Assessment of Maximum Mouth Opening among Students of College of Dentistry/Babylon University

قياس أوسع فتحة للفم بين طلبة كلية طب الأسنان / جامعة بابل

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الخلاصة

الهدف: هذه الدراسة اختبرت أوسع فتحة للفم وعلاقتها مع العمر للطلبة الذكور والإناث في كلية طب الأسنان في جامعة بابل.

المنهجية: ٣١٧ طالبا في كلية طب الأسنان (١٤٠ ذكور و ١٧٧ إناث) بعمر يتراوح بين ٢٠-٢٥ سنة كان قد تم الاستعانة بهم في هذه الدراسة. كل طالب كان قد طلب منه أن يفتح فمه إلى أوسع ما يمكن لتحديد أوسع فتحة للفم. وقد تم قياس المسافة ما بين الحافة القاطعة للسن الامامي العلوي الأيمن ونظيره في الفك السفلي كأوسع فتحة للفم باستخدام الفرجار اليدوي.

النتائج : أوسع فتحة فم كان قياسها يتراوح بين ٥٨ ملم ± ٧١ ملم و٤٢ ملم ± ٦و٩٨ للذكور والإناث بالتعاقب . فتحة الفم للذكور كانت أوسع وبشكل ملحوظ عما هي للإناث (P= 0.000). بالنسبة للذكور كانت أعلى نسبة لفتحة الفم في عمر ٢٣ سنة وعلاقة غير ملحوظة وسلبية بين العمر وفتحة الفم كانت قد شوهدت بعمر ٢٤ و ٢٥ سنة (P=0.472).بالنسبة للإناث كانت أوسع فتحة للفم قد شوهدت بعمر ٢٠ سنة ثم بدأت بالتناقص الملحوظ بعد ذلك مع العمر.

الاستنتاج : في هذه الدراسة أوسع فتحة للفم كانت قد شوهدت عند الذكور مقارنة بتلك التي عند الإناث وان قياس فتحة الفم تتناقص مع تقدم العمر لكلا الجنسين. ومع ذلك وبغض النظر عن الجنس لم تشاهد أي علاقة محددة بين العمر وكبر فتحة الفم.

التوصيات : دراسة مستقبلية باستخدام مجتمع اكبر لتوضيح تأثير العمر على فتحة الفم وكذلك العلاقة ما بين وزن الجسم مع فتحة الفم.

الكلمات المفتاحية : فتحة الفم ، الجنس، العمر، المسافة بين القواطع.

Abstract:

Objectives: This study investigated the maximum mouth opening and its correlation with age among male and female students of college of dentistry, Babylon University.

Patients and methods: A total of 317 students (140 males and 177 females) age ranged 20-25 years were recruited in this study. Each student was asked to open his/her mouth as wide as possible. The distance between the incise edge of upper right central incisor and the opposing tooth of the lower jaw was measured using a manual caliper.

Results: The maximum mouth opening was 58 mm ±7.21 and 42 mm ±6.98 for males and females, respectively. The maximum mouth opening of males is significantly larger than that of female (P= 0.000). For males the highest value of mouth opening was observed in the age 23 years and a negative and insignificant (P=0.472) correlation was seen in the ages (24 and 25 years). For females the maximum mouth opening was noticed in the age of 20 years and a significant decreased (P=0.000) of mouth opening was observed then after.

Conclusion: Males have wider mouth opening compared to females. Maximum mouth opening for males and females decreased with age. However, regardless the gender, non-specific correlation was observed between age and mouth opening.

Recommendation: Further study to clarify the effect of age on mouth opening and the correlation between mouth opening and body weight.

Key words: Mouth opening, Gender, Age, inter-incisal distance.

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INTRODUCTION

Maximum mouth opening can be defined as the greater distance between the incisal edge of the upper central incisor and the opposing tooth of the lower jaw at the midline when the mouth is open widely[1].

Assessment of mouth opening is abnormal daily practice in clinical dentistry. A known range of normal mouth opening is necessary to enable the clinician to conduct a thorough oral examination conveniently. Limitation of mouth opening is one of the early signs of pathological and traumatic conditions including TMJ disorders. Early recognition of decreased or limited mouth opening is mandatory for a prompt and efficient approach to diagnose and plan out the treatment options rationally.

Studies have shown that measurement of mouth opening varies with age, gender and race [2,3,4]. Most of these studies reported that mouth opening increases with age until adulthood and males have wider mouth opening compared to females. The mouth opening was measured in different population and the results showed that it varies from 40-60 mm, 41-43 mm and 47.1 mm [5].

It is, therefore; essential to determine normal mouth opening for each population to find out the diagnosis of reduced mouth opening.

Literature showed that mouth opening was measured either as an inter-incisal distance [6,7,8] or inter-incisal distance plus over bite[9]. Yao and his-coworkers found that the measurement of inter-icisal distance is relatively more accurate and easily determined. Technically, mouth opening was measured using ruler/caliper [6,7,8] or by using breadth of three or four fingers[7,10]. Some studies measured the mouth opening more than once and recorded the highest value while other reports performed it once [5,11,12].

The clinical significance of measuring mouth opening in normal subjects at different age groups is useful in managing patients with maxillofacial injuries, TMJ problems and other anomalies to restore the jaws opening to the normal status. According to the author knowledge there is little, if any, studies of normal mouth opening in different age groups in Iraqi population. With limited availability of data on normal mouth opening, there is a shortage in clinical examination of patients particularly those with TMJ disorders and dysfunction of masticatory apparatus.

The aim of this study was to determine the maximum mouth opening in males and females students of college of dentistry, Babylon University to establish a normal range of jaws mobility; and to investigate any correlation between age and maximum mouth opening both in males and females.

OBJECTIVES:

This study investigated the maximum mouth opening and its correlation with age among male and female students of college of dentistry, Babylon University.

PATIENTS AND METHODS:

A total of 317 students (140 males and 177 females) age ranged 20-25 years with a mean age 22.5 years from college of dentistry, Babylon University were recruited in this study. The students were examined intra and extra-orally with complete TMJ examination. Students with TMJ problems, orthodontic treatment, trauma and dental prosthesis of anterior teeth were excluded from the study. Each student was asked to open the mouth as wide as

possible while sitting comfortably on dental chair. The maximum distance was measured from the incisal edge of upper right incisor to the incisal edge of lower central incisor at the midline[1].The value was measured in millimeter using manualvernier. The recorded value was taken as an average of three readings [5,11,12].The examination and measurement were performed by single examiner to avoid any bias in the study.

The quantitative data like patients age (years) and mouth opening (mm) was presented in mean ±S.D. One way analysis of variance was used to compare the mouth opening among different ages and gender. P value ≤ 0.05 was considered as significant.

RESULTS:

The maximum mouth opening (MMO)in students of college of dentistry (140 males and 177 females) with a mean age 22.5 years and age ranged 20-25 years was measured.

Table (1): Shows variation of mouth opening in relation to gender.

Table 1 illustrates variation of mouth opening in relation to gender. The MMO was 58±7.21 mm and 42±6.98 mm for males and females, respectively. The range of MMO in males was 35-71 mm and 31-64 mm in females. The MMO of males is significantly larger than that of female (P= 0.000).

Statistics	Males	Females
Number	140	177
Mean(mm)	58	42
Standard deviation	7.21	6.98
Range (mm)	35-71	31-64

Table (2): variation of mouth opening in relation to age.

Age	Gender	Number	Mean ±SD
20	Male	18	50.8±6.87
	Female	45	46.15±8.2
21	Male	30	48.0±8.4
	Female	43	39±6.0
22	Male	33	50.12±6.87
	Female	50	41.6±5.16
23	Male	37	51.76±7.42
	Female	26	40.27±7.0
24	Male	10	49.6±4.8
	Female	6	40.4±4.17
25	Male	13	47.67±4.17
	Female	6	40±4.7

Table 2 shows variation of mouth opening in relation to age. The MMO of males is significantly larger than that of females in all age group (P<0.005).

The maximum mouth opening of males was observed in the age of 23 years old (51.76±7.42). A negative and insignificant correlation between mouth opening and age was observed in the older age group (P=0.472) i.e. mouth opening decreased with age 49.6±4.8 and 47.67±7 for ages 24 and 25 years, respectively. For female's gender, the highest mouth opening was observed in the age 20 years. Then, it decreased significantly with age (P=0.000). Lastly, there was a significant difference in the mouth opening among different age group (P=0.005). However, there was no specific correlation between age and mouth opening, regardless the gender, of the studied sample.

DISCUSSION:

Mouth opening is a cardinal sign of many pathological conditions. Patients with TMJ problems, maxillofacial trauma and oral malignancies or those who have been treated from these conditions often complain of restricted mouth opening. The goal of treatment of such conditions is to restore mouth opening to its normal range. Oral and maxillofacial surgeon should be familiar with the normal mouth opening since they encounter these conditions.

In the present study measurement of maximum mouth opening (MMO) showed that males have greater values than female's gender. These observations were true for all age groups. These findings are consistent with that found by [5,8,11,13] who investigated MMO in adult subjects in different populations. The values of MMO depends on the size of the mandible which is significantly greater in males than females as reported by [14].Physically, human males is taller and larger compared to females, hence it is conceivable that MMO would be larger in males. However, it has been reported that joint mobility in general is greater in females than in males gender [13].

The angle of the mandible was studied by Pullinger et al. and Beighton et al.[15], and found that it increased in women. This finding is in accordance with the general findings of the greater joint laxity in women and was further proved by Pullinger et al., when they showed that women have a greater range of mouth opening when the measurement was corrected for height and body weight but still have lesser mean mouth opening as compared to men. This difference between mouth opening and mobility of other synovial joints may be ascribed to the differences in mandibular length between males and females[13].

Many studies indicated that mouth opening decreased with adult age [12]. In the present study the highest mouth opening for males was observed in the age of 23, then decreased insignificantly with age (24 and 25 years old).In females gender the highest mouth opening was seen in the younger age group(20 years) and then decreased significantly with age. These findings are in agreement with that found in Pakistani population (Sohail & Amjad,2011) , Chinese population (Yao KT,2009), Irish population (Gallagher et al,2004) and Mexican population (Casanova-Rosado et al., 2012). This may be due to anatomical changes of TMJ as consequences of normal aging process. A physiological process such as condylar remodeling occurs to adapt the TMJ structures to meet functional demand. However, the present study showed that, regardless the gender, there was no specific correlation between age and mouth opening. This may be ascribed to the sample size, the method used to measure MMO and the age of students. Although majority of studies suggested that MMO varies with age, the MMO variation with age is still unclear. Further studies should be conducted in larger sample size to clarify the effect of age on MMO.

CONCLUSION

Greater measurement of mouth opening was observed in male compared to female gender. Maximum mouth opening of males and females decreased with age. However, an obvious variation of mouth opening with age, regardless the gender is not observed. Further study should be conducted using large size population to clarify the effect of age on mouth opening.

RECOMMENDATION:

Further study should be conducted using large size population to clarify:

1. Effect of age on mouth opening.
2. Correlation between body weight and mouth opening.

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