

Steiners Cephalometric Evaluation In Bhopal Population

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ABSTRACT

Background: The establishment of cephalometric norms for local population and their consequent clinical application contributes to more satisfactory diagnosis & treatment planning. Aim of this study was conducted to establish chephalometric norms for Bhopal population and their comparison with ideal Steiner's analysis norms.

Methodology: This cephalometric study was conducted on 60 Bhopal young adult (30 male and 30 female) with acceptable profile & occlusion. Data were collected and finally all the measurement were computed statistically.

Results: No significant differences were found in skeletal relationship, but Bhopal population has tendency towards horizontal growth pattern, dento alveolar protrusion & acute interincisal angle.

Conclusion: Any malocclusion cannot be treated to a template of norms which have been derived from mean values of a certain select group of subjects with excellent occlusion and good facial proportions. We need to have specific norms for each population to achieve good orthodontic results & facial changes.

Keywords: Steiner analysis, Cephalometric norms, Bhopal population.

INTRODUCTION

A Cephalometric Radiograph in diagnosis and treatment planning is an essential tool in Orthodontics. It assists research workers and clinicians. Broadbent (1931) ^{1,2} Downs' (1948)³ were among the pioneers who established Cephalometric standards for diagnosis, treatment planning and assessing degree of progress during orthodontic correction. The evolution of craniofacial morphology and its use in clinical practice and research can be achieved with different approaches. Radiographic Cephalometrics is the most suitable and therefore most commonly used. Cephalometrics plays a major role in most of the studies dealing with growth changes. Most

Cephalometric studies have proven that the 'Norms' should be based on ethnic, sex and age differences. Cooke and Wei(1989)⁴; Yeong and Huggare(2004)⁵; Wu et al. (2007)⁶. Mills (1982) stated that genetics play a major role in producing the face and the dentition of the individuals. Accordingly, the differences for populations in their characters, size, growth and shape make the differences in the measurements for various craniofacial structures and that motivated researchers to investigate the Cephalometric norms of different racial and ethnic groups in different countries for different populations. Some study found distinct differences in craniofacial features as compared with other

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populations and it may be due to ethnic variation. So, it is unscientific to use Cephalometric norms of specific racial group for another different population. Among the several numeric facial analyses currently employed, the analysis proposed by Steiner has been used broadly by orthodontists and maxillofacial surgeons. However, the measurements proposed for analysis were based on White American sample and cannot be applicable as a reference for diagnosis and treatment of other ethnic groups. Moreover, Steiner's Norms should be used only as a guide and not as absolute values for each patient. Hence, an approach is made to establish a "Norm" for use in diagnosis and treatment planning for Bhopal population.

AIMS AND OBJECTIVES

It is found that there is no established Cephalometric norm for Bhopal population till today using Steiner's Analysis. The prime purpose of the present study will be conducted to establish cephalometric norms of Bhopaladult (male and female), mean value and range and also to compare between Bhopal people and Steiner's norm.

MATERIALS AND METHODS

60 patients (30 female and 30 male) were selected for this study with following criteria

Inclusion criteria:-Age should be 20-25 years, there should be no previous history of orthodontic,

endodontic treatment or surgical intervention, Balanced Craniofacial aesthetics, Minimal Incisor crowding, Full complement of erupted teeth upto 2nd molar.

.All the subjects will be positioned in natural head position with relaxed lips and the teeth in maximum intercuspation. Steiner's analysis will be applied during locating and measuring landmarks, linear measurements and angles respectively. Each Cephalometric X-Ray will be traced twice and if there is any error that will be traced two times again. For Steiner's analysis the following anatomical landmarks are essential.

Cephalometric landmarks used in the study:

Steiner analysis composed of nine angular value and Five Linear measurements they are as followed

SNA, SNB, ANB, SND, SN-GoGn, SN-OP Upper incisor to N-A Angle, Lower incisor to N-B Angle, Interincisal Angle, Upper incisor to NA plane (mm), Lower incisor to NB plane (mm), SE distance, SL distance and Pog to NB plane

Statistical Analysis:

Data was entered in Microsoft excel and One sample 't' Test was analyzed by using statistical analysis software Graph pad Prism (Version 5) and data were presented as Percentage and Mean±SD. 'p' value of less than 0.05 was accepted as indicating significance.

Table 1: Comparison statistical evaluation of steiners norm and the present study.

S.No	Parameters	Steiners Average	Bhopal population				t, df	P value
			Mean	SD	Minimum	Maximum		
1	SNA °	82	81.07	4.18	74.00	94.00	t=1.222 df=29	0.2315 (NS)
2	SNB °	80	80.72	4.58	73.00	94.00	t=0.8570 df=29	0.3984 (NS)
3	ANB °	2	1.32	2.67	-5.00	6.00	t=1.403 df=29	0.1711 (NS)
4	SND°	76	78.33	4.18	71.00	86.00	t=3.058 df=29	0.0048 (S)
5	Sn TO GoGn°	32	24.65	4.45	16.00	35.00	t=9.056 df=29	< 0.0001 (S)
6	SnTOOcc°	14.5	14.10	16.69	5.00	100.00	t=0.1302 df=29	0.8973 (NS)
7	1 TO NA°	22	44.10	61.1	20.00	360.00	t=1.979 df=29	0.0574

				8				(NS)
8	<u>1</u> TO NB ⁰	25	25.52	7.15	12.00	39.00	t=0.3957 df=29	0.6952 (NS)
9	<u>1</u> TO 1 ⁰	130	122.9 0	9.86	96.00	145.00	t=3.973 df=29	0.0004 (S)
10	<u>1</u> TO <u>NA</u> (mm)	4	8.18	2.98	4.00	15.00	t=7.686 df=29	< 0.0001 (S)
11	<u>NB</u> TO 1(mm)	4	5.98	2.34	2.00	11.00	t=4.636 df=29	< 0.0001 (S)
12	SE (mm)	22	20.00	2.52	15.00	26.00	t=4.349 df=29	0.0002 (S)
13	SL (mm)	51	54.57	8.08	41.00	71.00	t=2.418 df=29	0.0221 (S)
14	Pog-NB (mm)	27	20.50	3.11	15.00	27.00	t=11.47 df=29	< 0.0001 (S)

DISCUSSION

This study tries to establish norms for Bhopal population according to Steiner's analysis. Statistical analysis was done among all angular and linear parameters of Steiner's analysis. Present study reveals that 8 parameters of Bhopal population were significantly different when compared with Steiner's analysis of Caucasian population.

Skeletal: while measuring SNA, SNB and ANB no significant differences were found.

On comparison it was seen there is no significant difference in value between Bhopal and Caucasian population.

The mean value of angle SND was equal in both the population.

Mandibular plane to the cranial base plane of Bhopal population was smaller than Steiner's value.

Dental: in linear measurement no significant difference found in SND, SL and SE parameters. During comparison it is found that interincisal angle is more acute in Bhopal population as compared to Caucasian population. Increase in value were recorded in Bhopal population for Na to upper incisor (mm), Na to upper incisor (angle), Nb to lower incisor (mm) and Nb to lower incisor (angle).

Conclusion: In Bhopal ethnic groups with well-balanced faces, there are some fundamental variations in the dentofacial features when compared with that of Steiner's norm. These should

be established to serve in the diagnosis and treatment planning of the Bhopal patients.

1. Mandibular plane in relation to cranial base plane (Sn – GoGn) was smaller which suggest horizontal growth pattern of Bhopal population

2. Bhopal population show protrusive dentoalveolar pattern.

This study concludes that there is variation in Bhopal population Steiner's cephalometric norm as compared to ideal Steiner's cephalometric norms.

These results may help in treatment planning for Bhopal patients during orthodontic treatment. Furthermore study need to be conducted with more sample size and proper screening of facial types to draw a decisive conclusion.

CONFLICTS OF INTEREST

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

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