Research Article

BETA ANGLE NORMS FOR SKELETAL CLASS I SUBJECTS OF KUMAON POPULATION

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A R T I C L E   I N F O

A B S T R A C T

Objective: The purpose of the study was to evaluate and establish norms for the class I subjects of kumaon population using the beta angle
Materials & Method: The sample included pre-treatment lateral cephalograms of 100 subjects belongIng to kumaon and possessing a skeletal class I malocclusion with pleasing profile (age 18-30 years).
Result: No statistically significant difference were found in the beta angle values of Kumaon and Caucasian population .Beta angle norms for Caucasian population can be applied for both the population.
Conclusion: Beta angle is relatively a stable parameter in population with different ethnicities.

INTRODUCTION

In 1931, Orthodontics introduced the time of radiographic cephalometry when the strategies of institutionalized cephalograhs of the head were presented and created after authentic work of Broadbent in the United States and Hofrath in Germany.[1] Since its inception, cephalometry holds a critical parameter for the diagnosis, treatment planning, assessment of treatment results and forecast of development. The institutionalization of scientific strategies prompted the cephalometric radiography as a fundamental diagnostic tool. A legitimate rule to clinicians through the accessibility of the cephalometric norms amid diagnosis and treatment arranging improves the outcome of facial and cephalometric characteristics in which the ethnic background of the patient is of a prime consideration.[2] Norms,thus define the facial traits and establish a range of values that optimizes the facial attractiveness.

The failure of the reference parameters utilized as a part of orthodontics in defining a treatment plan prompted the improvement of another estimation called as "BETA ANGLE" by Baik and Ververidou.[5] It has been observed that there exists an assorted qualities between the patients which urge the orthodontists to make certain special case. Certain facial features (such as prominent noses, cheek bones, chins) that

best suits the patient in terms of the size and arrangement must be evaluated as these features represent the characteristics of the family or the ethnicity .It has been recognized over the years that various ethnic groups represent significant variations in the craniofacial morphology and soft tissues.[3,4] This justifies the need to study and development of norms for population with unique facial morphology. Hence, the purpose of this study was aimed at the creating norms of the beta angle for kumaon subjects by comparison with the Caucasian population.

Figure 1 Lateral Cephalograph

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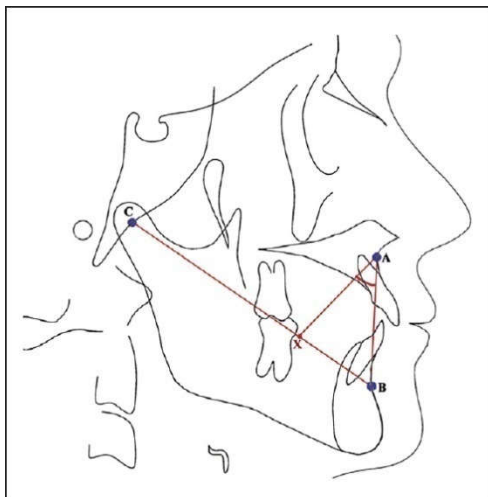
Figure 2 Repesenting Beta Angle (Parameter Used IN THE STUDY)

MATERIALS AND METHOD

The study included a total sample of 100 subjects including 50 males and 50 females belonging to the Uttarakhand ethnicity in the age ranging between 18-30 years were selected by conducting camps in the various areas of Kumaon region in Uttarakhand and the screening of subjects at the out patient department .Subjects possessing a Class I molar and class I canine relationship, straight facial profile were included in the study along with the parameters such as no previous history of orthodontic treatment , minimal rotations, no spacing, and well aligned arches .Informed consent of the subjects was obtained that were selected by the panel of judges which consisted of the orthodontists ,prosthodontists and layman . The lateral cephalogram obtained of the patient were analysed and was feeded in the dolphin imaging software 11.8 after which the mean values of the beta angle were being obtained

RESULTS

Table 1 calculated values of β angle for the male and female subjects of uttarakhand population

	Male		Female			
	Mean	Std. Deviation	Mean	Std. Deviation	Mean Difference	p-value
Beta Angle	29.53	4.65	30.80	2.87	2.40	0.425

Table 2 comparison of the values of β angle for the uttarakhand and caucasian population

Population	Uttarakhand		Caucasian			
	Mean	Std. Deviation	Mean	Std. Deviation	Mean Difference	p-value
Beta angle	29.63	3.69	31.1	+ 2	3.14	0.23

DISCUSSION

An orthodontic treatment planning depends vastly on the accuracy of the measurement of the interjaw relationships in the sagittal plane. The present study which was aimed at establishing norms of beta angle for Kumaon population and comparison with the Caucasian population, was based on a large sample of 18 to 30 -year-old individuals representing its original population .The mean values obtained by tracing of the cephalographs by the dolphin imaging software 11.8 showed that there are statistically no significant differences in the average values of the male and female subjects in the uttarakhand population

Various authors reported ethnic differences in cephalometric variables between the populations belonging to the Asian and Caucasian ethnicity[25]. However, the correlation of the mean values for beta angle in subjects possessing a class I malocclusion of Kumaon ethnicity and Caucasian population groups concludes the stability of the beta angle irrespective of the craniofacial morphology found in different ethnic groups.

CONCLUSION

The present study can be concluded as follows

- No statistical significant difference for the beta angle values exists in the male and female subjects belonging to Kuamaon ethnicity possessing a skeletal class I malocclusion .
- The Beta angle is a relativitely stable parameter in the Caucasian as well as the Kumaon population and thus the norms of caucasian population can be relatively applied for the same
- Beta angle can be used an effective and alternate method of assessing the sagittal discrepancies as compared to the traditional methods .

References

1. Paixao M, Costa M, Vogel C, Arauj T,Comparative study between manual and digital cephalometric tracing using Dolphin Imaging software with lateral radiographs Dental Press J Orthod 2010 Nov-Dec;15(6):123-30
2. Kalha AS, Latif A, Govardhan SN. Soft tissue cephalometric norms in South Indian ethnic population. Am J Orthod Dentofacial Orthop 2008; 133:876-81
3. Almyra M, Naranjilla S, Janson IR. Cephalometric floating norms as a guide toward a harmonious individual craniofacial pattern among Filipinos. Angle Orthod 2009; 79:6:1162-8.
4. Wei SHY. A roentgenographic cephalometric study of prognathism in Chinese males and females. Angle Orthod 1968; 38:4:305-20.
5. Baik CY, Ververidou M: A new approach of assessing sagittal discrepancies: the Beta angle. Am J Orthod Dentofac Orthop 2004; 126:100-105.
6. Hussels W, Nanda RS. Analysis of factors affecting angle ANB. Am J Orthod. 1984;85:411–23.[PubMed]