

**Ministry of Higher Education
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Dentistry**



**The Relationship Between
Interpupillary Distance and Maxillary Central
Incisor Width in Young Persons in Al-Furat
Al-Awsat**

**A Graduation Project Submitted to the College of Dentistry,
University of Babylon, Hilla, IRAQ, in Fulfillment of the
Requirements for the Bachelor's Degree in Dentistry.**

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الاهداء

اللهم اني افتتحُ الثناء بحمدك وانت مسدد للصواب بمنك، فالحمد لله بجميع محامده كلها، على جميع نعمه كلها، اللهم صل على محمد عبدك ورسولك وحبيبك وعلى آله صفوتك واهل الكرامة عليك من خلقك .

فأما بعد، فلم تكن الرحلة قصيرة، ولا الطريق مُمهدة، لكني، بفضل من سألته بوجه الكريم وبنور وجهه المنير، فعلتها . . .

لأقف فأقول، من اين لي الخير يا رب ولا يوجد إلا من عندك .

اللهم رببتي في نعمك وإحسانك صغيراً، ونوهت بأسمي كبيراً، فأستعلمني بما تسألني غداً عنه، وأستفرغ أيامي فيما خلقتني له، وأجعلني من أنصار مولانا الإمام المهدي واعوانه والذابين عنه والمسارعين اليه في قضاء حوائجه .

إلى من حملتني حيث لا يحمل أحدٌ أحداً، واطعمتني من ثمرة قلبها ما لا يطعم أحدٌ أحداً، ووقتني بجميع جوارحها ولم تبال . إلى أمي .

إلى من هو أصلي وأنا فرع، واني لولاه لم أكن، الى من مهما رأيت في نفسي مما يعجبني، فأعلم أنه أصل النعمة علي . إلى أبي .

إلى من اسأل الله ان يرزقني التعظيم والتوقير لمجلسه، وحسن الإستماع اليه والإقبال عليه، وأن أكون فيما القى الي رسولته الى من يلقاني من اهل الجهل فالنرم حسن التأدية عنه إليهم، وألا أخنه في تأدية رسالته والقيام بها عنه إذا تقلدها . . الى معلمي وأستاذي . . د . آنراد .

إلى من ساندوني بكل حب، وقت ضعفي وقوتي، وأنزلوا عني المتاعب ما أستطاعوا، الى من كانوا موضع اتكائي، إلى من من الله علي بهم . . إلى إخوتي وصدقاتي .

إليكم اهدي بحث تخرجي، مراجيتنا ان يحتم الله لي بخير، وان لا يسلبني صالح ما أنعم به علي .

تقى حيدر

شكر وتقدير

قال أئامر البلاء علي (ع) "إذا قصرت يدك عن المكافأة فليطل لسانك بالشكر"

من بعد الشكر لله العلي العظيم يشرفنا أن تتقدم بفاثق الشكر وعظيم الامتنان إلى أستاذنا

الدكتور انراد محمد مرضا المظفر.

وتتقدم أيضا بوافر الشكر والامتنان لأساتذتنا في طب الاسنان، لما قدموه من مساعدة وعون

ومتابعة مستمرة لنا طيلة الخمس سنوات الماضية.

والشكر الجزيل لكل من قدم يد المساعدة علمياً ومعنوياً، وأسدى النصيحة واسهم في

إنجاز هذا البحث.

The Relationship Between Interpupillary Distance and Maxillary Central Incisors Width in Young Persons in Al-Furat Al-Awsat

ABSTRACT

Esthetic is one of the most important factors in C.D success and the harmony between teeth, size and other anatomical landmarks is a factor to get esthetic outcome. Choosing the appropriate size of the artificial teeth for the complete denture is important. Therefore, the facial features that correlate with the size of the teeth must be determined so that it is easy to choose the appropriate size for each person. Seventy-seven individuals in the range of 19-24 years, measured their interpupillary distance mean (62.38-+4.212) and also measured their maxillary central incisor width mean (8.69+-0.88), and it was found that there is a positive correlation between interpupillary distance and the maxillary central incisor width.

person's correlation ± 877 , P. value less than 0.001

Keywords: interpupillary distance {IPD}, central incisor width {CIW}

INTRODUCTION

Achieving an aesthetically pleasing appearance is greatly influenced by the anterior teeth. The appropriate size selection is critical for a natural appearance and depends on the dentist's artistic skills and scientific knowledge. ^[1]

Tooth shape selection has been studied for many years with the aim of facial harmony and satisfactory esthetics, especially in oral rehabilitation. With the help of dental specialties like prosthodontics, radiology, and orthodontics, it is now possible to evaluate and identify the morphological requirements that affect dental and facial esthetics for each individual. ^[2]

A patient will refuse a prosthesis if it doesn't resemble as much as possible the natural teeth, even if it restores function and provides comfort, so it must be manufactured correctly. ^[3]

During the prosthetic rehabilitation of edentulous patients, the selection of artificial teeth is crucial as it is considered one of the principles of oral rehabilitation. ^[4]

Moreover, the appropriate choice of the maxillary incisor shape can contribute obviously to attaining greater facial harmony. ^[5]

Many facial structures are considerable important in anterior teeth selection. ^[6]

The interpupillary line (IPD) is an imaginary horizontal line drawn from one center of the pupils of the eyes to another. ^[7]

Habbu et al. (2009) , found that the IPD depends on growth, where the interpupillary distance remains constant after growth complet. ^[9]

The width of the central incisors (CW) remains constant throughout life, while their length may change due to wear. Therefore, CW is a more reliable dimension to consider when selecting the size of the teeth. ^[10]

The mean IPD is differs clearly statistically between people in terms of gender, certain ethnic groups, and certain age groups, so mean IPD depends on the characteristics of the population from which the data was extracted.^[8]

It is important for clinicians to select the appropriate sizes of the maxillary anterior teeth when creating an esthetic denture for edentulous patients. These sizes should be compatible with the available anthropological measurements on the face. ^[10]

Barman et al. (2018), found that IPD can be used as a guide in determining the suitable mesiodistal dimension of the artificial maxillary central incisors in complete edentulous patients.^[11]

Murali R., (2010), said there is a positive correlation between interpupillary distance and mesiodistal width of upper right central incisor in both genders.^[12]

Cesario and Latta (1984) reported that interpupillary distance could be used reliably in selecting maxillary anterior teeth width. Their measurements showed a consistent relationship to gender and race. ^[13]

The size, shape, shade and arrangement of the front teeth in the upper jaw have the greatest impact on a person's harmonious appearance when viewed

from the front. Specifically, the mesiodistal width of the central incisors was measured from mesial side of central incisor to the point where they touched the adjacent lateral incisor. ^[14]

Suryakant C.D, et al (2014), found the width between the upper central incisors and the interpupillary distance cannot be considered a guide for selecting the upper anterior central teeth for the treatment of a patient who is missing all teeth, but we can use them as an additional factor along with other methods helps us to selecting appropriate teeth in the complete denture's treatment. ^[15]

Picard (1958) stated that the width of the maxillary anterior teeth can be determined by measuring the interalar width. lee (1962) supported this finding. ^[16]

Robert L.E, (1996), found that facial measurements and proportions is important to determine and choose the width of the anterior teeth. ^[17]

Ashish R.J. etal, (2019), support the premise that single extraoral (IPD) anatomical variable, justifies its use in choosing appropriately sized maxillary anterior teeth. ^[18]

MATERIALS AND METHODS

Seventy-seven individuals were surveyed from AL_Furat Al-Awsat in Iraq. The participants were between the ages of 19-24, without any skeletal or dental discrepancy, no history of orthodontic treatment, no facial asymmetry, no restorations, no crowded or missing front teeth, and a normal relationship between the maxilla and mandible

jaw. Measured the mesiodistal widths of the maxillary central incisor (CIW) and the horizontal line between the right and left pupils (IPW) using electronic vernier. The individual must be in upright position, the distance between the researcher and the person must be no less than 30 cm, because if it is less, it will cause squint. SPSS computer program version (23) was used to analyze the data.

RESULT

A Pearson product-moment correlation was conducted to analysis the relationships between inter-pupillary distance (IPD) and central incisor width (CIW), IPD was very strongly positively related to CIW, $r(76) = +.878$, $p < .001$, mean of IPD 62.38 ± 4.212 , mean of CIW 8.69 ± 0.885 . A complete list of correlations is presented in table 1. These findings indicated that IPD explains much of variability in CIW. The effect size for IPD ($r^2 = .77$) indicated that the level of CIW that the prosthodontics accounted for a very large portion (77%) of the variability in IPD. ^[19]

Table 1 (APA style) Correlations for IPD (N=77)

Correlations			
		Interpupillary distance	Central incisor width
Interpupillary distance	Pearson Correlation	1	.877**
	Sig. (2-tailed)		.000
	N	77	77

** . Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

There was a positive correlation between interpupillary distance and mesiodistal width of maxillary central incisors among Iraqi population within age range (19_24) These results correspond with, Barman et al. (2018), found a positive correlation between IPD and combined MDW of MCIs among all the samples of males and females, age and ethnicity. Also, the IPD can be used as an additional guide in selecting suitable size of the artificial teeth. ^[11] Because, the age range was (18_26). During embryological development, the first frangial arch differentiates and gives the maxillary process and the mandibular process, which in turn differentiates to give the facial structure. The maxillary process will give raise to: -

- Maxillary prominence**
- Medial nasal prominence**
- Lateral nasal prominence**

These three prominences will diffuse and form philtrum of upper lip, nasal pridge, the upper part of the cheek, the floor of the eye, upper centrals incisors. Mandibular process will give raise to mandibular jaw and its structures **Conclusions** **Within the limitations of the present study and based on the results obtained. ^[20]**

And disagree with, Suryakant et al. (2014), found the examined interpupillary distance and intercommissural width cannot be considered reliable guidelines in the selection of artificial upper frontal teeth. However, they may be used as a useful additional factor combined with other methods for objective teeth selection in complete denture therapy, because of deferent population. ^[15]

CONCLUSIONS

There is a positive correlation between interpupillary distance and mesiodistal width of upper central incisor. Interpupillary distance can be used as a guide in selecting suitable size of the artificial teeth.

SUGGESTIONS

- Using a mirror placed in front of the patient, stand behind patient and take the measurement of IPD by looking into the mirror.**
- Standardized digital images of the face, viewed frontally, were recorded. Using image analyzing software, the images were used to determine the interpupillary distance (IPD), CIW were measured directly subjects using digital calipers.**

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