

Determination of the most accepted facial angles and anterior-posterior chin position in patients seeking cosmetic surgery in Shiraz, Iran

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Original Article

Abstract

BACKGROUND AND AIM: Beauty standards are related to race and change over time with cultural changes. The criteria obtained for a specific race cannot be used as treatment planning criteria for other races and societies. It seems that no thorough study has been carried out in Iranian context to determine the acceptability of these standards. In this study, the desired nasolabial (NL), nasofrontal (NF), chin-neck (Ch-N) angles and anterior-posterior chin position from the point of view of people seeking esthetic surgery were determined.

METHODS: In a cross-sectional, descriptive study, 500 people seeking esthetic surgery referring to School of Dentistry and Chamran Hospital in Shiraz, Iran, were asked to see images and record their desired angles in a questionnaire. The samples were chosen from people with ages ranging from 18 to 48 years old referred to the Hospital in 2012 and 2013. The silhouette profile image of a young girl with normal face ratios was used. Data were analyzed via SPSS software using chi-square and t-tests. Chi-square test was used to compare nominal data and student's t-test to compare quantitative data. $P < 0.050$ was considered as significant.

RESULTS: The mean age of subjects in our study was 27 years. From the 500 subjects, 35.4% were males and 64.6% were females. Average desired Ch-N, NL and NF were 118.28, 137.8 and 107.8 respectively. Desired mean for the anterior-posterior chin position was 6.23 mm.

CONCLUSION: According to this study, no significant differences were found between the desired face sizes in Iranian community and other communities.

KEYWORDS: Cosmetic Surgery, Beauty Cultures, Beauty

Citation: Mehravaran R, Samadi S. Determination of the most accepted facial angles and anterior-posterior chin position in patients seeking cosmetic surgery in Shiraz, Iran. *J Oral Health Oral Epidemiol* 2014; 3(2): 47-52.

Beauty is an ill-defined concept that is obvious to the observer, however, it is difficult to quantify,¹ Beauty is that "which gives the highest degree of pleasure to the senses or to the mind and suggests that the object of delight approximates one's conception of an ideal." Research also demonstrates that the attractiveness contributes to the on-the-job success of men and women and the face of people in the community plays an important role in their acceptability,² small changes in detail, even those produced by such

innocuous modalities as cosmetic, can affect changes that are perceived dramatic.³ For instance, the public frequently assumes that the bearer of a severe Class II or severe Class III pattern is a slow, dull individual.⁴

It is true that standards of beauty change over time and across cultures.² From ancient Egypt through the renaissance, western civilization has recorded in sculpture many refined concepts of facial esthetics, common to all these concepts was public recognition of the "the esthetic ideal" of each period.⁴ In the last century, with innovation of safe and

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efficient esthetic surgery methods, the people's interest in these types of surgeries has significantly increased. In the United States, esthetic surgery increased to 529000 cases between 1981 and 1995.⁵ Statistics shows that Iran is a country with the highest frequency of plastic surgery operations.⁶ It seems that some factors like cultural background,⁷ media advertisement⁸ increased people motivation to undergo cosmetic surgery. Concepts of facial beauty also seem to cross-cultural and racial line and also change over time and cultures.³

There are other studies on the desired face proportions and angles of other races. Iglesias-Linares et al. investigated faces of 80 attractive faces selected by American journals in the last 10 years. They determined the accepted nasofrontal (NF) and nasolabial (NL) angles.⁹ Yehezkel and Turley measured desired NF and NL angles in the mid- and late-20th century by exploring the attractive figures in fashion magazines in California.¹⁰

The criteria obtained for a specific race cannot be used as treatment planning criteria for other races and societies.¹¹ Given the high growth rate of esthetic surgeries in Iran, there is a need for patterns and criteria suitable for the culture and race of this area. The angles and sizes that influence the face and can be changed by esthetic surgery are: NL, NF, Ch-N angle and the anterior-posterior chin position.

It seems that there have been no comprehensive studies on determining the acceptability of these sizes and angles in Iranian society. Therefore, esthetic surgeons usually use the findings of foreign research that have little proportion to traditional and cultural interest in the country to plan treatments. In this study, the desired angles and proportions from the point of view of people seeking esthetic surgery were determined.

Methods

In this cross-sectional, descriptive study, 500 people seeking esthetic surgery referred to School of Dentistry and Chamran Hospital in

Shiraz, Iran, were asked to see images and record their desired Ch-N, NF, NL angles, and the anterior-posterior chin position in a questionnaire. The samples were chosen from people with ages ranging from 18 to 48 years old referred to the Hospital in 2012 and 2013.

The colored digital image of the profile was obtained using a Samsung smart camera (WB-500). The profile image was obtained in a standard sized procedure by positioning the subject 5 feet from the camera with the head in the natural head posture and lip at rest.

To prepare the image used for the purpose of this study, the silhouette profile image of a young girl with normal face ratios was used. Angles and sizes measured in this study were as the following:

NL angle: The angle between two lines tangent on columella and the upper lip mucocutaneous junction from subnasal point.¹²

NF angle: The angle between the two tangent lines on the forehead and the dorsum of the nose from radix point.¹³ N-Ch angle: The angle between two lines tangent on submental and neck areas.¹⁴

Anterior-posterior chin position: This is measured based on the distance of the most prominent anterior point of the chin (POG) soft tissue from the line that is perpendicular to the horizon from the subnasale point.¹² In these images, each of the NF, N-Ch, NL angles, and the anterior-posterior chin position were changed separately with equal amounts relative to the standard amount by Adobe Photoshop_cs6 (Figures 1-4). In each image, an angle was changed, and the rest of the angles and proportions were kept constant.

Images were classified in separate categories and hence that in each group an angle or size was changed. Each image was marked with a code, and the subjects were asked to select the desired image in each category and record it in his questionnaire. As the images belonged to a female, the result can be considered only in relation to female patients.

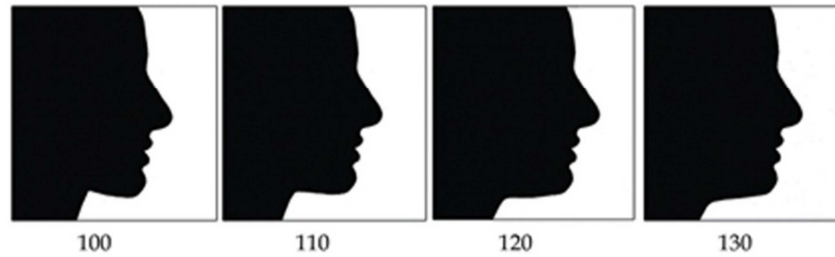


Figure 1. Photographs of neck-chin angle

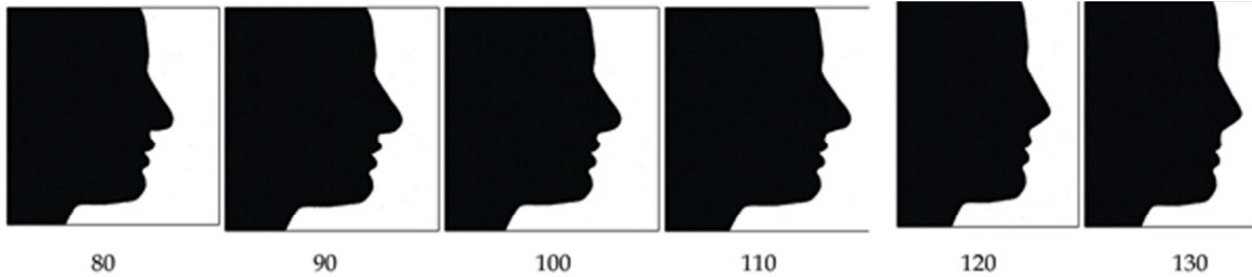


Figure 2. Photographs of nasolabial angle

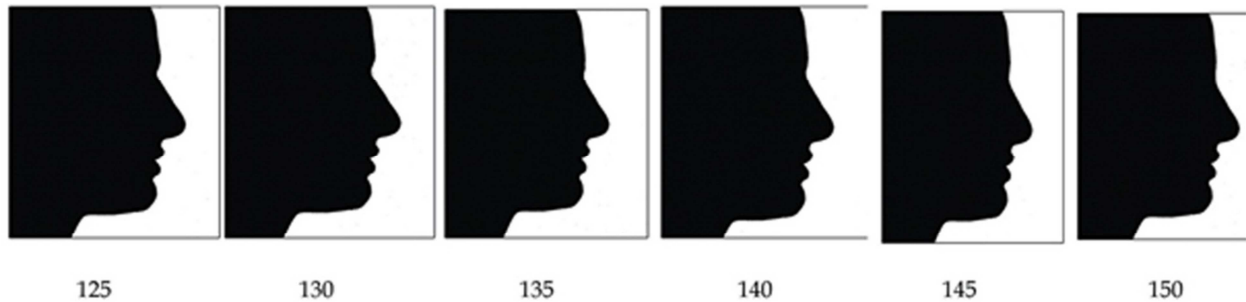


Figure 3. Photographs of nasofrontal angle

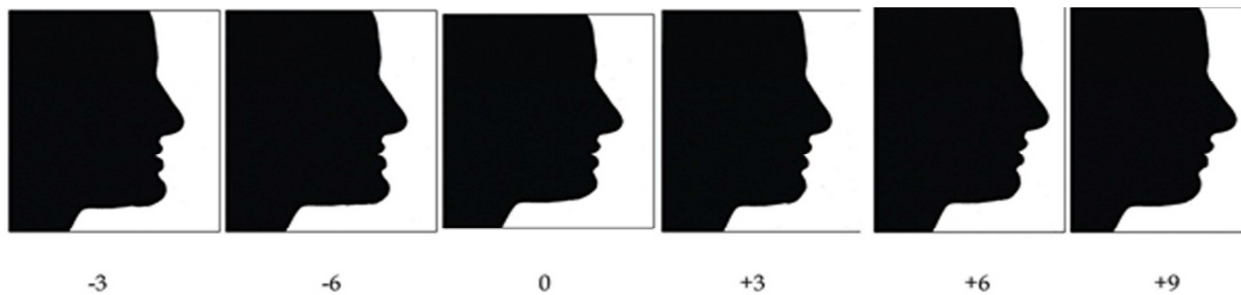


Figure 4. Photographs of anterior-posterior chin position

The results of the questionnaire were classified and the number of votes obtained for each image was determined. Data were analyzed by SPSS software (version 18, SPSS Inc., Chicago, IL, USA) using chi-square and t-test. Chi-Square test was used to compare nominal data and student's t-test to compare quantitative data. $P < 0.050$ was considered

as significant.

Results

The mean age of the subjects in our study was 27 years. Of the 500 subjects, 35.4% were males and 64.6% were females. Regarding N-Ch angle, the most desired angle was 120 ($P < 0.001$) following by 130°. It appears that

older people were more likely to choose more acute angles than younger people ($P = 0.028$) (Table 1).

In general, the average desired angle for this measure was 118.28° . The most desired NF angle from the subjects' point of view was 135° followed by 145° ($P = 0.056$). There was no relationship between age and sex of voters with their selected angles. The mean value for this angle was 137.8° (Table 2).

The studied patients chose 120° as their most desired NL angle followed by 110° ($P < 0.001$). Most female voters chose 120° and most male voters chose 110° . The overall mean value for this angle was 107.8° . Regarding anterior-posterior chin position determined by measuring the distance from POG to subnasal perpendicular line, the most desired value was 9 mm followed by 6 mm ($P < 0.001$). The average desired anterior-posterior chin position was 6.23 mm (Table 2).

Overall, no significant differences between the subjects' sex and NL, NF and N-Ch angles and anterior-posterior chin position were found. Furthermore, there were no significant differences between age and NL, NF angles and anterior posterior chin position.

Discussion

In our study, we have tried to investigate a

number of face angles and sizes in sagittal plan and to determine the ideal amounts from Iranians' point of view. It seems that every society's ideals of beauty change over time. In contrast, the concept of attractiveness is different from one ethnicity to the other,¹⁵ Therefore, the need for updating esthetic surgery guidelines in each society seems essential.¹⁶

In our study, the ideal sizes and angles were determined through a questionnaire accompanied by a series of face photographs. The procedure had been used in many other studies as well,^{17,18} However, to omit the influence of makeup, hairstyle and skin color on the voters' judgment,¹⁹ we prepared dark silhouette pictures. A number of other studies had used photographs of movie, TV and fashion stars to determine desired sizes,^{9,10} although the problem with this method is the impact of the celebrity's popularity on the judgment of voters.²⁰

In our study, the image of a woman was used to determine ideal sizes. The reason was women's highest request for esthetic surgery in our community compared to men's.⁶ It seemed that this was also true in other communities.²¹ In this study, the average N-Ch angle was 118° which was almost concurred with the standard value.²²

Table 1. Frequency and percentage of neck-chin angle

Neck-chin angle	100		110		120		130	
Age (year)	34-48	18-33	34-48	18-33	34-48	18-33	34-48	18-33
Frequency	11	35	29	107	42	134	26	126
Percentage	42	7	6	21	8	27	4	25
Total	9		27		35		29	

Table 2. Frequency and percentage of NF and NL angles and anterior-posterior chin position

Degree	NF angle		NL angle			Anterior-posterior chin position		
	Frequency	Percentage	Degree	Frequency	Percentage	Position	Frequency	Percentage
125	74	14.8	80	40	8.0	-6	5	1.0
130	72	14.4	90	76	15.2	-3	7	1.4
135	101	20.2	100	99	19.8	0	12	2.4
140	76	15.2	110	100	20.0	+3	99	19.8
145	100	20.0	120	109	21.8	+6	174	34.8
150	77	15.4	130	76	15.2	+9	203	40.6

NF: Nasofrontal; NL: Nasolabial

Regarding the NF angle, our study determined the desired average angle of approximately 138°. This was consistent with the results of Berneburg et al.,²³ However, the most popular NF angle for Iranians was 130°.²⁴

In our study, the ideal NL angle was approximately 108°, which was expected because the normal size of this angle is 90-110 in women.¹² However, this result was a little more than the most common angle among the Iranian race which is 98°.²⁴ In the contrary to our study, people had been interested in more acute NL in similar studies conducted before.^{10,25,26} A logical justification could be the tendency of people towards more protrude lips. In these studies, the more protrusion of the upper lip, the smaller the NL angle. However, in our study, despite a slight change in the shape of lips this did not occur.

The anterior-posterior chin position in our study was set back a little more than normal, which is consistent with Sforza et al.,²⁷ and Yehezkel and Turley study.¹⁰ However, study of Abu Arqoub and Al-Khateeb found results not consistent with ours.¹⁷ In the study of Turkkahraman and Gokalp,¹⁸ men voted to convex profile more than women. Women voted to women with a concave profile.

However, in our study there was no difference in the male and female votes.

Conclusion

Generally, according to the findings of this study, there were no significant differences between the desired face sizes in Iranian community and other communities. In some other studies, there had been no difference between the ideal face sizes in several races.^{6,10} This might be due to the same effect of ubiquitous media on different ethnic groups and strict patterns of beauty through the world.

Conflict of Interests

Authors have no conflict of interest.

Acknowledgments

This paper has been extracted from Sara Samadi's DDS thesis, which was conducted under supervision of Dr. Mehrvaran. This study was approved, registered with ID 8592039, and supported by the International Branch of Shiraz University of Medical sciences. The authors would like to thank Sarah Roosta at center for Development of Clinical Studies of Nemazee Hospital for statistical assistance.

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