Assessment of Skeletal Class I Subjects of Uttarakhand using Beta Angle

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ABSTRACT

Objective: To evaluate and establish the norms for Class I subjects of Uttarakhand population using the beta angle.

Materials & Method: The sample included pre-treatment lateral cephalograms of 100 subjects aged 18-30 years belonging to Uttarakhand ethnicity and possessing skeletal Class I malocclusion with pleasing profile. Beta angle measurement was performed and compared with Caucasian standards.

Result: No statistically significant difference was found in the beta angle values of Uttarakhand and Caucasian populations. Beta angle norms for Caucasian population can be applied for the Uttarakhand population.

Conclusion: Beta angle is relatively a stable parameter in population with different ethnicities.

Keywords: Beta Angle, Class I malocclusion, Uttarakhand population

INTRODUCTION

In 1931, cephalometric radiography was introduced in the field of orthodontics when the cephalograms of the head were presented through the authentic works of Broadbent in United States and Hofrath in Germany.[1] Since its inception, cephalometry holds a critical parameter for 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 improved the outcome of facial and cephalometric characteristics in which the ethnic background of the patient is of prime consideration.[2] Norms thus define the facial traits and establish the range of values that optimize the facial attractiveness.

Failure of the reference parameters of orthodontics in defining treatment plan prompted the development of another estimation called "beta angle" by Baik and Ververidou.[3] Certain facial features such as prominent nose, cheek bone, and chins that best suit the patient in terms of size and arrangement must be evaluated; as these features represent the characteristics of the family or ethnicity. It has been recognized that various ethnic groups represent significant variations in craniofacial morphology and soft tissues.[4,5] This justifies the need to study and develop the norms for population with unique facial morphology. Hence, the purpose of this study was to create the norms of beta angle for Uttarakhand subjects and its comparison with Caucasian standards.

MATERIALS AND METHOD

The study included a total of 100 subjects including 50 males and 50 females belonging to the Uttarakhand ethnicity of the age ranging between 18-30 years. The samples were selected by conducting the camps in various areas of Uttarakhand and screening was done at the out-patient department. Subjects possessing Class I molar and 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. The subjects were selected by the panel of judges consisted of orthodontists, prosthodontists and laymen. Informed consent was obtained from the participants to take lateral cephalogram. Mean values of the beta angle were obtained by tracing of the cephalographs. Radiographs were analyzed and fed in Dolphin imaging software 11.8 (Figure 1). The gender and ethnic variations were tested statistically using chi square test.

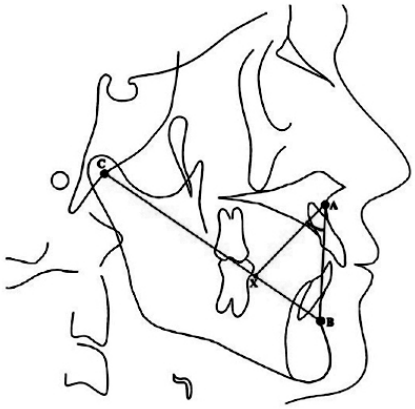

Figure 1: Beta Angle

RESULT

Table 1: Calculated values of β angle for male and female subjects

Parameter	Male		Female		Mean Difference	*p*-Value
	Mean	SD	Mean	SD		
Beta Angle	28.63	4.41	30.69	2.87	2.40	0.425 (NS)

NS: Not significant

Table 2: Comparison of β angle between Uttarakhand and Caucasian samples

Parameter	Uttarakhand		Caucasian		Mean Difference	*p*-Value
	Mean	SD	Mean	SD		
Beta Angle	29.63	3.69	31.1	2.0	3.14	0.23 (NS)

NS: Not significant

DISCUSSION

An orthodontic treatment planning depends vastly on the accuracy of measurement of the interjaw relationships in sagittal plane. The mean values obtained showed that there are statistically no significant differences in the average values of the male and female subjects in uttarakhand population sample.

Various authors reported ethnic differences in cephalometric variables between the populations belonging to Asian and Caucasian ethnicity.[2-6] However, the correlation of the mean values for beta angle in subjects possessing a Class I malocclusion of Uttarakhand 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 between male and female subjects belonging to Uttarakhand ethnicity possessing skeletal Class I malocclusion.
- The beta angle is relatively stable cephalometric parameter among Caucasian as well as Uttarakhand populations; thus the norms of caucasian population can be applied for Uttarakhand subjects.
- Beta angle can be used an effective and alternate method for assessing the sagittal discrepancies as compared to the traditional methods .

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