Research Article

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Esthetic Plane Assessment of Central India Subjects In Two Different Age Groups

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ABSTRACT

Background: To evaluate and compare Rickett's E-line in Class I subjects of Central India in two different age groups.

Materials and Methods: Sample size comprised of 60 subjects belonged to Central India. Subjects were divided in to two main groups: Group I comprised 30 young children in age of 12-16 years and Group II comprised 30 young adults in age of 18-22 years. Rickett's E-line was done from the data collected to asses protrusion of upper and lower lips. The mean and Standard deviation (SD) will be calculated. The gender differences will be calculated by t-test.

Results: No significant difference was found for the value for upper lip to E-line and lower lip to E-line in young children and young adult. Combined Rickett's mean for upper lip to E-line for class 1 subjects were found to be more in present study (-.0917mm) than Rickett's original mean (-4mm) and also more in lower lip to E-line (2.525mm) than Rickett's original mean (-2 mm).

Conclusion: Central India subjects had more protrusive upper and lower lips than Caucasians. In central India subjects this value should be considered as normal and subjects should be classified as having protrusive lips if value is higher than the present study.

Keywords: Cephalometric, Protrusion, Malocclusion, central India, Rickett's E-line.

INTRODUCTION

Radiographic cephalometrics was introduced by Broadbent in United States , provided a clinical and research tool to study the malocclusion and their underlying skeletal structures.[1] The great researchers who had established cephalometric standards were Bjork(1947) and Downs (1948),which helps as the guide in planning treatment modalities required for the orthodontic patients.[2,3] Cephalometric values particular to one ethnic group may be different to others and even in same race gender variability also exists.[4] Dentofacial problems are identified and the magnitude of problem is acknowledged in part by comparing subject's cephalometric values to a standard or normal data base.[5,6] Esthetic plane was employed for the purpose of describing the relationship of mouth to other structures. Lip protruding ahead of this line has been evaluated for facial disharmony. The adulthood lips should be behind this line for esthetic purpose.[7] The aim of this study was to

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evaluate for Rickett's E-line in Class I subjects from Central India in two age groups; 12-16 years of age (young children) and 18-22years of age (young adults) for assessment of facial esthetics.

MATERIALS AND METHODS

This prospective and comparative study comprised of 60 class 1 subjects belonged to Central India population. Subjects were divided in to two main groups according to age. Group I comprised 30 young children in age of 12-16 years and Group II comprised 30 young adults in age of 18-22 years. The study was approved by institutional ethical committee. Subjects in age group range from 12 to 16 years and 18 to 22 years were only included in study. Both male and female subjects with permanent dentition stage and who have not undergone orthodontic treatment were included. Subjects having missing teeth, long span crown and bridge, large proximal caries were excluded. The lateral cephalograms of all the 60 subjects were taken, as per established cephalometric standards given by Broadbent Jr (1975)[2,3]. Lateral cephalograms of all the subjects were taken from the same X-ray machine with the subject in the natural head position (NHP), with teeth in maximum intercuspation and lips in repose. All radiographs were taken following proper precautionary measures. The radiographs were exposed at 85 kV/10 mA for 17.6sec (as recommended by manufacturer) with effective dose / exposure-3-6μSv. The film to source distance was 5 ft 2" and the distance between the film and patient's mid-sagittal plane was 6". Magnification of all cephalogram was uniformly 1:1 to eliminate error of measurement by magnification.[7] The cephalometric tracing for all the subjects were carried to evaluate Rickett's E-line from the data collected to asses upper and lower lip protrusion. The data collected was tabulated for each subgroup and the mean, range and Standard Deviation was calculated. The gender difference was calculated by t-test.

RESULTS

The results of mean values of Rickett's analysis for class I young children was shown in Table 1and for class I young adults was shown in Table 2. No significant difference was found for the value for upper lip to E-line and lower lip to E-line in young children and young adult. Highly significant difference was found for present study mean values of Rickett's analysis for class I subjects and comparison with Rickett's original mean (Table 3). The value for upper lip to E-line was more in present study (-.0917mm) than Rickett's original mean (-4mm). The value was also more in lower lip to E-line in present study (2.525mm) than Rickett's original mean (-2 mm).

Table 1: Present study mean values of Rickett's analysis for class I young children.

Ser No.	Parameters	Young Children Males		Young Children Females		t-value	p-value
		Mean	S.D	Mean	S.D		
01	Upper Lip to E-line (mm)	.7333	3.189	.2333	2.610	0.4699	0.6421
02	Lower lip to E-line (mm)	3.3667	3.948	2.300	3.149	0.8181	0.4202

Table 2: Present study mean values of Rickett's analysis for class I young adult

Ser No.	Parameters	Young Adults Males		Young Adults Females		t-value	p-value
		Mean	S.D	Mean	S.D		
01	Upper Lip to E-line (mm)	-.5667	1.840	-.7667	2.069	0.2798	0.7817
02	Lower lip to E-line (mm)	2.0667	2.896	2.3667	2.843	0.2863	0.7768

Table 3: Present study mean values Of Rickett's analysis for class I subjects and comparison with Rickett's original mean.

Ser. No.	Parameter	Rickett's Mean (a)	Young Children Combined Mean(b)	Young Adults Combined Mean (c)	Combined Mean (d)	Difference (a-d)	*t*-value	*P*-value
01	Upper Lip to E-line (mm)	-4±2mm	.4833	-.6667	-.0917	-3.9083	14.4793	.0001**
02	Lower lip to E-line (mm)	-2±2mm	2.833	2.2167	2.525	4.5250	16.3292	0.0001**

Legends: * = p value < .05 which is significant. ** = p value < .005 which is highly significant.

DISCUSSION

The principle of the analysis is to compare the patient with a normal reference group so that differences between the patient's actual lip relationship and those expected for his ethnic group are revealed. Both hard and soft tissue evaluation is essential to establish harmony in facial esthetics.[8]

In the present study, Rickett's E-line was preferred over Steiner's S-line[2,3] because it is generally considered that the nose prominence is an important feature of facial profile to decide upon the decision for amount of retraction of protruding lip. Rickett's E-line is a line which is tangent to nose tip and anterior aspect of chin whereas, Steiner's 'S' line bisects the base of the nose. Hence E-line was considered more realistic to determine prominence of nose.

Highly significant difference was found for present study mean values of Rickett's analysis for class I subjects and their comparison with Rickett's original mean. In the present study the value of upper lip to E-line was more (-.0917mm) than Rickett's original mean (-4mm). The value is also more for lower lip to E-line (2.52mm) than Rickett's original mean (-2 mm). This may be attributed to more protrusive upper and lower lips in Central India population compare to Rickett's original study. Similar results were obtained by Kharbanda OP [9] for soft tissue chin and lip in north Indian population. Although Ricketts 'E' line is more in central India population but it should not be considered as sole reason to determine esthetics and other parameters to determine esthetics should also be considered. In central India subjects this value should be considered as normal and subjects should be classified as having protrusive lips if value is higher than the present study.

CONCLUSIONS

Central India subjects had more protrusive upper and lower lips than Caucasians. In central India subjects this value should be considered as normal and subjects should be classified as having protrusive lips if value is higher than the present study.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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