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REVIEW ARTICLE

Comparison of aesthetic facial criteria between Caucasian and East Asian female populations: An esthetic surgeon's perspective

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Summary Objective aesthetic criteria are important for patient evaluation and analysis during aesthetic surgeries, while successful aesthetic surgeries must take into account the underlying ethnic differences. The aim of this study is to help surgeons and scientists better plan facial aesthetic surgeries and understand the aesthetic needs according to different patients by reviewing and comparing the current aesthetic principles and preferences in Caucasian and East Asian populations.

PubMed and The Cochrane Library were searched using keywords regarding anthropometric measurements. Only original clinical studies and reviews written in English and Chinese and those that focused on the objective assessment of facial aesthetics in Caucasian and East Asian female populations were retained for review. Reference lists of the selected articles were also reviewed for eligible studies.

Sixty-five articles that described objective aesthetic criteria in Caucasian and East Asian female populations were found through PubMed, among which 47 included Caucasian populations and 18 included East Asian populations. Compared with White women, East Asian women prefer a small, delicate, and less robust face, lower position of double eyelid, more obtuse nasofrontal angle, rounder nose tip, smaller tip projection, and slightly more retruded mandibular profile.

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Various differences exist between objective facial aesthetic criteria in Caucasian and East Asian populations. Further studies that focus on the objective aesthetic criteria of facial attractiveness in different ethnicities need to be conducted, especially in Asian countries. Level V: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

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1. Introduction

Facial attractiveness plays a key role in a variety of judgments in the course of social interaction. Various evidences have shown that attractive individuals exhibit more positive personality traits and also have more opportunities.^{1–4} Mankind's interest in facial aesthetics can be traced back to the time of the Egyptians about 4000 years ago, when humans had already tried to define the aesthetic canons since the Greek period. These classical Greek canons were later formulated and documented by the Renaissance artists and scholars. More recently, the use of these neo-classical canons was propagated by the artist–anatomists of the 17th–19th centuries in the field of medicine.

However, scientific and systematic studies of facial attractiveness have come into its own during the past 30 years.^{5–8} These studies showed that race and gender are important factors that impact aesthetic criteria. It is impossible for a surgeon performing cosmetic surgeries to understand and evaluate the patient's motivation and expectations or to obtain the satisfied surgical results if he does not understand the patient's ethnic aesthetic characteristics.

In East Asia, aesthetic surgeries are very popular nowadays (rhinoplasty and blepharoplasty are the top 2 procedures in the Department of Plastic Surgery). Although, if aesthetic standards have changed over the years due to the influence of Western culture,⁹ Asian women still want to preserve their ethnic identities by refining their Asian features rather than totally Westernizing their appearance.¹⁰ However, relatively few scientific studies have been conducted regarding the current aesthetic canons in East Asian populations, in spite of the potential importance of such canons in aesthetic surgery for Asian people.

The aim of this study was to review and compare the current objective aesthetic criteria in Caucasian and East Asian populations in order to help surgeons and scientists better plan facial aesthetic surgeries and understand the aesthetic needs according to the different patients. The facial landmarks that are often used in anthropometric measurement are shown in [Figure 1](#).

2. Methods

PubMed and The Cochrane Library were searched using the following words: "objective facial attractiveness," "ideal facial proportions," or "facial proportion canons" regarding the facial form and proportions; "eye anthropometric

measurement," "Asian blepharoplasty aesthetic criteria" regarding eyes; "principles in aesthetic rhinoplasty," "rhinoplasty ideal nasion position," "rhinoplasty ideal radix height," "rhinoplasty ideal nasal length," "rhinoplasty ideal dorsal shape," "rhinoplasty ideal tip projection," "rhinoplasty ideal shape of columella," "rhinoplasty ideal nasofrontal angle," or "rhinoplasty ideal nasolabial angle" regarding the nose; and "ideal lip and chin proportion," "ideal relationship between lip and chin," or "ideal lip position" regarding the lips and chin.

Only medical original clinical studies and reviews written in English and Chinese that focused on the objective assessment of facial aesthetics in Caucasian and East Asian female populations were retained for review. Reference lists of the selected articles were also reviewed for eligible studies.

3. Results

Using the search filter, 387 medical articles were found through PubMed and The Cochrane Library. Two hundred and two articles were considered irrelevant and were excluded after we reviewed the title and abstract, leaving 185 for retrieval. After reviewing full articles and references lists, there were 65 articles that described the objective aesthetic criteria in Caucasian or East Asian female populations ([Table 1](#)).

3.1. Facial form and proportions

3.1.1. In Caucasian population

The Renaissance artists and scholars established the neo-classical canons which underlay their understanding of an ideal face that have often been used by modern plastic surgeons as working guides.

These neoclassical canons are as follows ([Figure 1](#)). (1) The head can be divided into equal halves, with special head height (vertex–endocanthion) and special face height (endocanthion–gnathion). (2) The face can be divided into equal thirds, with forehead height (trichion–nasion), nose height (nasion–subnasale), and lower face height (subnasale–gnathion). (3) The head can be divided into equal quarters, with height of calva (vertex–trichion), forehead height (trichion–glabella), special upper face height (glabella–subnasale), and lower face height (subnasale–gnathion). (4) The lower face can be divided into equal thirds, with subnasale–stomion, stomion–supramentale, and supramentale–gnathion. (5) The

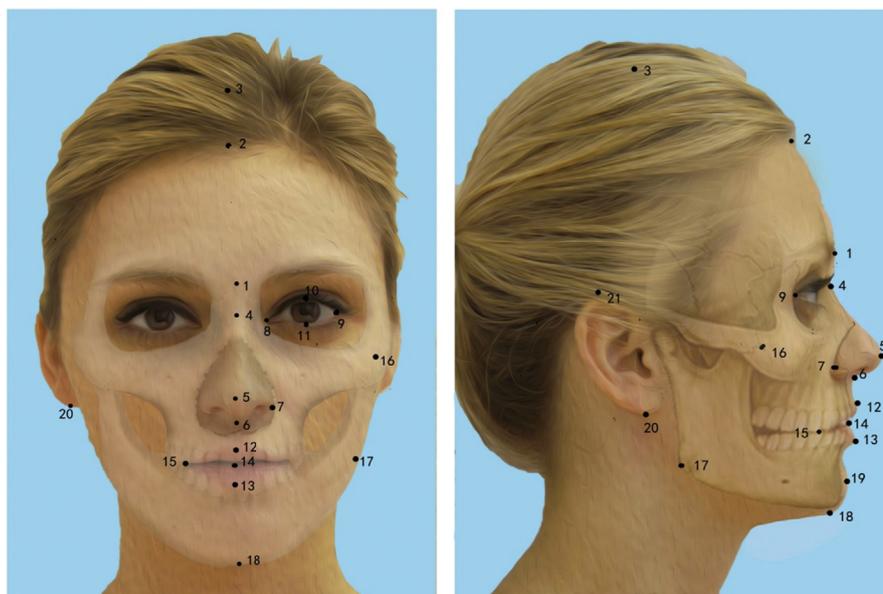


Figure 1 Ideal facial proportions (skeletal image comes from the same person, and this woman has given her permission to use the image; the overlay method is just a symbolic one). 1 = glabella; 2 = trichion; 3 = vertex; 4 = nasion; 5 = pronasale; 6 = subnasale; 7 = alare; 8 = endocanthion; 9 = exocanthion; 10 = palpebrale superius; 11 = palpebrale inferius; 12 = labrale superius; 13 = labrale inferius; 14 = stomion; 15 = cheilion; 16 = zygion; 17 = gonion; 18 = gnathion; 19 = pogonion; 20 = subaurale; 21 = supraurale.

length of the ear (supraaurale–subaurale) equals the length of the nose (nasion–subnasale). (6) The face width can be divided into equal fifths, with interocular distance (endocanthion–endocanthion), left or right eye fissure width (endocanthion–exocanthion). (7) The interocular distance equals the width of the nose (alare–alare). (8) The width of the mouth (cheilion–cheilion) equals one and a half times the width of the nose. (9) The width of the nose equals one quarter the width of the face (zygion–zygion). (10) The nasal bridge inclination parallels the auricle longitudinal axis inclination.^{5–8}

Farkas et al^{7,8,11} have defined almost every single facial measurement and studied objective facial aesthetics criteria through > 130 scientific articles. They performed work testing the validity of the neoclassical canons. These

studies have shown that these canons do not represent the average facial proportions, and their interpretation as a prescription for ideal facial proportions must be tested.

Torsello et al¹² have stated a similar concept that some of the neoclassical canons seem to change over centuries. Their study also showed that, e.g., the attractive Italian women have smaller intercanthal distance, nose width, and relatively larger eyes and mouth width than the “neoclassic canon face.” Sforza et al¹³ also proposed that attractive Caucasian women have larger eyes, smaller noses, larger mouths, more voluminous lips, a relatively large facial upper third (forehead) with a relatively reduced facial lower third (mandible), a round face, and a convex soft tissue facial profile.

Besides, the ratio *phi* which is derived from the ancient Greeks and possesses many fascinating mathematical, geometrical, and artistic properties is believed by some surgeons today to describe the aesthetics of an attractive face. This golden ratio is obtained when a “ABC” line is cut such that in this line, the distance $AB/AC = BC/AB$ ($AB = 1.618$, $BC = 1$, $AC = 2.618$). It was first used in facial plastic surgery in 1964 by Seghers et al¹⁴ (Figure 2). Later, Ricketts^{15–18} and Marquardt¹⁹ popularized this concept and several studies have focused on the facial attractiveness in term of the golden ratio.^{20,21}

3.1.2. In East Asian population

Regarding the East Asian population, Zhao et al²² proposed in 2013 the objective facial aesthetic criteria of Chinese Han women. According to their study, attractive Chinese young women have smaller bizygomatic, bigonial widths and a greater temporal width. Also, higher attractiveness scores were associated with smaller facial heights, smaller

Table 1. Article numbers. The numbers of articles regarding the objective aesthetic criteria in Caucasian and East Asian female populations. These articles described the features of the attractive faces, and were all found though PubMed.^a

	Facial form & proportion	Eyes	Nose	Lips & chin	Total No.
Regarding Caucasian population	17	4	14	12	47
Regarding East Asian population	3	3	6	6	18
Total No.	20	7	20	18	65

^a One article was written in Chinese, all the other articles were written in English.

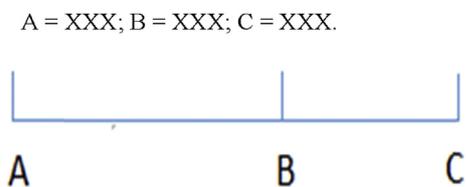


Figure 2 The golden ratio. The distance $AB/AC = BC/AB$ ($AB = 1.618$, $BC = 1$, $AC = 2.618$).

ratios for the upper-face height and lower face height to the total-face height, but a slightly increased ratio for middle-face height to total-face height. Among the facial types, the oval and inverted triangular were the most attractive, whilst the triangular and trapezoidal were the most unpopular.

Rhee and Lee²³ have generated attractive composite faces of different races by mixing the images of popular actresses from different races, and found that both ideal Chinese and Japanese female faces have flatter cheekbones, obtuse mandible angles, and sharp chins, while Chinese women prefer a slim and thin face and Japanese women prefer slightly chubby cheeks. In fact, many Asian women seek the reduction of malarplasty and genioplasty to get a more smooth overall face. Quantitatively, Chinese surgeons Chen T et al²⁴ have proposed that the surface projection of the gonion should be 2 cm below the earlobe and 1 cm in front of the earlobe.

3.2. Eyes

3.2.1. Palpebral fissure dimension

3.2.1.1. In Caucasian population. Price et al²⁵ have reported that the mean value for palpebral fissure height and width were 10.3 mm and 27.2 mm, respectively, in young White women, while the slant of palpebral fissure was 5.8° . Similarly, in Rhee et al's²⁶ study, they reported that the average eye fissure height, width, slant of palpebral fissure, medial canthal angle, and lateral canthal angle were, respectively, 10.72 mm, 28.94 mm, 4.12° , 55.96° , and 64.34° in Caucasian women, while the attractive ones were 10.12 mm, 27.45 mm, 7.13° , 48.99° , and 51.72° .

3.2.1.2. In East Asian population. Rhee et al²⁶ reported that the mean value of the eye fissure height in the Korean population was 8.62 mm, while it was 12.49 mm for an attractive Asian face. In a classic Chinese book, Wang²⁷ demonstrated that the palpebral fissure height for average Asian faces ranged from 8 mm to 10 mm and that for beautiful Asian faces it was 10–12.5 mm. They reported that the mean value for palpebral fissure width ranged from 27 mm to 30 mm in Asian people and that in attractive ones people it was 30–34 mm. They also reported that the mean value of the slant of palpebral fissure was 10° in Asian people.

Another study using three-dimensional photographs from 103 young Chinese individuals found that the canthal index (endocanthion – endocanthion/exocanthion – exocanthion $\times 100$) was 44 in the average Chinese women,

which indicated that the neoclassical “equal fifth” canon may be not suitable for the Chinese population.²⁸

3.2.2. Double eyelid

Upper blepharoplasty is one of the most commonly performed aesthetic procedures in the East Asian population, as half of East Asian people do not have an upper eyelid crease, while current Asian public standards of female attractiveness include the double eyelid. However, while the Caucasian population prefers a high upper eyelid crease which is often seen within the orbitopalpebral groove, the upper eyelid crease is low and about 7–8 mm from the upper eyelash in aesthetic Asian female eyes. Importantly, the high position of the double eyelid or the lack of fat in the upper eyelid region results in a depression of the upper eyelid in Asian eyes, which is an important sign of aging. Besides, compared with the Caucasian centrally peaked upper eyelid crease, aesthetic Asian upper eyelid creases can be presented in various shapes, which demands that surgeons discuss carefully with their patients before operations. Finally, the length of the upper eyelid crease should equal the palpebral fissure width in an aesthetic Asian female eye.^{27,29,30}

3.3. Nose

3.3.1. In Caucasian population

3.3.1.1. Lateral view. Regarding the lateral analysis of the nose, the most important points are the nasion (radix) position, radix height, nasal length, dorsal shape, tip projection, shape of the columella, and the nasofrontal and nasolabial angles (Figure 1). The nasion is the central point of frontonasal suture line. Sajjadian and Guyuron³¹ suggested that the nasion should lie between the supratarsal and the upper eyelashes, while Mowlavi et al³² suggested that the preferred female nasion positions are at the ciliary margin of the upper lid or at the mid pupillary line in Caucasian population.

Alternatively, the nasion can be measured in reference to the corneal plane (which should be ~ 10 mm height in ideal Western women)^{31–33} and to the forehead plane (which should be 6 mm deep in Caucasian women).³¹

Next, attention should be paid to the dorsal shape and length. It is generally accepted that the ideal nasal dorsum is not straight but has a slight supra-tip depression.^{31,33,34} Besides, the nasal length which is defined as the distance between the nasion and tip-defining points should be equal to the distance between the mentum and stomion, while the ideal nasal dorsum should be 2 mm behind this nasion-tip defining point line.³¹

Tip projection, which refers to the distance between the pronasal (the most anterior point of the nose) and nasal facial crease, should be analyzed. Goode's method is a classical method used for evaluating appropriate tip projection, which calls for a ratio of 0.55–0.60 between tip projection and nasal length. More recently, after a slight modification of Goode's method, Crumley and Lanser³⁵ described that nasal length and desired tip projection should form a 3:4:5 right triangle.

The shape of the columella should also be assessed in the profile view. It is formed by the underlying medial crura

of lower lateral cartilage and the caudal margin of the septum. In profile, the columella is ideally 2–3 mm lower than and parallel to the alar rim.³⁶

Regarding the profile view, several facial angles should be assessed. The ideal nasofrontal (glabella–nasion–pronasale) angle is 115–130° in Western women.³⁷ Various ways to measure the nasolabial angle have been published. One of the most common definitions of the nasolabial angle is the angle between a line parallel to the columella and the line drawn from the subnasale to the labial superius.^{38–40} An arbitrary range of 90° to 120° for the nasolabial angle is usually stated in the literature,^{40,41} while this wide range may be partly due to the multiform definition of the nasolabial angle. Thus, it is important to establish a uniform definition of the nasolabial angle. However, some authors have aimed to verify the most ideal nasolabial angle. Sajjadian and Guyuron³¹ have reported that it should be 103–108° for Caucasian women. Park³³ reported that it should vary from 100° to 105°, while Abbou et al⁴¹ have reported 100.9–108.9° for the ideal Caucasian female nose.

3.3.1.2. Frontal view. As we discussed above, the width and height of the nose should be assessed in the frontal view in order to evaluate the overall facial balance. Also, the nose itself should possess an intrinsic shape. Surgeons should consider the relationship between the different aesthetic subunits and create subtle convexities and concavities that give natural highlights and shadows to the aesthetic nose.^{33,34} Besides, the dorsal aesthetic line is an imaginary line traced from the medial brow down the lateral wall of the nose to the tip defining points. In the aesthetic female nose, the line should be slightly wider at the radix and tip, narrow at the middle third (80% the width of the base), while this “hourglass” shape should be subtle, unbroken, and fluid³³ (Figure 1).

3.3.1.3. Basal view. Although much has been published with regard to the nasal aesthetic assessed on the frontal and lateral views, a paucity of literature exists regarding the basal view. In a pleasing basilar view, the alar rims should fall within an equilateral triangle,⁴² while the nostrils are oriented 30–45° toward the midline and tear-shaped and with a lobule-to-nostril ratio of 1:2.³¹

Another important aesthetic factor in this view is the tip-defining point, which is the highest point of the domal segment of lower lateral cartilage.³⁴ Burres⁴³ has established a grading system for tip-defining points based on measurable differences in the intercrural distance and tip form.⁴⁴ He supported the contention that the Caucasian nose should have horizontally aligned tips, the more distinct the better, with a desirable distance apart, typically between 6 mm and 10 mm.

3.3.2. In East Asian population

Several evident differences exist between aesthetic Asian and Caucasian noses. Firstly, the aesthetic Asian female nose has a slightly lower nation height and tip projection than the aesthetic Caucasian female nose.⁴⁵ Also, the nasion (radix) should fall roughly at the midpupil line in most cases for Asian women rather than the supratarsal crease, which is an appropriate position for White

women.⁴⁶ The ideal Asian female nose has a more obtuse nasofrontal angle (about 140°), which is harmonious with the less stereoscopic Asian face.^{47,48} However, the aesthetic Asian female nose has a more acute nasolabial angle, which might be due to the greater forward angulation of the Oriental upper lip. Choi et al's⁴⁹ study shows that the mean measurement for the nasolabial angle was 80.4°, for ideal cases it was 87.1°, and for cases with overrotation it was 88.6°. Finally, the ideal Asian female nose tip is rounder than their Caucasian counterparts. A more conservative nasal tip augmentation can achieve the desired Asian features while maintaining a more ethnically appropriate look that could look otherwise too artificial and unharmonious if the distinct tip points are created, which are desirable in Caucasian women.⁴² These particular aesthetic nasal features are in harmony with other facial characteristics of the Asian face.

3.4. Lips and chin

The lower third of the face from the base of the nose to the soft tissue chin highly determines female beauty. This part can be divided into three horizontal segments, which are the upper lip, lower lip, and chin. Ideal proportions and relationships between these three segments significantly impact facial beauty⁵⁰ (Figure 1).

3.4.1. In Caucasian population

In the Caucasian population, there has been no big change in the golden lower facial third ratio for many centuries. These so-called lower face's Vitruvian thirds today have an ideal proportion of 30% upper lip and 70% lower lip–chin,^{51,52} which is similar to the neoclassic canon (see above). However, its validation in the East Asia population needs to be tested more.

Regarding the lips, many studies have suggested that Caucasian women tend to prefer larger and fuller lips which are seen on sensual-appearing young Hollywood actresses^{53–55} and that lip augmentation procedures have become common in aesthetic plastic surgery in the Caucasian population.^{56–58} Also, in contrast with Asian women, some studies of White women showed that Class II profiles are less attractive than Class III profiles.^{59–61}

3.4.2. In East Asian population

Many studies regarding the East Asian female lower face have shown that a slightly more retruded mandibular profile is more attractive than the average, and that Class II profiles are much more accepted than Class III profiles. Regarding the lips, the Asian population also prefers slightly more retruded lips than average.^{62–66} These modern scientific studies regarding the aesthetic lower face are in accordance with traditional Chinese culture. There is a saying “small cherry mouth” in China, which is used to praise the beautiful women with smaller and thinner lips. Nomura et al⁶⁷ conducted a study that aimed to determine whether the judges race has an influence on the aesthetic preference for lip position. According to their study, they revealed that the Asian population prefers more retruded lips than the Caucasian population.

4. Discussion

4.1. Facial form and proportions

These scientific articles are consistent with our common sense that Asian women prefer a small, delicate, and less robust appearance face, while the angulated mandible and protruding cheeks that deviate from Asian public standards seem to be more accepted in Caucasian women.

However, attractive Caucasian and East Asian female faces shared some common features—the neonate features, among others. From an evolutionary psychological perspective, the neoteny that denotes babyish features in mature adults is one of the most important cues that influence facial attractiveness.⁵ The common characteristics of a baby-like face are larger eyes, smaller nose, a relatively large facial upper third (forehead) with a relatively reduced facial lower third (mandible), and a convex soft tissue facial profile.¹³ Besides, sexual dimorphism is another important cue that influences facial attractiveness, as experimental findings have supported the fact that extremes of secondary sexual characteristics are more attractive, particularly for female faces.⁵ These attractive feminized facial features are as follows: wide eyes, raised thin eyebrows, small chin, full lip, and thick hair.^{68–70}

4.2. Eyes and nose

Just as William Shakespeare famously wrote that eyes are the windows to the soul, beautiful eyes play a very important role in the perception of overall facial attractiveness. They are also thought to play a large role in ethnic identification.

As we reviewed above, there is a wide range in anthropometric measurements regarding eyes, showing the different results from numerous previous anthropometric studies. However, these studies have shown the same tendency that the average East Asian female eyes have much smaller palpebral fissures and a wider intercanthal distance than the aesthetic ones, which makes large eyes an outstanding feature in East Asian populations. However, although Caucasian women also prefer large eyes, there seems to be no big difference between the average eyes and the aesthetic eyes.^{71–77}

Regarding the upper eyelid and nose, it appears that although many East Asian women seek a double eyelid and higher and narrower noses, double than the Western ones, they still prefer refining their Asian features rather than totally Westernizing their appearance.^{10,78} Many differences exist between the Asian and Caucasian eyelids and the superorbital bones surrounding the eyelid. Asians have more fat tissue in the supratarsal region. Importantly, the orbital septum may merge with the levator palpebrae superior aponeurosis as low as 2 mm below the superior tarsus border in Asians, whereas the septum joins the levator aponeurosis 5–10 mm above the superior tarsus border in Caucasians, which allows the preaponeurosis fat in Asians to extend more inferiorly than the Caucasians. Asians have a shorter superior tarsus height, with an average of 6.5–8 mm compared with the Western tarsus of 8–10 mm in height.^{29,79,80} Caucasians have protruding supraorbital

bones, while Asians have low supraorbital bones.³⁰ The different standards and public preferences for aesthetic double eyelids in Asian and Caucasian populations is at least partly due to these anatomical differences. Similarly, an attractive Asian nose should be in harmony with the less stereoscopic Asian face.

4.3. Lips and chin

Many methods have been proposed to evaluate the relationship between the lip, chin, and nose^{81–87}: (1) Sushner's S2 line (a line joins Pog' and N'), S2 line to upper lip, and S2 line to lower lip⁸¹; (2) Legan and Burstone⁸⁴ analysis: soft-tissue convexity (Gn'–Sn–Pg'), upper lip to Sn–Pog' and lower lip to Sn–Pog'; and (3) the soft-tissue relationship of Epker et al:⁸⁷ subnasal perpendicular to Pog', lower lip, and upper lip.

Each of these methods has its own characteristics.^{50,88} Hsu⁸¹ has suggested that the analytic lines which do not transverse the nasal landmarks are more likely to have poor sensitivity and consistency, and that Legan and Burstone's⁸⁴ Sn–Pog' line has the highest sensitivity to differentiate attractive and unattractive Chinese people. This is in accordance with the fact that there is a marked aesthetic interrelation between the nose and the chin.⁸⁹ Nevertheless, the validation, consistency, and sensitivity of these methods in evaluating lower facial attractiveness in different ethnic groups still needs more assessment.⁹⁰

Our present study has some limitations. The major problem is the imbalanced situation regarding the amount of research between Western and Eastern beauty. Compared with the large quantity of literature regarding the "Western beauty," the same topics in Eastern literature seem to be few and not so objective. Although a tremendous amount of Asian patients seek aesthetic surgeries nowadays, most scientific studies are conducted regarding the surgical techniques, while the topic of objective aesthetic criteria is relatively neglected, in spite of the importance of such studies. There is no doubt that the objective aesthetic criteria differs with race, as they have different anatomical characteristics and cultural backgrounds. Further objective and scientific studies regarding Asian beauty would be very helpful.

5. Conclusion

In this article, we have compared the current objective aesthetic criteria between Caucasian and East Asian women with regards to four facial features (overall facial form and proportions, eyes, nose, lip, and chin). For us, some points needed to be emphasized.

Firstly, the patient's expectation is the most important goal rather than the objective criteria in aesthetic surgery. However, it is impossible for a surgeon performing cosmetic surgeries to understand and evaluate the patient's motivation and expectations or to get the satisfied surgical results if they do not know the current social preference.

The average faces are different from the attractive faces, while attractive faces differ according to race. In other words, the average facial norm and aesthetic criteria

are different. We should use the attractive faces of a race to study that race's aesthetic criteria.

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