Research Article

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Comparison of Mandibular Width Between Males and Females in Central India Subjects

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ABSTRACT

Aim: The purpose of the study was to find mean mandibular width on right and left side in females and males.

Material & Methods: The sample comprises of 100 subjects (50 males and 50 females) from Central India region in the age group of 18- 25 years (young adults). Postero-anterior (PA) view cephalograms were obtained for all subjects and assessed for mandibular width between antegonial notch (AG) and mid sagittal reference plane (MSR). Mean, Standard Deviation and Range was noted and subjected to statistical tests. The comparison between the females and males was done using independent 't' test.

Results: The values of mandibular width were more for males on both right and left sides. A significant difference was found in between males and females on both sides. (*P* value 0.002).

Conclusion: Mandibular width between AG MSR was more for males on both right and left sides when compared to females and were statistically significant in Central India population. Mandibular width symmetry is an important part and should be considered for the patients in prosthodontics, orthodontics, psychology and orthognathic surgeries.

Keywords: Mandibular width, male, female, orthodontics.

INTRODUCTION

Perfectly bilateral face and symmetry of human body is an assumed concept and this rarely exists in living organisms as stated by Hirapara *et al.*[1] In nature right and left side differences persists everywhere. Every human being experience functional as well as morphological asymmetries. These are determined and controlled by genetics. Development of human body parts undergoes with bilateral symmetry. This indicates that the right and left sides are similar images of each other. However due to biological disturbances it is rarely found. The face always shows mild degree of asymmetry as mentioned by Sforza *et al.*[2] Slight changes in symmetry can also be termed as normal asymmetry. The lower and mid face develops from the medial and lateral nasal processes as well as maxillary and mandible processes and these processes coordinate properly and sometimes failure of development or maturation of such embryonic processes may results in asymmetry.

A posteroanterior (PA) cephalogram can be evaluated so that the vertical, transverse and sagittal dimensions can be found. Vertical asymmetry can be seen readily in a postero-anterior cephalogram by connecting bilateral structures or

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landmarks, by drawing the transverse planes and by observing their relative orientation with each other. The concept was given by Grummons and Kappeyne van de Coppello in 1987.[3]

With the development of cephalometric radiography by Broadbent orthodontists primarily depend on the lateral X ray for patient's skeletal and dentoalveolar data. However the frontal PA view has necessary information for diagnosis and planning of treatment. Various dental and skeletal widths and asymmetries which cannot be obtained from the lateral cephalogram can be quantified from a frontal radiograph. The main indication for obtaining a PA cephalometric film is the presence of asymmetry which is mentioned by Burstone.[4] The purpose of the study was to find mean mandibular width on right and left side in females and males.

MATERIALS AND METHODS

The sample comprises of 100 subjects (50 males and 50 females) from Central India region in the age group of 18- 25 years (young adults).The subjects were evaluated for assessment of mandibular width between antegonial notch (AG) and mid sagittal reference plane (MSR) which is one of the parameter of Grummon's PA cephalometric analysis. The study was conducted according to the regulations of the Helsinki Declaration 1975, revised at Seoul, Korea in 2008 and patient's informed consent was obtained.

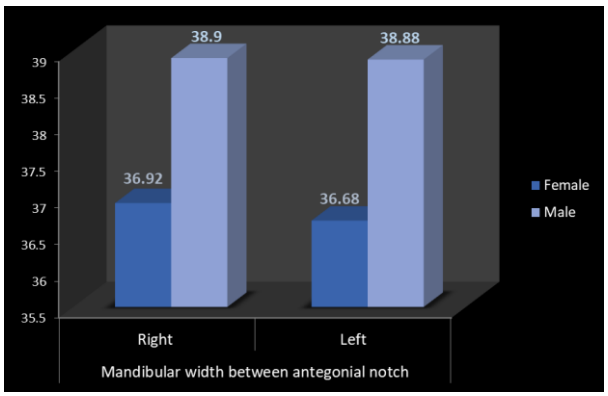
PA view cephalograms were obtained for all subjects at Oral Medicine and Radiology department using X mind Pano D digital X ray machine (Soredex, Finland) using 57-85 Kv and 10 mA current. The PA cephalograms of all the 100 subjects were taken, as per established cephalometric standards. PA cephalograms of all the sample subjects were taken in the natural head position (NHP) from the same X-ray machine, with teeth in maximum intercuspation and lips at rest. With the help of a cephalostat NHP was obtained and by asking the subject to look straight ahead such that the visual axis was parallel to the floor. All radiographs were taken following proper precautionary measures using lead aprons, throat shields and eyewear with effective dose / exposure-3-6μSv. Magnifications of all cephalogram were uniformly 1:1 to eliminate error of measurement. Recommended dose limits for occupational human exposure is 20 mSv/year and for is public it is 1 mSv/year. These PA cephalometric parameters for assessment of mandibular width between AG and MSR were evaluated and he data collected were tabulated. Mean, Standard Deviation and Range was noted. The data thus collected was subjected to statistical tests using SPSS Software (Statistical Package for Social Sciences, IBM, 20.0 version). The comparison between the females and males was done using independent't' test. P value < 0.05 was considered statistically significant.

RESULTS

Table 1 and Graph 1 show the mandibular width on right and left side. On analyzing the data using unpaired 't' test the values of mandibular width was more for males on both right and left sides. A significant difference was found in between males and females on both sides (*P* value 0.002).

Table 1: Mean mandibular width on right and left side in females and males.

Parameter	Group	N	Mean (mm)	Std. Deviation	P value
Mandibular width between antegonial notch on right side i.e. between AG (R) - MSR.	Female	50	36.9200	3.02938	0.002*
	Male	50	38.9000	3.10530	
Mandibular width between antegonial notch on left side i.e. between AG (L) - MSR	Female	50	36.6800	3.80354	0.002*
	Male	50	38.8800	2.95987	



Graph 1: Mandibular width between antegonial notch.

DISCUSSION

The present study was done on posteroanterior cephalogram of individuals and it proved to identify the mandibular width between antegonial notch on left and right side. The posteroanterior cephalometric study was carried out on 100 subjects (50 males and 50 females). from Central India region in the age range of 18-25 years.

According to Thundukattil *et al*[5] facial symmetry is considered attractive in women and symmetrical faces correlate with long term mental performance. Symmetry and the asymmetry have relevant importance in the field of the plastic surgery, art, orthodontics, psychology orthognathic surgeries and in prosthodontics. Facial symmetry is considered as important for the esthetically pleasing facial profile as quoted by Trypkova *et al*.[6]

Facial esthetics in terms of symmetry and balance can be called as equilibrium of face. Both sides of the face should be equal to each other in size as well as shape and volume with respect to the mid sagittal plane if the face is symmetrical. Asymmetry can be seen in the face where the bilateral structures are not at equal distance from the mid sagittal plane. The symmetry measurement is qualitative analysis of the asymmetry through visualization which is followed by the quantitative measurements either by directly taking measurement on the face or indirectly by measuring on the photographs as in case of facial asymmetry in which is present extraorally.[7]

In the present study both right and left side mandibular width between AG-MSR is significantly more in case of males compared to females. In a study conducted by Reddy *et al* [8] the values were found to be more for males on right side as compared to females. In a study conducted by Mendigiri *et al* [9] right side values for males were more. Farkas and Cheung[10] found longer measurement of mandibular length on the right side of mandible in both sexes.

CONCLUSION

Mandibular width between AG - MSR was more for males on both right and left sides when compared to females and were statistically significant in Central India population. Mandibular width symmetry is considered as important parameter for the aesthetically pleasing facial profile. It is a important part and should be considered for the patients in prosthodontics, orthodontics, psychology and orthognathic surgeries.

CONFLICTS OF INTEREST

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

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