together, these results show surgeons’ region of practice and gender impacted their attractiveness perceptions of...
buttock size (Table 4). Buttock size preferences did not differ significantly across plastic surgeons’ type of practice (academic versus private).

**General Public**

**Age**

Buttock size preferences differed significantly across ages among the general public ($F_{2,446} = 9.684, p < 0.001, \eta^2 = 0.042$). Younger people prefer larger buttocks (Table 3).

**Ethnicity**

Buttock size preferences differed significantly across ethnicity among the general public ($F_{1,447} = 4.592, p = 0.033, \eta^2 = 0.010$). Non-Caucasians prefer larger buttocks compared with Caucasians (Table 3).

Regression analyses were performed with gender, age, ethnicity, region, and income as predictors and buttock size preference as the outcome variable. Overall, the regression was significant ($F_{5,443} = 5.583, p < 0.001$), and the predictors accounted for 24 percent of the variance. Age ($b = -0.030, p < 0.001$) and ethnicity ($b = -0.361, p = 0.025$) emerged as significant predictors, controlling for gender, region, and income. These results show that age and ethnicity of the general public significantly influenced their buttock size preferences (Table 4). Buttock size preferences did not differ significantly across gender, region of origin, or yearly income among the general public.

**DISCUSSION**

Given the potential discordances regarding the definition and recognition of attractive buttocks, the presented study investigates the presence of such differences and how these are related to ethnic background and nationality, as well as, demographic factors including age, sex, social status (general public versus plastic surgeons), and type of surgical practice (academic versus private). Several interesting findings emerged from the analysis of the data.

Recently, Wong et al. evaluated buttock preferences among several ethnicities and concluded that new ideal waist-to-hip ratios of 0.6 and 0.65 update the previous standards and indicate a more curvy ideal, signaling a preference shift. The study, as the authors point out, was limited in that more than 90 percent of the respondents live in the United States and by the fact that there were highly disproportionate numbers of Caucasian respondents. Wong et al. consequently anticipated more culture-specific findings in future studies with a more proportionate number of respondents.

![Fig. 12. Interaction effects between sex and region of practice on surgeon’s buttock size preferences.](image)
respondents from other ethnic groups and geo-
graphic locations.19 We hope that the findings
of apparently simultaneous data acquisition can
address some of the outlined limitations and add valu-
able information to the interesting findings of
our colleagues.

In the presented study and supporting our
initial hypothesis, the majority of survey takers
preferred the 0.7 waist-to-hip ratio as their ideal.
Regarding buttock size, in the total survey popu-
lation, size preferences differed significantly across
participants’ ethnicity, showing that non-Cauca-
sians prefer larger buttocks compared with Cauca-
sians. After regression analysis, the results showed
that regardless of profession (surgeon or lay peo-
ple) and region, sex, age, and ethnicity impacted
their attractiveness perceptions of buttock size.
Specifically, men prefer larger buttocks control-
ling for other covariates (profession, age, eth-
nicity, region), younger people perceived larger
buttocks to be more attractive, and non-Cauca-
sians perceived larger buttocks to be more attrac-
tive compared with Caucasians. Furthermore,
participants in non-European regions perceived
larger buttocks to be more attractive compared
with those in Europe, although this was only mar-
ginally significant.

Several distinct differences regarding the
ratios and buttck sizes were further seen when
taking demographic factors into consideration.
Regarding the respondents’ age and buttock size
preference, it appears that surgeons in their 40s
and lay people in their 20s prefer significantly
larger buttock sizes. This may be because cur-
rent beauty and fashion trends emerge from the
media and tend to manifest themselves among
the younger age groups. Also, there are actually
few plastic surgeons younger than 30 years
(\(n = 10\) in this analysis), so one could postulate
that, generally, younger people tend to prefer
larger buttocks. However, the cohort of plastic
surgeons between 40 and 50 years of age was
also the second largest group, which might have influ-
enced these findings. Overall, the data dem-
strate transgenerational stability in use and
meaning of waist-to-hip ratios, while strengthen-
ing the contention that female physical attractiv-
ess is adaptive.

With respect to self-reported ethnicity, non-
Caucasians preferred significantly larger buttocks
independent of profession. Regarding region of
practice, surgeons in Latin America (followed by
Asia and North America/Europe) preferred the
largest buttck size. This is in accordance with the
current phenomenon of the “Brazilian buttck.”

Another factor that seems to play a major
role in influencing why certain procedures and
body shapes are more popular in one region
compared with another is the weather.20 In coun-
tries with warmer weather (e.g., Latin America),
people tend to wear less clothing year round,
which might lead to more body consciousness
and increased demand for aesthetic procedures.
Therefore, individual preferences and aesthetic
perception depend not only on the individual’s
cultural and ethnic background, but also on geo-
graphic factors.20 As recent studies have shown,
the impact of ethnic characteristics on aesthetic
preferences and the ethnic distribution within
a certain region further factor into surgical
decision-making.20,21

Regarding the sex of respondents, male sur-
guons prefer significantly larger buttocks com-
pared with female surgeons, while there were no
significant differences in the general public. How-
ever, this statement does not hold true for every
country, as the opposite finding was observed in
the group of plastic surgeons in Europe, where
female surgeons preferred the larger buttck sizes.

In the cohort of plastic surgeons, regression
analysis revealed that surgeons’ region of practice
and gender impacted their attractiveness percep-
tions of buttck size the strongest. In the general
public, lay people’s age and ethnicity were the
most important factors regarding their buttck size
preferences.

Overall, the analysis showed that ideal pro-
portions are not universally applicable. Although
most plastic surgeons will acknowledge these facts
given their experience, it is very hard to prove it
numerically.

The study certainly has several limitations.
Arguably, throughout their career, each genera-
tion of plastic surgeons has been exposed to dif-
ferent sociocultural influences, including visual
media, which might have influenced the find-
ings. The same assumption might explain inter-
cultural preferences in the general public. The
media and suggested ideals in fashion and body
habitus are different in every country and there-
fore undoubtedly impact beauty preferences. It is
also important to note that the findings represent
current trends in aesthetics, are therefore only a
snapshot in time, and may as such be subject to
change. Because this study was based on voluntary
participation in an online survey, a certain degree
of selection bias might also prevail. It may further
be critiqued in that the survey displayed images
of only one Caucasian model, which were altered
artificially using digital software, a technique that may be less ideal than comparing different “real” models with different ethnicities and features. Furthermore, other body proportions that play a role when defining attractiveness were not included in this analysis.

Singh has already described that the linkage between waist-to-hip ratio and body fat distribution may largely influence the perception of female attractiveness. In three separate studies, the author found that body fat and its distribution are critical when judging female attractiveness and health, whereas a female figure of normal body weight and low waist-to-hip ratio were perceived as healthy, youthful, and of high reproductive potential. Singh further hypothesized that an attractive waist-to-hip ratio should be culturally invariant in its significance. Regarding cross-cultural validity, several studies exist that evaluated attractiveness on the basis of multiple body portraits that were of different ethnic background, and where the evaluators were asked to choose the most attractive appearance. However, by only using one model for the evaluation, many potential confounding factors such as skin color, age of the models/patients, and remaining habitus do not need to be taken into consideration. Using different models also means that the actual proportions of buttock size and shape would have to be calculated and changed each time. Using modern technology and changing only certain bodily features within an otherwise fixed body frame, and thereby actually changing proportions, golden ratios and ideal proportions are apparently not universally applicable and must be seen in context. Despite the artificial character of the model, the fact that all survey takers used the same images for their assessment increases the validity of the findings. This is in concordance with findings from Perrett et al., where the authors had faces judged by observers and found that, contrary to the averageness hypothesis, highly attractive faces are systematically different in shape from average, a finding that prevailed across different cultures. In a subsequent study, where evaluators were asked to rate attractiveness of Caucasian and African faces, the authors found that there seems to be a cross-cultural agreement in facial attractiveness preferences, again a finding that supports our main hypothesis that certain body proportions and features appear most attractive across a very wide range of ethnicities and cultures.

In summary, although golden ratios and ideal proportions are generally not universally applicable, the 0.7 waist-to-hip ratio can be considered most attractive across a wide range of people. This study may change a surgeon’s modi operandi because it sensitizes the aesthetic perception of plastic surgeons. It emphasizes that many factors need to be taken into consideration when evaluating body shapes, with the patient’s aesthetic desires remaining the ultimate gold standard, even if it may be different from the surgeon’s perceived ideal.

Future research should consider investigating whether surgeons’ opinions change behavior across different countries. For example, by having augmented many women’s buttocks, have plastic surgeons affected the way society thinks buttocks should appear and the way they are portrayed in the media?

**CONCLUSIONS**

Aesthetic perception is influenced by a wide range of factors. This study illustrated that intercultural and ethnic differences, in addition to the ethnic and geographic background of surgeons and the general public, play major roles in this regard. Particularly in the field of plastic and reconstructive surgery, globalization suggests more and more unified surgical goals, and, with respect to buttock aesthetics, apparently a waist-to-hip ratio of 0.7 is rated to be attractive by a wide range of people. However, the authors of this study urge all plastic surgeons to take all compounding factors into consideration when defining surgical goals with their patients, which will ultimately aid in achieving optimal aesthetic outcomes, satisfying both surgeon and patient alike.

**REFERENCES**