

ORIGINAL ARTICLE

Morphometric Analysis of Nose of Adult Female

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ABSTRACT

Objectives: To determine the mean values of different morphometric measurements from nose of females in study population and to explore the variations in its size and shape.

Study: Cross sectional Study

Place of Study: This study was conducted in the department of ENT Unit – I, Mayo Hospital, Lahore associated with King Edward Medical University, Lahore.

Material and Methods: A total of 100 female patients visiting ENT Department, Mayo Hospital, Lahore were randomly selected and recruited for the study. Surface measurements were taken directly from the nose of all subjects included in the study, by inch tape. Each variable was measured twice in centimeters and degrees by the same investigator. Demographic profile and relevant data was recorded in a standard performa. Mean of different morphometric values of nose of female were taken.

Results: Mean age of patient was 31.97 ± 12.32 year. Minimum and maximum age was 16 and 60 years. Mean length of dorsum of nose 4.74 ± 0.31 cm. Mean nasal width was 3.79 ± 0.28 cm. Mean distance between alar crease and tip of nose was 2.43 ± 0.23 cm. Mean distance between alar crease and vertical line over upper lip and nasal tip and level of upper lip was 1.00 ± 0.13 and 1.42 ± 0.22 cm. Mean nasal root width was 1.41 ± 0.16 cm. Naso frontal and naso labial angle was $148.75^{\circ} \pm 6.25$ and $109.53^{\circ} \pm 9.35$. Mean SM distance was 4.05 ± 0.30 cm.

Key Words: Morphometric, Anthropometry, Nose measurements.

INTRODUCTION

Anthropometry is the science which deals with measurements of the size, weight and proportions of human body. Face is the most cared part of human body and defining feature of a person. Every part of face plays a vital role in producing a natural and harmonious look and an aesthetically fine facial appearance but nose has central and most prominent position on face and so accounts the most.

Measurements of the human face as part of the body have been performed since the Greek Era⁽¹⁾. Beauty is the finest expression of human emotions⁽²⁾. Disfigurements of nose causes psychosocial problems, so normal measurements of nose should be available to improve its figure. The improvement of facial aesthetics has rapidly become one of the desired objectives of orthodontic treatment⁽²⁾. Aesthetic features are different from one race to another, and this should be considered for treatment planning⁽³⁾.

For reconstructive and cosmetic surgery, realistic sizes and proportion are assessed using anthropometric techniques and used as guidelines to correct deformities and disproportion⁽¹⁾. The

nose must not only be looked at in isolation, but also with respect to the rest of the face, in order to create or preserve overall facial balance and harmony⁽⁴⁾. The size and shape of nose is important aesthetically in both sexes as males on average have larger noses than females⁽⁵⁾. The measurements data of nose provides aesthetic and forensic benefit. The purpose of the present study was to obtain average morphometric values and variations in different parameters of nose of females in our province.

MATERIAL & METHODS

After obtaining informed consent a total of 100 female volunteers from different areas of Lahore and other cities of Punjab visiting ENT Department of Mayo Hospital, Lahore were randomly selected and recruited for this study. Surface measurements were taken directly from noses of the subjects included in this study by inch tape. Each variable was measured twice in centimeters or degrees by the same investigator. Measurements included were length of dorsum of nose, width of nose, nasal root width, naso-fronted angle, naso-labial angle, Stomion to Mentum (S M)

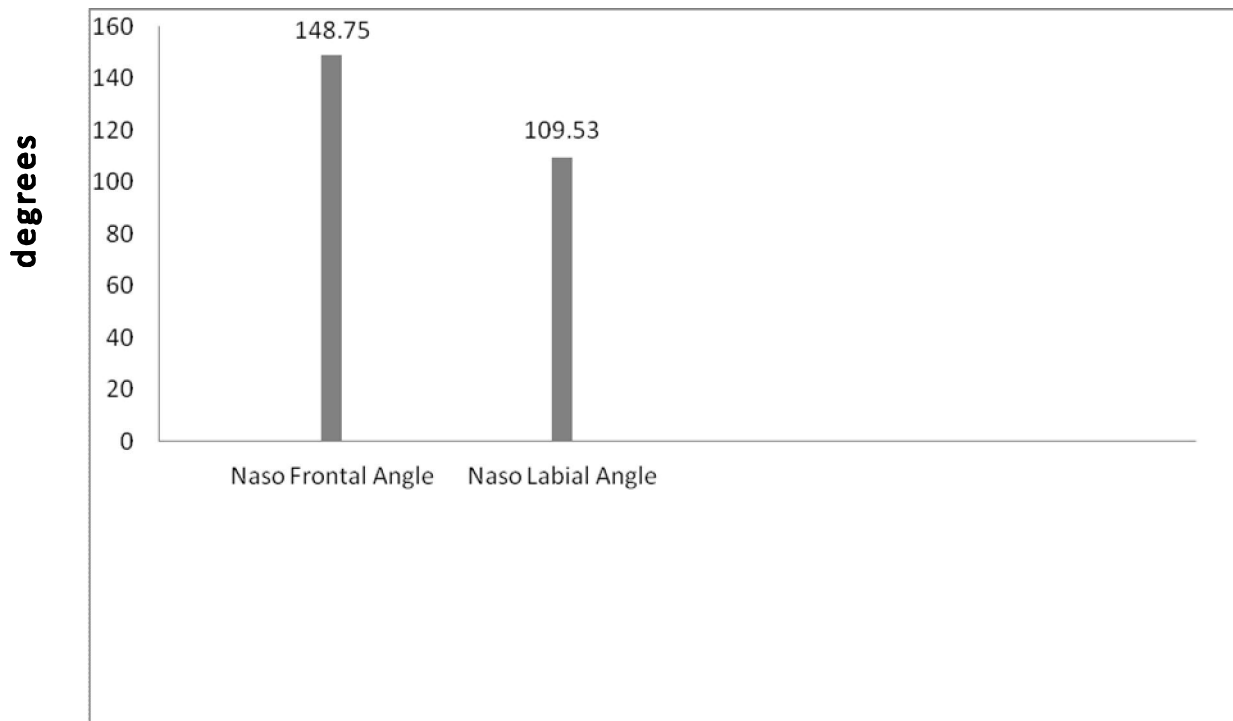
distance, distance from alar cheeks junction to tip of nose, distance from alar cheek junction to vertical line over most projecting point of upper lip and distance from line over most projecting point of upper lip and tip of nose.

Demographic profile and relevant data was recorded in a standard Performa. Mean and standard deviations were computed for qualitative variables like age. Mean of various morphometric measurements of nose were taken.

RESULTS

Mean age of patient was 31.97 ± 12.32 year. Minimum and maximum age was 16 and 60 years. Mean length of dorsum of nose 4.74 ± 0.31 cm. Mean nasal width was 3.79 ± 0.28 cm. Mean distance between alar crease and tip of nose was 2.43 ± 0.23 cm. Mean distance between alar crease and vertical line over upper lip and nasal tip and level of upper lip was 1.00 ± 0.13 and 1.42 ± 0.22 cm. Mean nasal root width was 1.41 ± 0.16 cm. Naso frontal and naso labial angle was $148.75^{\circ} \pm 6.25$ and $109.53^{\circ} \pm 9.35$. Mean SM distance was 4.05 ± 0.30 cm.

	MEAN	SD	MIN	MAX
Age	31.97	12.32	16.00	60.00
Length of Dorsum of Nose	4.74	0.31	4.00	5.50
Nasal Width	3.79	0.28	3.00	4.40
Distance between Alar Crease and tip of nose	2.43	0.23	1.90	3.00
Distance b/w Alar Crease and vertical line over upper lip (41.65%)	1.00	0.13	0.70	1.40
Distance b/w Nasal Tip and Level of upper lip (58.34%)	1.42	0.22	1.00	1.90
Nasal Root Width	1.41	0.16	1.00	1.80
Naso Frontal Angle	148.75	5.25	130	160
Naso Labial Angle	109.53	9.35	90	130
SM Distance	4.05	0.30	3.40	5.00



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DISCUSSION

The ideal nasal length is assessed as a ratio of nasal length to tip projection, with tip projection equaling 0.67 times the nasal length⁽⁶⁾. Tip projection can be assessed by drawing a horizontal line from the alar-cheek junction to the tip of the nose. The distance between these points should be equal to two things: (a) The alar base width and (b) 0.67 x R-T (Radix to Tip)⁽⁴⁾. For assessment of tip projection, a line is drawn from alar-cheek junction to the tip of the nose⁽⁸⁾. If 50 - 60% of the tip lies anterior to the vertical line adjacent to the most projecting part of upper lip, then tip projection is normal⁽⁴⁾. In our study, the mean distance between alar-cheek junction and tip of nose is 2.43 cm and mean distance between nasal tip and level of most projecting part of upper lip is 1.42cm which is 58.34% of the total distance between alar-cheek junction and tip of nose.

In our study, the mean length of the dorsum of the nose, was 4.74cm ± 0.31cm ranging from 4.0 to 5.50cm. In contrast, literature shows this length in reference to other measurements of face as Byrd and Hobar calculated nasal length as being equal to the distance between Stomion and Menton (SM)⁽⁶⁾. SM(Stomion to Menton) distance is 2/3rd of the lower 1/3rd of face⁽⁴⁾. In our study the mean SM distance is 4.05 ± 0.30cm ranging from 3.40 to 5.00cm, in contrast to the study done by Jovana Milutinovic et al, the mean Menton-Stomion distance in anonymous females was 3.24cm and in attractive females was 2.8 cm⁽⁷⁾. The nasal length (Radix to Tip or R-T) should ideally be equivalent to the Stomion to Menton (S-M) distance. For each and every parameter, the ratio between them is used, so that the actual length of the measured parameters is of no importance⁽⁷⁾.

Nasal width represented by the inter-alar distance alare-alar (AL-AL) is measured between the most lateral points on the alar curvature⁽⁹⁾. In our study the mean nasal width of female nose is 3.79 ± 0.28 cm in the range of 3 to 4.4cm which is very close to the observation made by Naveen Reddy et al as 3.48 ± 2.19 cm⁽¹⁰⁾ and by Hoffman W Jr et al to be 3.42cm⁽¹¹⁾.

The Radix or root of nose is the most narrow and back sited point of the nose which differentiates the nose from the forehead⁽¹²⁾. In our study, nasal root width is 1.41 ± 0.16cm in the range of 1.00 to 1.80cm in contrast to the study done by Naveen Reddy et al which showed it to be 2.8cm⁽¹⁰⁾.

Naso-frontal angle is located between a line drawn from the radix tangent to the glabella and a second line from the same point tangent to nasal tip⁽¹³⁾.

In our study the naso-frontal angle made by nose of adult females is 148.75±6.25 degree in the range of 130 to 160 degree, in contrast to the study done by Mathes SJ et al which showed it to be 134±7 degrees in women⁽¹³⁾.

The Naso-labial angle is angle formed between a line coursing through the most anterior and posterior edges of the nostril and plump line dropped perpendicular to the natural horizontal facial plane⁽⁴⁾. This angle is usually between 95 and 100 degrees in woman and 90-95 degrees in men⁽⁴⁾. In our study, the mean naso-labial angle is 109.53±9.35 degrees in the range of 90 to 130 degrees, which is very close to the observation done by Kohila Kandhasamy et al, in which the naso-labial angle was found to be 115.7±4 degrees in women.

CONCLUSION

With analysis of normative data, this study explored size and shape differences of noses of adult females in the province of Punjab of Pakistan. Data collected in present investigation can serve as a data base for the quantitative description of nose morphology in adult females. This data also has forensic importance.

REFERENCES

1. Vegter, Florine M.D, Hage J, Joris. Clinical Anthropometry and canons of the Face in Historical Perspective. Plastic & Reconstructive Surgery: October 2000-vol 106 issue 5, PP 1090 -69.
2. Subtelny J.D. The soft tissue profile, growth and treatment changes. Angle Orthod, 1961;31: 105-22.
3. Kandhasamy K, Prabu NM, Sivanmalai S, Prabu PS, Philip A, Chiramel JC. J Pharam Bioallied Sci2012 August; 4(Suppl 2): S313-5. Doi:10.4103/0975-7406100284.
4. Jeffrey E, Jansi, Rod J, Rohrich. Grabb & Smith Pleastice Surgery, 6th Edition 2007; 517-32.
5. Fan Liu, Fedde van der Lijn, Claudia Shurmann et al. A Genome-Wide Association Study identifies fine loci influencing Facial Morphology in Europeans. September 13, 2012. DOI: 10.1371/journal.pgen.1002932.

6. Byrd HS and Hobar P.C. Rhinoplasty: A practical guide for surgical planning. *Plast. Reconstr. Surg* 91:642, 1993.
7. Jovana Milutinovic, Nenad Nedeljkovic and Ksenija Zelic. Evaluation of Facial Beauty using anthropometric Proportions. *The scientific world Journal* Vol 2014 (2014), Article ID 428250, 8 pages. <http://dx.doi.org/10.1115/2014/428250>.
8. Kopacheva – Barsova, G.Nikolovski. N; Kirjas M; Avramovski-A; *Macedonian Journal of Medical Sciences*.2013 vol 6 No. 2 PP. 158-161.ISSN 1857 -5749.
9. Ahmed A, M. Nawres. Primary repair of Bilateral Cleft lip nasal deformity: Iraqi Experience; *Medical Journal of Babylon*;2013 10:2, 2014, doi:1812-156x-10-2.
10. Naveen Reddy, T. Rajesh Singh, Swetha Reddy, Yada valli Guruprasad. A cross sectional clinical study on shape of Nose, Intercanthal distance and geometric progression as predictors for width of the maxillary incisor teeth. 2014 vol 5 Issue 2, Page 265-67.
11. Hoffman W Jr, Bomberg TJ, Hathch RA. Interalar width as a guide in denture tooth selection. *J Prosthet Dent* 1986 Feb; 55(2): 219-21.
12. SB Pousti, M Jalessi, A. Asghari Management of Naso-frontal angle in Rhinoplasty. 2010 vol 12 issue 1(7-11).
13. Mathes SJ. *Plastic Surgery* vol 2, part 1, 2nd edition, Philadelphia, PA, Elsevier, 2006.
14. Kohila Kandhasamy, Neetika Mukhija Prabu, Sivaraj Siwan Malai, Pannoikadu Somasundaram Prabu, Abraham Phillip, Jawala C Chiramel. Evaluation of Naso-labial Angle of Komarapalayam population.2012 vol 4, Issue 6, page 313-15.