

CORRELATION OF INTERALAR WIDTH AND MAXILLARY INTERCANINE WIDTH IN DENTATE SUBJECTS OF GANDHARA UNIVERSITY, PESHAWAR

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ABSTRACT

Objectives: *The present study aims to find out the correlation of maxillary anterior teeth and the nose width in a dentate study population of Gandhara University, Peshawar.*

Methods and materials: *The study population was the students of Gandhara University, Peshawar. Out of these a total of 211 students were invited to participate in the study. Both male and female were included in the sample population. Ethical clearance was obtained from the institution of the University. Informed consent was also obtained from the participants of the study. Interalar width was measured with Vernier caliper and the Inter canine distance was measured on a cast obtained from impression of the arch.*

Results: *A correlation was found between the interalar widths and combined mesio-distal dimensions of anterior 6 maxillary teeth; however, when compared in males and females the difference was not significant.*

Conclusion: *Although nose can be used as guide for selection of maxillary anterior teeth width, however more than one guide must be used for predictable results.*

Key words: *Interalar width, Inter canine Width, Teeth Size Selection, Aesthetics*

INTRODUCTION

Teeth play an important role in facial esthetics along with other facial structures. For a partially dentate patient replacement of missing teeth is rather easy as compared to completely edentulous patients as the rest of teeth can be used as a guide to duplicate the width, height and shade. However in case of completely edentulous patients, especially in absence of pre-extraction records and other means, selection of proper size of teeth and shade is rather difficult procedure. Various landmarks can be used to select the size of teeth for example width of the nose along with other land marks such as bizygomatic width, intercanthal width, and interpupillary distance.¹⁻³

In interalar width of the nose implies that parallel

lines drawn on the labial aspect of the wax occlusion rims of the maxillary denture base during the maxilla-mandibular relations, gives an approximate estimation of the six maxillary anterior teeth. This relationship between the width of the nose (interalar width) and the combined width of the six maxillary anterior teeth is depended on the morphological measurements of people of various regions and races. This width is also gender related and a difference has been found between the males and females. Therefore a correlation has been observed between the interalar width and intercanine distance. A study has shown that the intercanine distance is more than the interalar width by a factor of 1.08 in males and 0.62 in females. Several studies have shown various multiplying factors to bring the interalar width proportional to the intercanine distance. This can be obtained by multiplying the observed value of the interalar width with this particular multiplying factor value. Another study has shown this multiplying factor to be 1.31, assuming that this multiplying factor is dependent on the nose size demographically.⁴

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However there are studies which have observed no correlation between the interalar width and the intercanine distance. They have concluded that these two measurements may not be reliable for calculating a correlation⁵. A study done in Saudi by Abdullah has found that nose can be used as a reliable guide for the prediction of the combined width of maxillary anterior teeth.⁶

The type of anthropometric measurement is variable in different sets of populations; therefore, this study will help in calculating the measurement of these variables in local circumstances and provide a data that can be useful while selecting the size of the anterior teeth for completely edentulous patients.

MATERIALS AND METHODS

The present study regarding the correlation of the interalar width and intercanine distance was carried out at Out Patients department of Prosthodontics, Sardar Begum Dental College and Hospital, Peshawar.

The study was carried out from January 2022 to March 2022. A total of 211 patients were invited to participate in the study. The subjects of study included both males and females who were selected by random sampling technique. An ethical approval was obtained from the institution for carrying out this study. Participants having age from 19 to 30 years and those having permanent dentitions were included in the study. All those participants having nose deformity, cleft lip and palate, having orthodontics history, direct or indirect restorations or spacing in anterior teeth, history maxillofacial trauma and treatment were excluded from the study.

Interalar width was measured with the help of Vernier caliper and divider respectively. The interalar width was measured with a Vernier caliper. For every subject three different measurements were recorded for the interalar width by bringing the sides of the Vernier caliper with skin of the nose on either side. The subjects were asked to hold their breath for a brief period of time during the recording of interalar width, without compressing the soft tissues. The average of these three recordings was used for calculating the precise width of the nose. For this purpose subjects were seated in dental chair in a normal relax upright position with the head seated in head rest. Sterilized perforated rim lock impression stock

trays were used suitable in size for that particular subject. Alginate impression material (Alginmajor, Major Prodotti Dentari, Italy) mixed according to the manufacturer's instructions and specifications in a rubber bowl were used for recording the maxillary arch impression.

After rinsing under tap water, these impression were poured to make casts on which separate measurements were taken to calculate the width of maxillary anterior teeth. Type III dental stone (ISI Hi-Tech, Hi-Tech plaster industry, China) was used to make casts with proper dimensions. After retrieval from the cast individual width of each central incisor, lateral incisor and canine was measured. The widest mesio-distal width of the tooth was used for recording the width with the help of a divider and subsequently measuring this on plane scale in millimeters. These six readings of each individual tooth were added to calculate the combined width of six anterior teeth.

RESULT

Interalar and intercanine distance was measured in 211 participants. Out of these 52 percent were female and rest were males. The range of the study population age was from 19-29 years with a mean of 23 years having a standard deviation of 1.99 as shown in table-1. The mean of interalar width was 32.5 with a standard deviation of 4.07. The mean of

Table-1: Statistics for age, interalar and intercanine width.

	Interalar width(mm)	Intercanine width(mm)	Age(years)
Mean	32.56	47.96	22.70
Standard Deviation	4.07	3.09	1.98
Range	29.00	23.00	7

Table-2: Correlation of interalar width with intercanine width.

		interalar	Intercanine
Interalar	Pearson Correlation	1	.238(**)
	Sig. (2-tailed)		.000
Intercanine	Pearson Correlation	.238(**)	1
	Sig. (2-tailed)	.000	

intercanine distance was 47.9 with a standard deviation of 3.09. The Pearson Correlation for interalar and intercanine width was found to be ($p=0.00$).

Difference between the means of intercanine width in females (ICWf) and their interalar width (IAWf) was found to be 15.79 with a p-value ($p=0.03$). Similarly the intercanine width in males (ICWm) the interalar width (IAWm) had a mean difference of 14.98 with a p-value of ($p=0.009$), table-4.

DISCUSSION

Human aging and the associated physical and psychological changes are natural, a phenomena which cannot be stopped. One such change is the loss of teeth. Teeth play a vital role in the pleasing appearance of an individual. Apart from esthetics normal functioning and comfort related to oral cav-

ity is also compromised. Loss of teeth also gives a psychological trauma to the patients. Therefore it becomes necessary to provide to the patient a replacement that will fulfill his/her esthetic, function and comfort demand.

A general opinion prevails that Interlar width is approximately alike to combined width of six anterior teeth. However many studies have suggested that this cannot be used as a single reliable guide for selection of anterior teeth in edentulous cases, and has found that average ICnW is more than IAW. Similarly our study has found a greater ICnW (mean of 47.96mm) as compared to IAW (mean= 32.56). This is in accordance with other study done earlier by Mavroskoufis.⁷

In our study intercanine distance was found to be greater than the interalar width in both males and females. This is in accordance with the study done earlier by Patel.⁸ Intercanine width was found to be 47mm which is more than the studies done earlier. For example Aleem and Hoffman found it to be 43mm and 44.85 respectively.^{9,10} While the combined width of six interior teeth in our study is less than the studies done by Scandrett, who found it to be 53.61mm.¹¹ The intercanine width(47.96) found in our study is strongly in agreement to a local study done in Lahore earlier, where ICW was found to be 47.53mm with a 7.72 standard deviation.¹² However ICW in female (48.36mm) was found to be slightly higher (0.84mm) than the ICW in male (47.53mm). This is in contrast with other studies which found that ICW in males is higher than females. This may be attributed to the fact that the female study subjects were more in number than the males subjects.¹³ The recorded interalar width in this study was 32.56mm with a standard deviation of 4.07. This finding is more in agreement with Smith (33.5) and Scandrett et al (34.4mm).^{5,11} The mean IAW is more closely related to a local study by Khizran where it was found to be 35.46mm.¹² When our results are compared with the another local study done, they found a greater intercanine distance of 54mm in males and 52 mm in females.¹⁴

No significant difference was found when interalar width was correlated with combined width of the six maxillary teeth ($p=0.00$). This finding agree with the one found by Latta and al, as they found no correlation between facial measurement

Table-3: Correlation of female interalar (IAWf) and female intercanine width (ICWf).

		ICWf	IAWf
ICWf	Pearson Correlation	1	.207(*)
	Sig. (2-tailed)		.031
IAWf	Pearson Correlation	.207(*)	1
	Sig. (2-tailed)	.031	

Table-4: Correlation of interalar width with intercanine width in male.

		ICWm	IAWm
ICWm	Pearson Correlation	1	.25
	Sig. (2-tailed)		.009
	N	102	102
IAWm	Pearson Correlation	.25	1
	Sig. (2-tailed)	.009	
	N	102	102

Table-5: Statistics of Intercanine width and Interlar width in males

	Mini- mum	Maxi- mum	Mean	Std. Devi- ation
ICWm	37.00	60.00	47.53	3.50
IAWm	13.00	42.00	32.55	4.86

and with of front teeth.¹⁵ The interalar width was found to be approximately a mean of 32.5 mm in male and female. This is in contrast to a study done earlier which claimed that gender has an influence on width of the nose.¹⁶

CONCLUSION

Within the limitation of the present study it was found that interalar width and the combined mesio-distal width of six maxillary anterior teeth are closely related with a significant correlation for the study population.

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