FACIAL ATTRACTIVENESS EVALUATION USING NASOLABIAL ANGLE AND MENTOLABIAL ANGLE AS AN UNIQUE PARAMETER: A CEPHALOMETRIC STUDY.

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ABSTRACT

Background: A key feature of the face is its physical look. Self-esteem is greatly influenced by facial attractiveness, as has long been known. Ethnicity, age, gender, culture, and personality all have an impact on what people find appealing about the average facial features. **Aim:** This study aims at evaluating the soft tissue facial aesthetics, using the nasolabial angle and mentolabial sulcus as one of the prime parameters on a lateral cephalogram.**Methodology:** A group of 60 subjects (30 males and 30 females) with skeletal and dental Class I relationship was included to provide a normative data for the Nasolabial and Mentolabial angle. The mentolabial angle and nasolabial angle for this pooled sample of males were measured at 97.13 ±14.58 and 110.43± 12.10, respectivelyand females had the values at 96.37 ± 12.06 and 113.37 ± 14.89 respectively. **Results:**The resultant values for males and females using student T-test showed statistically insignificant differences, however males did have a slightly bigger nasolabial angle and women did have a slightly larger mentolabial angle.**Conclusion:**There is no difference between the male and female

characteristics, we may thus conclude that the individual parameters, nevertheless, are all within the expected range of values.

KEY WORDS:

Cephalometrics, Nasolabial Angle, Mentolabial Angle, Soft tissue esthetics.

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INTRODUCTION:

A very significant face trait is physical appearance. Self-esteem is greatly influenced by facial attractiveness, as has long been known. The notion of a beautiful face is mostly subjective, with average facial characteristics being influenced by factors like race, age, gender, culture, and personality. Researchers continuously assess facial expressions with the goal of advancing aesthetics.

As well-defined underlying skeletal and dental structures are necessary for well-proportioned and balanced soft-tissue shapes, orthodontics has given a lot of attention to facial harmony, balance, and aesthetics. Soft-tissue analyses were created by Legan, Burstone, and Holdaway[1] and quickly acquired popularity in both clinical and academic settings for orthognathic surgery and orthodontics. Numerous techniques, including anthropometry, photogrammetry, computer imaging, and cephalometry, are used to examine facial features.

Czarnecki et al. evaluated the perception of facial balance by varying the length of the nose, lip protrusion, and chin development. They found that the interrelationships of those face expression must be in balance so as to attain racial harmony.

A major motivation for seeking treatment could be a desire to boost dental and facial esthetics. Facial harmony and balance are determined by the facial skeleton and its soft tissue drape. The structures during this region are so variable that the nasolabial angle (NLA) by various investigators were drawn differently during this study Fitzgerald method[2] was used.

Metropolitan areas of the planet have a way diverse patient population, bringing with it a necessity to acknowledge that one standard of facial esthetics might not be appropriate when making diagnostic and treatment planning decisions. Profile outlines of the patients are utilized in treatment planning as any skeletal or dental changes either by growth or treatment are reflected and may be measured in profile analysis of the patients. Lateral cephalogram is universally utilized in orthodontics for measuring soft and hard tissue relations as dental, skeletal and soft tissue profile view is visible on this two-dimensional x-ray

MATERIALS AND METHOD:

60 individuals' cephalometric radiographs—30 males and 30 females—were gathered from the record database of the Department of Orthodontics at the Dr DY Patil University School of Dentistry in Navi Mumbai, Maharashtra,India.

The cephalograms of patients who had class I occlusion in their skeletal and dental structures were taken from their pre-treatment data. There was no medical or orthognathic surgical history. Except for the third molars, all 28 permanent teeth were in good condition.

Hard copies of lateral cephalograms were placed on a sheet of cellulose acetate with dimensions of 8 by 10 inches and a thickness of 0.008 inches. Next, hand tracing was done using a mechanical pencil with a 0.5-mm lead tip.For all the 60 samples, ANB angle was measured to verify class I skeletal base. Manual cephalometric tracing of the nasolabial angle using the Fitzgerald method and tracing of the mentolabial sulcus was done to guage the soft tissue profile.

NASOLABIAL ANGLE EVALUATION USING THE FITZGERALD METHOD[2]

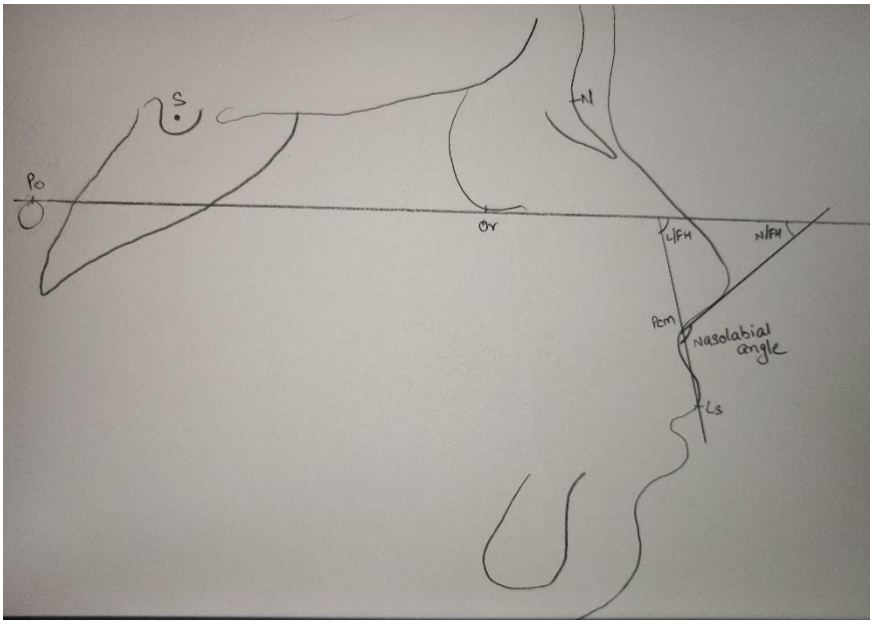
The nasolabial angle was depicted using a three-step procedure. The posterior columella point, or PCm, is the furthest posterior point of the lower border of the nose when it starts to turn inferiorly to join with the philtrum of the upper lip. The PCm tangent is a line drawn anteriorly along the bottom border of the nose, roughly at the midpoint of the structure.

The lower nose to Frankfort horizontal plane angle, or N/FH, was defined as the posteroinferior angle of this line that extended anteriorly and intersected the Frankfort horizontal plane. This angle was thought to represent the relative inclination of the nose.

The PCm-Ls line, which was drawn from PCm to labrale superius (Ls), intersects the Frankfort horizontal plane when it is extended superiorly. The upper lip to Frankfort horizontal plane angle, or L/FH, was named after the anteroinferior angle that was created at this juncture and was thought to represent the upper lip's relative inclination. The nasolabial angle was created by the intersection of the PCm tangent and PCm-Ls line. This angle, which is a component of the triangle formed by these two lines and the FH plane, is equal to the sum of the angles N/FH and L/FH.

EVALUATION OF MENTOLABIAL ANGLE

Three sites were used to form the mentolabial angle: sublabiale, labrale inferius, and soft tissue pogonion. A tangent to the lower lip (sublabiale to labrale inferius) and a tangent to the top of the soft tissue chin pad intersecting at an anterior angle is known as the chin angle (sublabiale to soft tissue pogonion).



STATISTICAL ANALYSIS

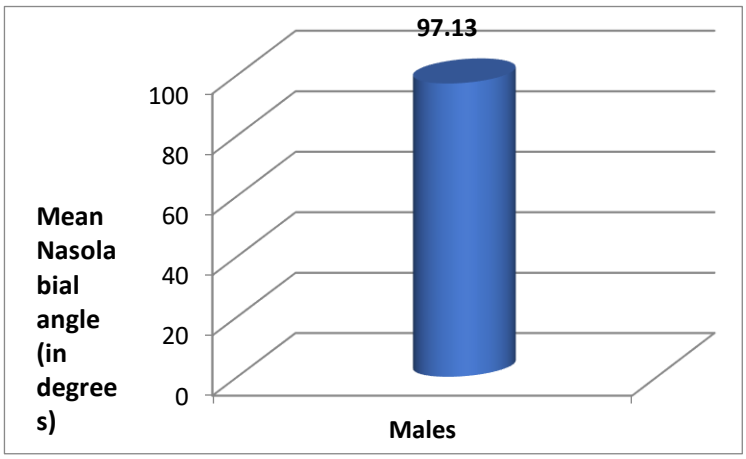
Means and standard deviations were used to represent descriptive statistics for each group. The Student t test was used to compare the nasolabial and mentolabial angles between groups. In the aforementioned tests, a p value of less than 0.05 (p0.05) was considered statistically significant. Using SPSS software version 2.0, all analyses were carried out.

RESULT:

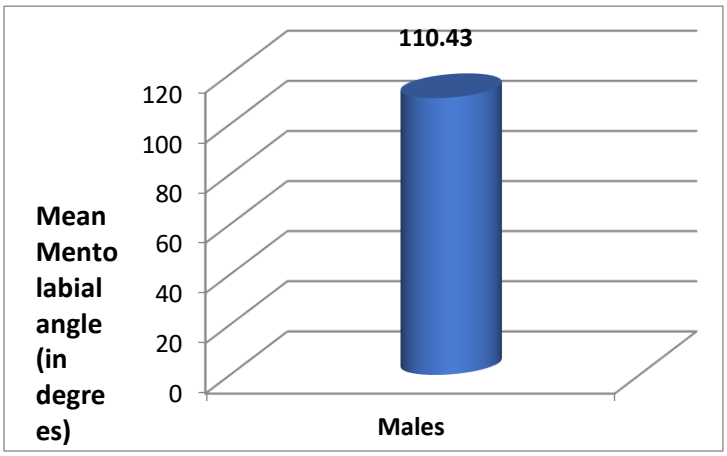
The present study was conducted on the lateral cephalograms of the patients reported to the department of Orthodontics and Dentofacial Orthopaedics of Dr DY Patil University School of Dentistry, Nerul, Navi Mumbai,Maharashtra,India to guage the Nasolabial angle and also the Mentolabial angle

The norm of Nasolabial angle was 90-110 degrees with male population showing a price of 97.13 ± 14.58 degrees and feminine population showing values of 96.37 ± 12.06 degrees.

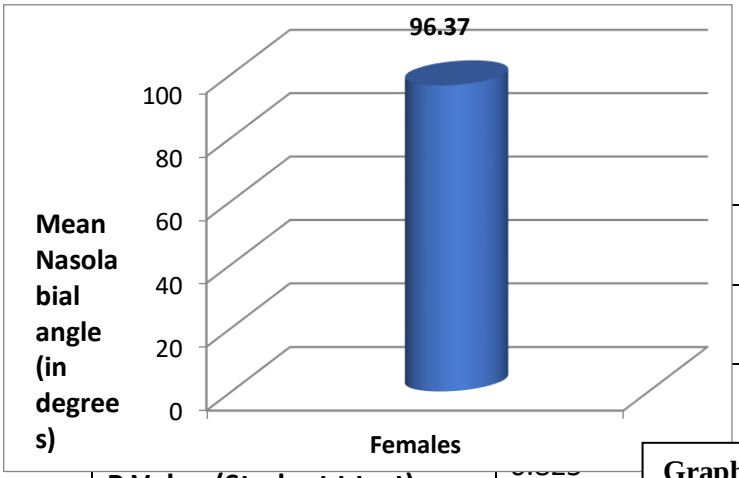
Statistically insignificant results were found. The mean of Mentolabial angle was 107-118 degrees with male population showing a worth of 110.43 ± 12.10 degrees and feminine population showing values of 113.37 ± 14.89 degrees.



Graph no.1 showing mean Nasolabial Angle in Males

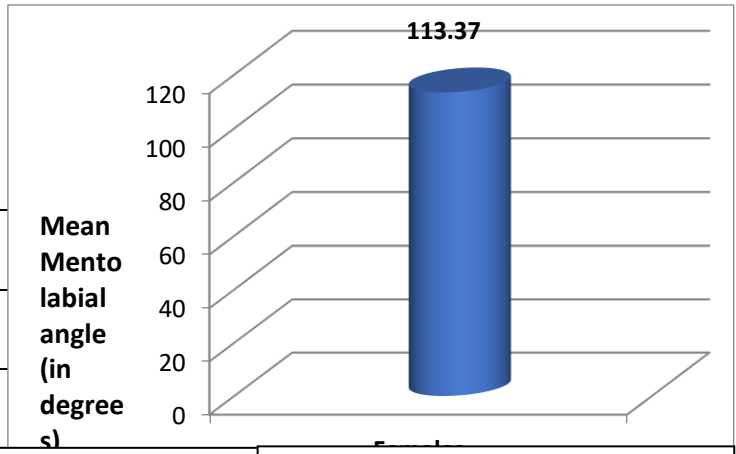


Graph no.2 showing mean Mentolabial Angle in Males



P Value (Student t test)	

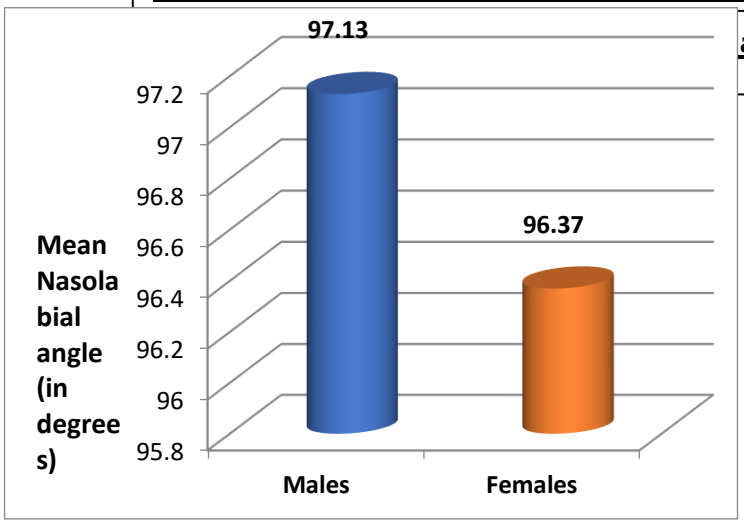
Graph no.3 showing mean N Angle in Females



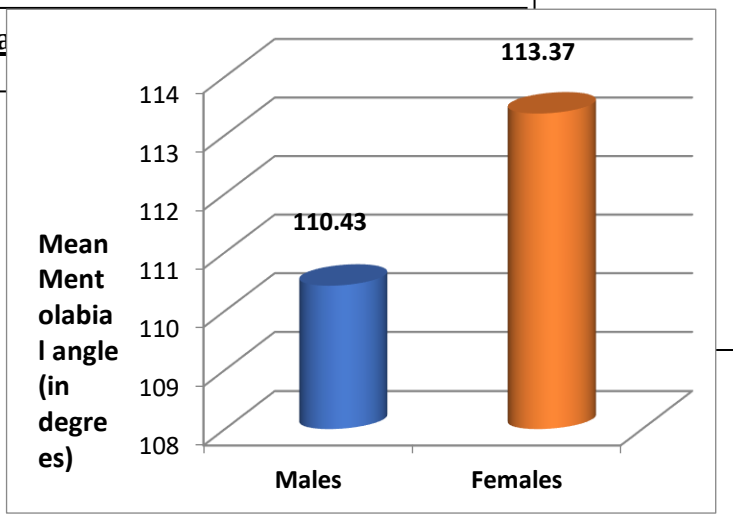
Graph no.4 showing mean Mentolabial Angle in Females

Gender (Total = 60)	Males (N = 30)	Females (N = 30)
Mean MLB angle (in degrees)	110.43	113.37
Standard Deviation	12.10	14.89
P Value (Student t test)	0.406	

Table no.1: Comparison of the nasolabial angle between males and females



Graph no.5 : Comparison of the Nasolabial angle between males and females



Graph no.6 : Comparison of the Mentoolabial angle between males and females

The result was found to be statistically insignificant. The results of the study from Table nos. 2 and three gives us the knowledge about the P value per the coed T- test which states that the study is statistically not significant.

We can therefore say that there's no difference between the male and female parameters in evaluating the Nasolabial Angle and also the Mentolabial Angle. However, the individual parameters fall within the conventional range of values.

DISCUSSION

Beauty is a vaguely defined term that is universally understood and appreciated by observers. It's challenging to quantify, though, because it should be viewed differently by various ethnic groups. The orthodontist needs to be inspired by suitable aesthetic criteria if they are to regularly achieve high levels of patient satisfaction after treatment. [3]

The diagnosis and treatment planning of the orthodontic patient depend greatly on the examination of the soft tissue profile. Soft tissue alterations have been demonstrated to occur both during growth and during treatment. [4,5]

The direct impact of treatment on the soft tissue profile is occasionally noticeable, despite the varying soft tissue alterations with treatment. The modifications to the soft tissue profile brought on by orthognathic or aesthetic surgery will be further more noticeable.it's for these reasons that the soft tissue profile must be carefully examined before a call regarding treatment and/or orthognathic surgery may be made.

Before considering orthodontic or orthognathic treatment options, several writers have underlined the need of evaluating the soft tissues, and the nasolabial soft tissue is a key factor in defining the patients' face aesthetics. There aren't any reliable, repeatable methods for assessing the nasolabial area. The two lines that form the nasolabial angle, one from the nose and one from the upper lip, are separate from one another.

These two lines' respective inclinations may have contributed to the angle that they depict. An individual's nasolabial angle could alternatively be within the typical range, be tiny, or be large. Because it doesn't identify which element is responsible for the variability, the measurement of this angle alone is insufficient for providing accurate information.It may be the nose, the lip, or both.

In order to aid in the medical diagnosis of normal from its variation, it is crucial to analyse each component of this angle. Regarding lower face facial cosmetics, the mentolabial sulcus is also crucial. When determining the extent of reduction genioplasty in patients with horizontal macrogenia, Zide and Boutros have defined a crucial diagnostic point: the upper component of the mentolabial angle, which is the inclination of the road from the lower lip to the mentolabial groove. [6]

In contrast to the findings of this investigation, Owen et al.[7] found a larger nasolabial angle value of 105° 8°. The different positions of the vertices of the two nasolabial angles may very well be the probable cause of the discrepancy. Their subnasale vertex was created by bisecting tangents to both the upper lip and the columella of the nose. As a result, the vertex was situated far more posteriorly than the posterior columella point.

CONCLUSION:

The following conclusion were drawn from the current study:

• Constructing nasolabial angle by Fitzgirald method has been devised that has angulations of the lower border of the nose and therefore the upper lip. These measurements were consistent and reproducible within and among the orthodontists studied.

• Result gives us the knowledge about the P value per the coed T- test which states that the study is statistically not significant.

• We can therefore say that there's no difference between the male and feminine parameters in evaluating the Nasolabial Angle and also the Mentolabial Angle within the Navi Mumbai Population. However, the individual parameters fall within the traditional range of values.

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