ORIGINAL ARTICLE

COMPARISON OF MESIODISTAL CROWN WIDTH OF ANTERIOR TEETH AND BICUSPIDS IN BOTH ARCHES IN SAMPLE OF PESHAWAR POPULATION

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ABSTRACT

Teeth size and shape play a key role in dental esthetics of different age group form childhood to old age, due to which dentist and patients take a great interest in dental esthetics from the last few years because it is a dominant features of of facial attractiveness The aim of this study is to determine the mesiodistal width of the crown of maxillary and mandibular teeth of individual belongs to Peshawar for esthetic purposes. The study was conducted in department of Orthodontics of Peshawar Dental College and Hospital, in which the total number of the subjects were 190 (86 males and 104 females), age rang from 15 to 35 (mean 18.6 years). Mesiodistal width of the crown of permanent incisor, bicuspid and premolars of both upper and lower arches were measured. All the data were analyzed by using SPSS version 21. Males showed significantly larger mesiodistal crown dimension than females. The maxillary canines showed greater mean mesiodistal crown dimension than mandibular canines No significant differences was found in left and right side. Males shows wider mesiodistal crown dimension than females.

Key word: *Mesiodistal width, Anterior teeth, Bicuspids*

INTRODUCTION

Once it was written that we greet the world with our faces it also helps to determine our social appearance. So teeth size, shape and number play a key role in esthetics of different age group from childhood to old age.[1] Patients and dentists have taken greater interest in dental esthetics during last few decades.[2] Dental esthetics is the most dominant aspect of facial attractiveness and encompasses not only tooth colour, size and shape but[3] but also other aspect like upper lip position and gingival morphology.[4,5]

In dental and facial aesthetics, maxillary teeth are considered the most dominant element[6] because of the amount of visible coronal structure.[7,8] Many studies have been done on teeth size, and they have reported that variation in tooth size is present between and within different racial groups.[9]

Richardson et al performed a study on Kenyan and Irish population and they found significant differences in the mesiodistal width of the teeth between males and females.[10]

The morphology of the tooth structure is similar in both males and females but the size of the teeth does not necessarily remain the same as the tooth size is determined by racial and genetic factors.[11]

In a study of Bishara, which was performed in three different population from Mexico, Egypt and the United states. The result of this study showed that significant difference in mesiodistal dimension of the teeth was found in three different population.[12]

Very little information is available regarding mesiodistal width of the teeth of Peshawar population. Information and data regarding mesiodistal crown width is important for dentist in planning successful Prosthodontics, Orthodontics and Restorative treatment of this population. The aim of this study was to determine the mesiodistal widths of the crowns of both upper and lower teeth of individuals belonging to Peshawar for esthetic purposes.

MATERIALS AND METHODS

This study was conducted in the department of orthodontics at Peshawar Dental College and Hospital, Warsak Road, Peshawar. The total number of subjects were 190 in which 104 were females and 86 were males. Their age range was from 15 years to 35 years. Partici-

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pants having full complement of permanent teeth from right second premolar to left second premolar of both upper and lower jaw were included in the study. For this purpose standard research protocol was followed. Informed consent was taken from the patient or the patient guardian for the study

Impression of upper and lower teeth were taken by alginate impression materials, following the manufacturer recommendations. After taking impression, it was then poured with dental stone within 10 minutes. The casts were recovered after one hour. Damaged cast, fractured teeth, crowded teeth, contour of teeth affected by caries and tooth/teeth having crown or bridge were excluded. Digital vernier caliper having least count of 0.01mm was used to measure the mesiodistal diameter of the teeth. Maximum mesiodistal width of the teeth was measured between mesial and distal contact point. All the data were collected on specially designed proforma.

The collected data were analyzed by using computer software statistical package for social sciences (SPSS) version 21. The descriptive statistics i.e frequency and percentages were calculated for categorical variables like gender. Mean and standard deviations were calculated for numerical variables like age and mesiodistal diameter of teeth. Unpaired t-test was used to made comparisons between the groups. P-value <0.05 was considered significant.

RESULTS

Total number of subjects in the present study was 190, in which males were 86 (45.3%) and females were 104 (54.7%) table-1. Mean ages of males were 26.63 years (SD± 5.8 years) and females were 22.48 years (SD± 5.1 years) table: 2. The mesiodistal crown dimension for males and females in both maxillary and mandibular arches are given in table: 3, 4, 5 and 6 respectively. Between right and left side the mean difference ranged from 0.03mm to 0.18mm.

Analysis of this study shows significant larger tooth size in males as compared to females, however maxillary lateral incisors and mandibular central incisors in females showed larger crown width.

The maxillary canines showed greater mean mesiodistal crown dimension than mandibular canines (average in males 0.92mm and in females 1.14mm).

The mesiodistal crown dimension of maxillary second premolars were less than maxillary first premolars (average 0.28mm) in both males and females, while the crown width of mandibular second premolar was wider than mandibular first premolars (0.2mm) in both sexes.

The mesiodistal crown dimension of mandibular lateral incisors were wider than mandibular central incisors on an average 0.48mm in males and 0.52 in females, in contrast maxillary lateral incisors were smaller in mean mesiodistal crown dimension than maxillary central inciosrs.

The SD and coefficient of variation of tooth size measurement in both males and females showed that variability differed between individual teeth, with maxillary central incisors showing the greatest variability (11.2%), lower central incisors the next greatest (9.4%) and the maxillary canine the least (7.2%).

DISCUSSION

In the current study the total number of subjects were 190 (males 86, females 104) and their age ranged from 15 to 35years. The mean difference in this study between left and right side ranged from 0.03mm to 0.18mm, which is very little difference in the mesiodistal crown dimension of the two sides. Due to this little difference in left or right side measurement could be taken to represent mesiodistal crown dimension in both males and females. Similar results were found in the study of Moorrees CFA[13] but in the study of Richardson et al[10] certain difference was found in the mesiodistal crown width of left and right side of both males and females.

Study by Herrper[14] showed that the difference between left and right side in homologous teeth were smaller than those of monozygotic twins. Herper assumed that all these changes were due to environmental effects.

In the current study, it was found that the mesiodistal crown dimension of both upper and lower jaw in males were larger than mesiodistal crown dimension in females. This is supported by many studies that mesiodistal crown dimension of males are larger than females[6,15,16] but study of Jehan H[17] which was conducted in Bangladeshi population, showed that there was no significant difference present in the mesiodistal crown dimension of males and females.

TABLE 1: FREQUENCY OF THE PATIENTS

Gender	Frequency
Male	45.3% (86)
Female	54.7% (104)
Total	100% (190)

TABLE 2: DEMOGRAPHIC REPRESENTATION OF THE PATIENTS

Gender	Age (Mean)	SD
Male	24.63 years	5.8
Female	22.48 years	5.1

TABLE 3: MESIODISTAL CROWN DIMENSION OF MAXILLARY TEETH OF MALES

No. of teeth	Side Involved	Mean (mm)	SD (mm)	Overall Mean (mm)
Central Incisor	Right	9.13	0.81	9.12
	Left	9.11	0.78	
Lateral Incisor	Right	7.36	0.59	7.39
	Left	7.42	0.62	
Canine	Right	8.23	0.54	8.21
	Left	8.20	0.52	
1st Premolar	Right	7.38	0.51	7.45
	Left	7.51	0.55	
2nd Premolar	Right	7.22	0.48	7.22
	Left	7.23	0.52	

TABLE 4: MESIODISTAL CROWN DIMENSION OF MAXILLARY TEETH OF FEMALES

No. of teeth	Side Involved	Mean (mm)	SD (mm)	Overall Mean (mm)
Central Incisor	Right	8.70	0.52	8.73
	Left	8.76	0.34	
Lateral Incisor	Right	7.04	0.49	7.06
	Left	7.09	0.28	
Canine	Right	7.86	0.64	7.91
	Left	7.95	0.51	
1st Premolar	Right	7.23	0.44	7.20
	Left	7.17	0.49	
2nd Premolar	Right	6.92	0.38	6.91
	Left	6.87	0.46	

TABLE 5: MESIODISTAL CROWN DIMENSION OF MANDIBULAR TEETH OF MALES

No. of teeth	Side Involved	Mean (mm)	SD (mm)	Overall Mean (mm)
Central Incisor	Right	5.79	0.44	5.81
	Left	5.83	0.68	
Lateral Incisor	Right	6.39	0.42	6.36
	Left	6.33	0.44	
Canine	Right	7.34	0.57	7.38
	Left	7.41	0.52	
1st Premolar	Right	7.39	0.38	7.43
	Left	7.48	0.42	
2nd Premolar	Right	7.98	0.54	8.10
	Left	8.22	0.61	

In the present study, maxillary first premolars were larger than maxillary second premolars in both males and females. Study of Lennert and Nils[18], showed found that maxillary second premolars were smaller in mesiodistal crowns dimension than maxillary first premolars.

Mandibular lateral incisors in this study were larger than mandibular central incisors. Many authors[19,20,21] also showed that mandibular central incisors were smaller in mesiodistal crown dimension than mandibular lateral incisors, which supports the results of the present study. Measeurment of mesiodistal crown width of upper and lower is important and play an

TABLE 6: MESIODISTAL CROWN DIMENSION OF MANDIBULAR TEETH OF FEMALES

No. of teeth	Side Involved	Mean (mm)	SD (mm)	Overall Mean (mm)
Central Incisor	Right	5.69	0.52	5.70
	Left	5.64	0.66	
Lateral Incisor	Right	6.16	0.51	6.18
	Left	6.19	0.55	
Canine	Right	6.78	0.38	6.80
	Left	6.82	0.34	
1st Premolar	Right	7.15	0.44	7.12
	Left	7.10	0.49	
2nd Premolar	Right	7.16	0.52	7.14
	Left	7.12	0.48	

TABLE 7: COMPARISON OF MESIODISTAL CROWN DIMENSION OF MAXILLARY TEETH BETWEEN MALES AND FEMALES

Tooth	Side	Gender	Mean	P-value
Maxillary Central Incisor	Right	Male	9.13	0.01< P <0.05
		Female	8.70	
	Left	Male	9.11	0.001< P <0.01
		Female	8.76	
Maxillary Lateral Incisor	Right	Male	7.36	0.05< P <0.1
		Female	7.04	
	Left	Male	7.42	0.1< P <0.5
		Female	7.09	
Maxillary canine	Right	Male	8.23	0.01< P <0.05
		Female	7.86	
	Left	Male	8.20	0.001< P <0.01
		Female	7.95	
Maxillary 1st Premolar	Right	Male	7.38	0.001< P <0.01
		Female	7.23	
	Left	Male	7.51	0.1< P <0.5
		Female	7.17	
Maxillary 2nd Premolar	Right	Male	7.22	0.001< P <0.01
		Female	6.92	
	Left	Male	7.23	P <0.001
		Female	6.87	

*P<0.05 = significant

important role for diagnostic purposes in Orthodontics and Prosthodontics. Sometime malocclusion takes place due to small arch length and large tooth size, or it may be because of small tooth size and larg earch length which leads to diastema and spacing in the teeth.[20] Bolender[1] has stated that dentist plays a key role in the selection of artificial teeth, to meet the esthetic and functional needs of the individuals.

CONCLUSION

No significant differences was found on left and right side. Males showed wider mesiodistal crown dimension than females. Crown width of mandibular canines were smaller than maxillary canines.

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TABLE 8: COMPARISON OF MESIODISTAL CROWN DIMENSION ON MANDIBULAR TEETH BETWEEN MALES AND FEMALES

Tooth	Side	Gender	Mean	P-value
Mandibular Central Incisor	Right	Male	5.79	0.1< P <0.5
		Female	5.69	
	Left	Male	5.83	0.1< P <0.5
		Female	5.64	
Mandibular Lateral Incisor	Right	Male	6.39	0.001< P <0.01
		Female	6.16	
	Left	Male	6.33	0.001< P <0.01
		Female	6.19	
Mandibular canine	Right	Male	7.34	P <0.001
		Female	6.78	
	Left	Male	7.41	P <0.001
		Female	6.82	
Mandibular 1st Premolar	Right	Male	7.39	0.001< P <0.01
		Female	7.15	
	Left	Male	7.48	0.01< P <0.05
		Female	7.10	
Mandibular 2nd Premolar	Right	Male	7.98	P <0.001
		Female	7.16	
	Left	Male	8.22	P <0.001
		Female	7.12	

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1 Farhan Dil: Title, abstract writing, introduction, methodology, data collection, discussion and final review.

2 Mohammad Shiraz Alam: Data collection, data analysis, results and tabulation.

3 Nighat Shafiq: Literature search, methodology, discussion, Proof reading and Review.