Comparison of Cephalometric Norms of Pleasing Faces with Patients Reported in the Out Patients Department of Orthodontic at Liaquat University of Medical and Health Sciences Hyderabad/ Jamshoro

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ABSTRACT:

Objective: This was a cross sectional study aimed to analyze Cephalometric norms of patients reporting to outpatients department of Orthodontic Department Liaquat University of Medical and health sciences, Hyderabad / Jamshoro in comparison with the Caucasian norms.

Methods: The study was carried out on true lateral cephalometric radiographs of 150 subjects (75 male, 75 female) between 18-28 years, with esthetically pleasing and harmonious faces, competent lips, class 1 molar relationship, with all permanent teeth present, no facial trauma and no history of previous orthodontic treatment. The mean, standard deviation and ranges of all measurements were compared with the norms established by Steiner. For all statistical evaluation was performed by SPSS 16 .0 version software, the student t-test were performed to compare the sample with Steiner means.

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Results: several significant findings were notable in the result of the present study. The result of the present study sample showed retrusive mandible (p < 0.000), horizontal growth pattern, procline upper incisors (p < 0.000), decrease inter-incisal angle (p < 0.001) when compared with the Caucasian norms taken by Steiner. No significant findings were found between male and female in present study sample.

Conclusion: There were no significant differences between the male and female Population cephalometric norms Even though, a careful analysis of cephalometric norms of patients along with other diagnostic considerations before initiating orthodontic treatment for better stability.

Keywords. Cepahlomatric norms, Steiner analysis.

INTRODUCTION

Craniometry was initially useful in measuring skull, standard landmark and dimension were developed and much more information was obtained. It was used to study Neanderthal and Cro-Magnon people whose skulls were found in European caves in the eighteen and nineteenth centuries.

In 1931 Hofarth[1] and Holy Broadbent[2] established cephalometric radiograph with simultaneously publication of methodology to obtained standardized cephalometric head films. But it was until 1948 the first cephalometric analysis was published by Down in United States of America and rapidly became an integral method to study normal and abnormal human craniofacial growth pattern and its development and become a major diagnostic tool for orthodontic treatment.[3]

Several Comparative cephalometric studies have been reported for various racial sub-groups and information concerning cephalometric findings in the Caucasian, Saudi, Japanese, Chinese, Egyptian, American African, Filipinos, Mexicans and Swedish are available.[4, 5, 6.]

It has been proved by the research that each population has their own norms and differs from others. The Japanese population has been found to be more retrognathic with a greater vertical direction of facial growth than Caucasians. Japanese have been found to have a more protrusive dentition than Caucasians.[7] The appearance of more protrusive lip positions were evident in Japanese patients due to their more retruded chin position. Similarly in Saudi's population group slightly more bi-maxillary protrusion is found with a tendency to class II facial pattern and high mandibular plane angle than Caucasians.[6, 10] Further Chinese has the greater Incisal inclination compared to Caucasians.[9]

Over the past decades Steiner, Down, McNamara and others analysis were used to obtain cephalometric

norms for different population. Now a day'-s Steiner analysis has become a popular. It is used by 58% of Dutch orthodontists and 45.1% by American orthodontists for diagnosis and treatment planning for their patients .[11]

Much work has been done internationally, however no study has been done on population indwell in the province of Sindh of Pakistan on a randomized sample to set the norms for cephalometric. Aim of this study to analyze cephalometric norms of the patients reporting to outdoor patients department of Dentistry Liaquat University of Medical and Health Sciences Hyderabad / Jamshoro to cater the patients from all most all of the lower part of the Province of Sindh in comparison with the Caucasian norms.

MATERIAL AND METHODS

A Cross sectional study was conducted to analyze cephalometric norms of patients reporting to outpatients department of Orthodontic Department Liaquat University of Health and Medical Sciences Hyderabad/ Jamshoro in comparison with the Caucasian norms.

Site of study: This study was conducted at the Dental outpatients department of Orthodontic Department, Liaquat University of Medical & Health Sciences, Hyderabad/ Jamshoro.

Study population: There were 150 samples including 75 males and 75 females, reporting to outpatients department of Orthodontic Department Liaquat University of Medical & Health Sciences, Hyderabad/ Jamshoro for treatment, were analyzed.

Inclusion Criteria: Patient has a pleasing and harmonious face, Class 1 occlusion relationship, age 18-28 years old and no history of orthodontic treatment.

Exclusion Criteria: Patients with supernumerary or supplemental teeth, apparent congenital craniofacial anomalies, Previous history of trauma to the face and neck, incompetent lips, excessive over jet and over bite and Class 2 and Class 3 skeletal relationship.

Sampling Technique: Initially a sample of 300 patients consisting of both male and female individuals having Class I occlusion belong to different ethnic groups, living in Hyderabad and it's out skirts and also some dental students were selected through a non-probability sampling technique. Through a simple random sampling 150 patients were selected.

Data Collection/ Analysis: The samples were derived from good diagnostic quality True Lateral cephalometric radiograph of 150 subjects, most of them were dental students, registered as a study samples at the Orthodontic Department Liaquat University of Medical & Health Sciences (L.U.M.H.S). Consent forms were taken by each subject. True lateral cephalometric radiographs were obtained for each subject and traced on acetate paper under direct observation over an illuminator with using lead pencil and evaluated with appropriate skeletal and dental anatomical land marks like Steiner's analysis. Sample readings were entered in designed Performa.

All statistical analysis was performed using SPSS 16.0 version software package. Descriptive statistics was obtained by calculating the mean values and standard deviation of patients. The student t-test was used to compare the samples with Steiner values. P-value's <0.05 taken as significant. P-value's >0.05 taken as non significant.

Ethical Considerations: The study proposal was reviewed and approved by ethical review committee of Liaquat University of Medical & Health Sciences, Hyderabad/ Jamshoro and permission was granted by the Dean of faculty of Dentistry.

RESULTS

The results of the study show comparison of Mean & Standard Deviation of value for male and female individuals by skeletal, dental angular, linear and soft tissue measurements in this part of the world in comparison with Steiner's analysis. No significant values were found in between our study samples with those of Caucasian population.

Table No 1: Comparison of Skeletal angular measurements of the male and females present study sample.

Parameters	Male values for Present study Sample		Female values for Present study Sample		P-value
	MEAN	SD	MEAN	SD	
SNA°	82.49	1.649	82	1.64	0.0700
SNB°	80.1	2.4003	79.4	3.16	0.128
ANB°	3.97	1.3	3.73	1.1	0.224
GoGn to SN°	28.10	6.1	29.97	7.9	0.106
Occ. to SN°	18.2	3.87	18.00	4.32	0.765

SNA°   =   Sella-Nasion – Deepest Point on Anterior Profile of Maxilla Angle.

SNB°	=	Sella-Nasion- Deepest Point on Cavity of Anterior Profile of Mandibular Symphysics Angle.
ANB°	=	Deepest Point on Concavity of Anterior Profile of Maxila-Nasion- Deepest Point on Concavity of Anterior Profile of Mandible Angle.
GoGn to SN°	=	Condylon to Most Anterior and Inferior Point of Mandible to Sella and Nasion Angle.
Occ. to SN°	=	Occluosal Plane to Sella-Nasion Plane Angle.

Table No 2: Comparison of Dental linear and angular measurements of the male and female present study sample.

Parameters	Male values for Present study Sample		Female values for Present study Sample		P-value
	MEAN	SD	MEAN	SD	
UI-NA°	26.4	6.27	27	5.9	0.5471
UI-NA mm	5.12	1.9	5.01	2.5	0.762
LI-NB°	27.9	4.7	27.00	6.54	0.3347
LI-NB mm	6.9	4.25	7.1	3.9	0.764
IIA°	129.8	7.8	130.9	9.32	0.434

UI-NA°	=	Upper Incisor to Nasion and Deepest Point on Concavity of Anterior Profile of Maxilla Angle.
UI-NA mm	=	Upper Incisor to Nasion and Deepest Point on Concavity of Anterior Point of Maxilla in Linear Distance.
LI-NB°	=	Lower Incisor to Nasion and Deepest Point on Concavity of Anterior Profile of Mandible Angle.
LI-NB mm	=	Lower Incisor to Nasion and Deepest Point on Concavity of Anterior Profile of Mandible in Linear Distance.
IIA°	=	Inter Incisor Angle

Table No:3: Comparison of soft tissue linear measurements of the males and the present study sample.

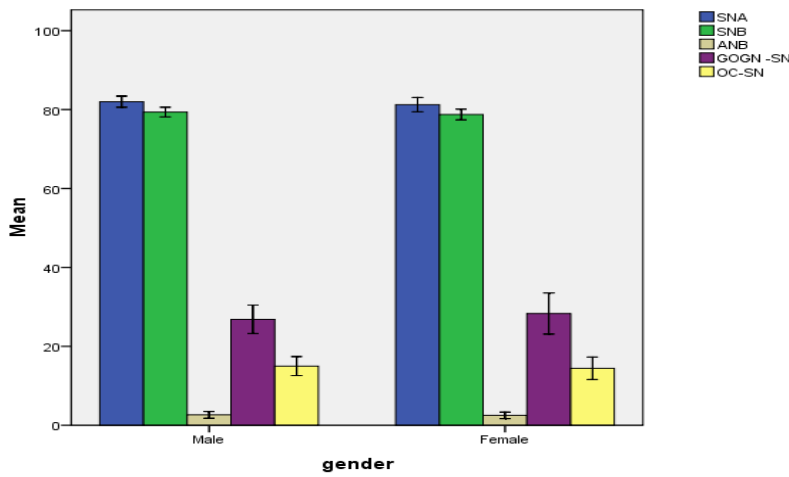| Parameters	Male values for Present study Sample		Female values for Present study Sample		P-value
	MEAN	SD	MEAN	SD	
Upper lip distance S-line	-0.12	0.709	-0.026	0.71	0.4185
Lower lip distance S-line	0.44	2.29	0.6	1.7	0.6278

Figure 1: Skeletal angular measurements of the male and female present study sample
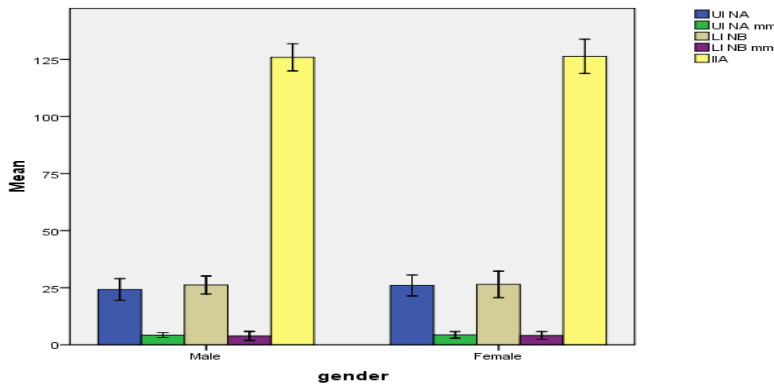

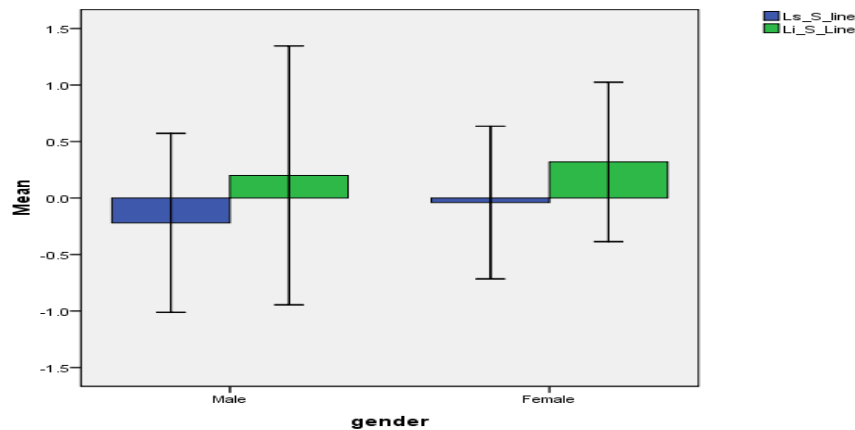**Figure 2:** Dental linear and angular measurements of the male and female for the present study sample

Figure 3: Comparison of soft tissue linear present study sample

DISCUSSION

The mean values for the comparison of Skeletal angular measurements of the male and females present in the study sample found co-incident with the result of Fayyaz, Saqib and Saad.[12]. They conducted this study in De Montmorency College of dentistry on "Pakistani population". Our study sample shows that there is no difference in skeletal angular measurements of the male and females who attain the outpatients department of Liquat University of Medical and Health Sciences

Hyderabad / Jamshoro when compared with the study done at the De Montmorency College of Dentistry and the one done by Steiner.

The mean values for the comparison of dental linear, angular measurements of the male and females in present study sample found co incident with the result study of Imran Tajik [14], therefore there is no differences has been found dental linear, angular measurements of the male and females present in this study sample.

The mean values for the comparison of soft tissue measurements of the male and females present study sampler found in agreement with the studies of S.kumar[15] and Fayyaz[16] evaluated in Hyderabadi Indian and Pakistani population respectively. The mean value of soft issue for present study sample is found in contrast with the value of Rasheed al Azeemi[17], who found the increased value of soft tissue between male and female in Kuwaitis population. This shows that in our study sample soft issue norms are close in similarities with Caucasian as compared to Arabs and other population group.

CONCLUSION:

1   Non significant differences were found skeletally dentally and soft tissue   between the males and females in present study samples. No significant findings were found in soft tissue pattern in males and females in present study samples, similar findings were found when it compares with Steiner norms for Caucasians.

2   On the whole local population has similar cepahlometric values for male and female individuals at some extent with Pakistani population when compares with Steiner's norms for Caucasians. It is recommended that more broad based study with increased sample size and increased number of analysis must be conducted to get more accurate values for dento-skeletal relationship for the local population.

REFERENCES:

1.   Profit WR, Concepts of growth and development. Contemporary orthodontics. 4th ed.: Elsevier; 2007.

2.   Broadbent, B.H. A new X-Ray technique and application in orthodontia. Angle Orthod.1931; 1: 45-66.

3.   Abdullah RTH, Kuijpers MAR, Berg   Sj, Katsaros C: Steiner cephalometric analysis: predicted and actual treatment outcome compare. Orthod craniofac res 9, 2006;-77-83.

4.   Al-jame B, Artun J, Al-azemi R, et al. Lateral Cephalometric Norms for Adolescent Kuwaitis: Hard Tissue Measurements. Med Princ Pract. 2006; 15:91-97.

5.   Al-azemi R, Al-jame B, Arton jon. Lateral Cephalometric Norms for Adolescent Kuwaitis: Soft Tissue Measurements. Med Princ Pract. 2008; 17:215-220.

6.   AL-Jasser NM. Cephalometric Evuluation for Saudi population Using the downs and Steiner analysis. J contemp Dent Pract. 20ruyy05; 2:52-63.

7.   Ioi H, Nakata S, Nakasima A and Counts AL. Comparison of cephalometric norms between Japanese and Caucasian adults in antero-posterior and vertical dimension. Eur J of Orthod 2007; 29:493-499.

8.   AL-Brakati SF, Talic NF. Cephalometric norms for Saudi sample usinsg McNamara analysis. Saudi dental jour. 2007; 19:139-145.

9.   Hassan AH. Cephalometric Norms for Saudi Adults Living in the Western Region of Saudi Arabia. Angle Orthod.2006; 76:109-113.

10.   Sevilla-Naranjilla   MA,   Rudzki-Janson   I. Cephalometric Floating Norms as a Guide toward a Harmonious Individual Craniofacial Pattern among Filipinos. Angle Orthod.2009; 79: 1162–1168.

11.   Behbehani F, Hicks EP, Rayens CB, Kluemper GT, et al. Racial Variations in Cephalometric Analysis between Whites and Kuwaitis. Angle Orthod. 2006; 76: 406-411.

12.   S, Abdalla E, Hoppens B. Cephalometric comparison of dentofacial parameters between Egyptians and North American adolescents. Am J Orthod Dentofacial Orthop.1990; 97:413–421.

13.   Garcia CJ. Cephalometric evaluation of Mexican Americans using the Downs and Steiner analyses. Am J Orthod. 1975; 68:67-74.

14.   Grewal H, Sidhu SS, Kharbanda OP. Cephalometric appraisal of the craniofacial pattern in Indo-Aryans. J Indian Orthod.1995; 26:43–48

15.   Wu, J. Urban, H. & Barkr, A. M. Chinese norms of McNamara's Cephalometric Analysis. Angle Orthod. 2007; 77:12-20.

16.   Cooke MS, Wei SH. A Comparative study of Southern Chinese and British Caucasian cephalometric standards. Angle Orthod.1987; 59:131–138.

17.   Glies .R, Brezniak. N, Liberman.M. Israeli cephalometric standards compare to Downs and Steiner's analysis. Angle Orthod.1990; 60:35-40.