

Comparison of Cephalometric Norms of Pleasing Faces Reporting to OPD of Orthodontic Department L.U.M.H.S Jamshoro / Hyderabad

1. Qamar-un-Nisa Memon 2. Khalil Ahmed Alizai 3. Sarfraz Ahmed

1. Assoc. Prof. of Orthodontics, LUM&HS Jamshoro / Hyderabad 2. Senior Registrar, Dept. of Orthodontics, BMC, Quetta 3. P.G. M.Sc (Orthodontics) LUMHS, Jamshoro / Hyderabad

ABSTRACT

Objective: This study was aimed to analyze cephalometric norms in Pakistani population in comparison with the standards of European-American Adults.

Study Design: Cross sectional study

Place and Duration of Study: This study was carried out at Dental OPD Department of Orthodontic Dentistry Liaquat University Hospital Hyderabad/Jamshoro from August 2012 to December 2012.

Materials and Methods: Cephalometric norms were analyzed on a sample of 60 patients, with full complement of permanent teeth and no previous orthodontic treatment. The consent was taken and the patients were informed for the amount of radiation exposure related to cephalometric radiography. Lateral cephalometric radiographs of the patients were exposed in centric occlusion. The cephalometric radiographs of patients were traced manually on acetate papers. Each radiograph of the patient was traced at the same sitting to minimize tracing errors. In this study nasolabial angles were measured for comparison with European-American Adults. The database of study sample measurements was developed in SPSS version 17. The arithmetic mean, range and standard deviation for all the concerned variables were determined using the above-mentioned software with the help of SPSS processor. P value < 0.05 was considered significant.

Results: The results suggest that the study sample comprised of (53.3%) males and 28 (46.7%) females. Nasolabial angle of the patients were statistically analyzed and the minimum angle noted was 90 degree, maximum was 150 degree, mean angle was 108.45 degree and standard deviation was 10.98 degrees ($p < 0.001$). Females showed more sharp nasolabial angles ($p < 0.01$).

Conclusion: Comparisons revealed statistically significant differences in cephalometric norms between the study population in comparison to standards of European-American population.

Key Words: Nasolabial angle, cephalometric Analysis, Pakistani population.

INTRODUCTION

Esthetic criteria is considered in almost all culture and scientific research on the quantitative measurable basis of facial attractiveness is still in progress.¹ A presentable face becomes the key to success.² Final facial profile is determined by the soft tissue and these can be altered by growth and orthodontic treatment. Facial aesthetic are remarkably influenced by soft tissue characteristics. There is great individual variation in period magnitude, and pattern of growth in different part of the face and thus studying these variables in fundamental for orthodontic treatment.³

Growth evaluation in skeletal class-II subject is relevant with soft tissue profile because about 50% patient have these malocclusion and distinct development aspects of the soft tissue have been observed. Facial aesthetic have been studied since the beginning of orthodontic in 1911, this has been analyzed in details by means of plaster mask and it was believed that facial lines represent the true basis for diagnosis.^{4, 5}

In radiograph cephalometric analysis, the relationship of maxilla and mandible to cranial base is the most important diagnostic criterion for the assessment of sagittal skeletal relationship. First method based on cephalometric radiography was developed by down in 1948 through the contribution of investigator such as brodie, down, radial, steiners, tweed, and rickets. The techniques that show the observation of discrepancies observed in the mandible, maxilla, dental units and soft tissue profile.⁶

A number of lines and angles have been used to evaluate soft tissue facial esthetic. Some of them are the reidel plane, Steiner's plane, Zeromeridian angle by Gonzales-ulla, Merrifield's Z-angle Rickets line worm's lip assessment.⁷ There soft tissue measurement for altering the dento alveolar as well as skeletal component the analysis has the added advantage that is based on natural had position (NHP).⁸ The ideal nasal proportion requires a straight above the nasal tip, forming the super lip break and the alar rims 1 to 2 mm superior to the columella in the lateral view.⁹ Nasolabial angle (NLA) is clinical and cephalometric parameters

for the determination of soft tissue profile which is representative of maxillary inclination increase angle reflect a maxillary retrusion and decreased amount show a maxillary protrusion Owens reported its arbitrary value to be range 90° to 110° considered as the standard.

MATERIALS AND METHODS

Cephalometric norms were analyzed on a sample of 60 patients, with full complement of permanent teeth and no previous orthodontic treatment. The consent was taken and the patients were informed for the amount of radiation exposure related to cephalometric radiography. Lateral cephalometric radiographs of the patients were exposed in centric occlusion. The cephalometric radiographs of patients were traced manually on acetate papers. Each radiograph of the patient was traced at the same sitting to minimize tracing errors. In this study nasolabial angles were measured for comparison with European-American Adults. The database of study sample measurements was developed in SPSS version 17. The arithmetic mean, range and standard deviation for all the concerned variables were determined using the above-mentioned software with the help of SPSS processor. P value < 0.05 was considered significant.

RESULTS

In the study sample 53.3% were males and 46.7% were females. Mean age of the patient was 18.09 years, the minimum age was found 8 years and maximum age of 35 years. Age distribution was assessed according to age groups, number of patients in age group less than 10 years were 5 (8.3%), in the age group of 10-15 years 27 (45%) patients were recorded, which are the maximum number of age group found in this study. Fourteen patients (23.3%) were recorded in age group 16-20 years, in the age group of 21-25 eleven patients (18.4%) were recorded and in age group of more than 25 years 3 patients (5%) were found. Nasolabial angle of the patients were statistically analyzed and the minimum angle was 90 degree, maximum was 150 degree, mean angle was 108.45 degree and standard deviation was 10.98 degrees. The difference between Nasolabial angle of male and female was analyzed and there was no statistically significant difference in both groups ($P \geq 0.05$). Nasolabial angle of the patients were statistically analyzed and the minimum angle was 90 degree, maximum was 150 degree, mean angle was 108.45 degree and standard deviation was 10.98 degrees. While analyzing according to age groups, it was found that in the age group of up to 10 years the mean Nasolabial angle was 108.1° , in the age group of 11-15 years, the mean angle was 108.4° , in the age group of 16-20 years, mean angle was 114.5° , in age group of 21-25 years, mean Nasolabial angle was 107.27° and in subjects above 25 years has mean angle

of 98.66° . These findings show no statistically significant difference between in these groups. The norms of the sample had the following statistically significant difference in terms of nasolabial angle: Nasolabial angle ($p < 0.0034$).

Comparison of soft tissue cephalometric values of Turkish and European-American using Legan and Burstone analysis. The nature of the soft tissue profile is affected by many factors, including ethnicity. For this reason, facial characteristics have been studied in various ethnic groups¹⁷. In our daily practice, various methods are used to evaluate cephalometric radiographs for orthognathic surgery. The advantage of such analyses is that they provide the ability to make objective evaluation of important structures and relationships. In recent years the number of cephalometric studies has been increased for Turkish population. However, the applicability of the norms described in these analyses to Turkish people is controversial. Several attempts have been made to evaluate the soft tissues of the Turkish population. The current study developed and compared cephalometric measurements of soft tissue facial profile of a sample of Turkish adults to European-American's norms using Legan and Burstone analysis.

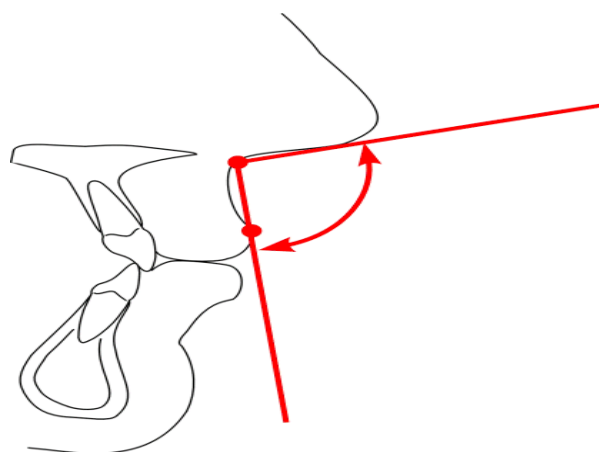


Table No.1: Nasolabial Angle

Variable	Minimum	Maximum	Mean	Std. Deviation
Nasolabial Angle	90.00°	150.00 °	108.45 °	10.98 °
Interlabial gap (mm)	1.7	.4	1.1	.5

Nasolabial angle (NLA): Nasolabial angle is taken as per this criterion. The anterior inferior angle formed by the intersection of a line tangent to the columella of the nose and a line drawn from subnasale to the mucocutaneous border of the upper lip. It is used to evaluate the degree of protrusion or retrusion of the upper lip, in reference to the columella of the nose. The nasolabial angle can influence the decision for extractions as part of the orthodontic treatment plan, as

it is partially dependent on the anteroposterior position of the maxillary incisors.¹⁷

Table No.1: Cephalometric Comparison

Variable	Pakistani		Euro.American		P Value
	Mean	SD	Mean	SD	
Nasolabian Angle	108.45°	10.98 °	107.05	8.45	0.035
Interlabial gap (mm)	1.11	.5	2	2	0.042

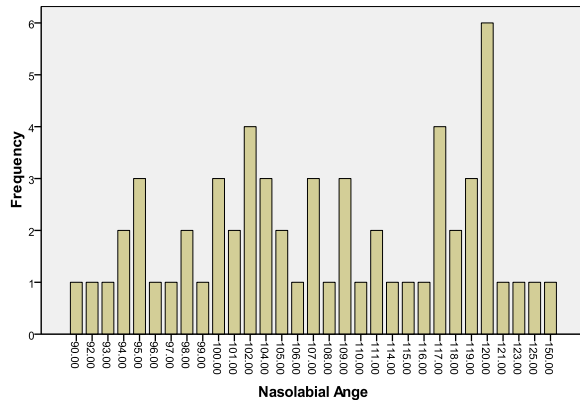


Figure: Nasolabial Angle

DISCUSSION

The current study was conducted for analysis of cephalometric norms reported in OPD LUMHS, Jamshoro/Hyderabad to compare study outcomes with steinor and theories ricketts western norms. This will lead to understand soft tissue facial profile of a sample of Pakistani population in comparison to European-American's norms using steinor and theories ricketts western standards.

The value of Nasolabial angle in the range of 90 to 110 considered as the standard, racial differences of the nasolabial angle in the facial appearance of dentate subject ranging in age from 18th to 41 years from six racial groups, including Japanese. They evaluated that Japanese had a smaller nasolabial angle (NLA) $97^{\circ} \pm 1$ than did Caucasians $109^{\circ} \pm 5$, and Hispanic $105^{\circ} \pm 1$ but a larger angle than did Korean $92^{\circ} \pm 5$, Chinese $92^{\circ} \pm 5$, African and American 90° .¹²

The mean value of the nasolabial angle in this sample was $108.4^{\circ} \pm 10.75^{\circ}$ and shows equal values as compared to the nasolabial angle reported in other studies, like: Nanda et al, $105.8^{\circ} \pm 9^{\circ}$ for men and $110.7^{\circ} \pm 10.9^{\circ}$ for women, Owen $105^{\circ} \pm 8^{\circ}$, Scheideman²⁰ $111.4^{\circ} \pm 11.7^{\circ}$ for males and $111.9^{\circ} \pm 8.4^{\circ}$ for females. For this reason, facial characteristics have been studied in various ethnic groups^{14,19}. Various methods are used to evaluate cephalometric radiographs for orthognathic surgery. The analyses provide an advantage that by these assessments, objective evaluation of important structures and relationships can identified. A number of cephalometric studies has been carried out for Turkish population. However, results

described in these analyses to Turkish people are controversial in different studies. The current study was conducted to assess cephalometric norms by applying cephalometric measurements of soft tissue facial profile of a sample of Pakistani population to compare with European-American's norms using Legan and Burstone analysis. In various studies other ethnic groups have been compared with European-Americans using Legan and Burstone analysis, significant differences were observed. Chinese subjects had less convex faces and acute nasolabial angle in comparison with European-Americans. Japanese subjects had a retrognathic maxilla and obtuse nasolabial angle, and more protrusive lips compared with European-Americans. North Indian subjects had convex profile, acute nasolabial angle than in European-Americans. Saudis have a more convex profile and reduced lower vertical height depth ratio values, shorter neck distance, and more reduced chin than European-Americans. In a study on a Yemeni population, soft tissue analyses showed a more convex facial form, a more retruded mandible, obtuse lower face throat angle, deep mentolabial sulcus, shorter interlabial gap, and increased incisor exposure compared with European-Americans.

CONCLUSION

Nasolabial angle in soft tissues facial profile in patients in Pakistani population ,while compare with western norms ,it is evident from this study that it is slightly different from western norms. More research is recommended to identify at the community level at various parts of Pakistan to assess cephalometric norms in different ethnic groups within regions of Pakistan.

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Address for Corresponding Author:**Dr. Qamar-un-nisa Memon,**

Associate Professor, Head of Orthodontics Department,
Liaquat University of Medical & Health Sciences,
Jamshoro / Hyderabad.