

MOUTH OPENING AMONG NIGERIANS

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INTRODUCTION

Maximum mouth opening has been defined as the inter-incisal distance at maximal mouth opening or as the inter-incisal distance plus the overbite (1). Many authors have written on mouth opening and its relevance to the clinical practice of dentistry. A known normal range of mouth opening is necessary to enable the clinician conduct a thorough oral examination conveniently.

Limitation of mouth opening is one of the early signs of a pathological or traumatic conditions affecting tissues of dental region. Such conditions include infections in oral and maxillofacial region, temporomandibular joint diseases, jaw fractures and tumours. Though limitation is a common clinical feature, its early recognition is necessary for a prompt and efficient approach to diagnosis. Nevertheless a knowledge of a reliable normal range of mouth opening makes this early recognition possible.

Although it is known that variations in a range of mouth opening could serve as an essential tool to diagnosis, no documented research work has yet been reported among Nigerians.

MATERIALS AND METHODS

This study was conducted among young healthy adults between 18 and 35 years. There were 311 males and 201 females.

A pair of dividers was used to measure the inter-incisal distance between the upper and lower right central incisors, while the mouth was maximally open. The value was read off a graduated scale in millimeters. In addition the three-finger breath of each individual was measured at the distal inter-phalangeal joint, after each individual has demonstrated the ability or inability to insert the three fingers vertically and comfortably into the open mouth. The fingers involved were the index, middle and ring of the right hand.

Finally past history of facial swelling due to infection, fracture and pain in the facial region especially at the site of the temporomandibular joint, were obtained.

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The pain according to the people measured followed prolonged chewing of gum or its local equivalents such as palm kernel among others.

Furthermore chewing habits were noted and graded as frequent chewing, occasional chewing, and rare chewing.

Individuals who chewed gum or its equivalents, daily for several hours, were graded as frequent. Similar individuals who chewed for some hours in one or two days of a week were graded as occasional chewers, whereas those that seldom chewed gum or its equivalents were graded as rare chewers.

Following a similar pattern, yawning habits were noted and graded as frequent, occasional and rare.

Pathological yawning is equated to frequent while physiological yawning is equated to occasional yawning. Individuals who seldom yawn are grouped as rare.

It is noteworthy that information from patient regarding chewing and yawning habits, as well as apparent pain or exhaustion on prolonged chewing were subjective, as some of them chew or when they yawn or the location of the apparent pain on prolonged chewing.

None of the patients had dentures or any other form of restorations.

RESULTS

The mean average mouth opening for men was found to be 56.1 ± 4.8 mm with a range 44 mm to 73 mm. The mean average for women on the other hand was found to be 52.3 ± 4.3 mm, with a range of 41 mm to 65 mm.

Among the subjects 19.9 % women have past dental history of facial swelling before the age of 35 as compared to 10 % of the men. Also 22.4 % women chew frequently compared to men which recorded 11.3 %. Twenty three point nine percent of the women had pain around the temporomandibular joint after prolonged chewing as compared to men with only 17.4 %.

In addition more women (19.9 %) yawn frequently than men 7.4 %. A total of 89 % of the women were able to put their three fingers vertically into their mouth while only 85 % of men could do the same.

Below are Tables 1 to 4 which compare mean averages with age, past dental history, social history and yawning habits. Further results obtained showed

Mouth opening...

that 87 % of the people measured were able to insert three of their fingers comfortably into their mouths, whereas 13 % had difficulty inserting their three fingers vertically in their mouths.

Table 1 : Mean values and the range of mouth opening for both sexes

Age (Yr)	Mouth Opening Men (mm)		Mouth Opening Women (mm)	
	Mean	Range	Mean	Range
18 - 20	55.6	45.0 - 70.0	52.8	41.0 - 65.0
21 - 25	56.9	44.0 - 73.0	51.0	42.0 - 61.0
26 - 30	55.7	49.0 - 65.0	47.6	45.0 - 50.0
31 - 35	52.8	48.0 - 57.0	50.0	45.0 - 57.0

Tables 2, 3 and 4 below show the percentage distribution of cases measured in relation to the noted factors (swelling, fracture, pain, chewing and yawning) which may influence mouth opening.

The corresponding mean values of mouth opening of individuals affected by the above factors both in past and present dental history are also given.

Table 2 : Distribution of past dental history

History	% of Total	Mouth Opening (mean average mm)
Swollen	13.5	55.40
Fracture	1.4	54.70
Pain	19.92	53.90
Normal	68.95	54.70

Table 3 : Distribution of social history (Chewing habits)

History	N°	% of Total	Mouth Opening (mean average) mm
Frequent	80	15.6	54.40
Occasional	270	52.7	54.80
Rare	162	31.6	54.30

Table 4 : Distribution of yawning habits

History	N°	% of Total	Mouth Opening (mean average) mm
Frequent	61	11.9	54.30
Occasional	401	78.3	54.70
Rare	50	9.8	53.90

DISCUSSION

The mean values of mouth opening as recorded for people with past dental conditions and various factors as shown in Tables 2, 3 and 4 are represented in a graph, chewing is designated as 1, while yawning is designated as 2.

If each of the factors are traced in the graph (Fig. 1), both minimum and maximum values of mouth opening of individuals measured will deduced from the graph.

Figure 1 : Effects of Factors on Mouth opening (1 : chewing ; 2 : yawning)

	swollen	fracture	pain	negative	freq.	occ.	rare	freq.	occ.	rare	male	female	Total
Minimum	46	48	41	42	41	42	43	42	41	44	44	41	41
Average	55.4	54.7	53.9	54.7	54.4	54.8	54.3	54.3	54.7	53.7	56.1	52.3	54.6
Maximum	63	67	67	73	65	77	73	70	73	62	73	65	73

Mouth opening...

The average column is almost a parallel line showing that there is no significant variation between mouth opening of individuals with past dental history of infection, fracture and pain, and those who chew and yawn frequently, occasionally or rarely.

Mouth opening could be limited or enhanced by pathological or traumatic conditions of the temporo-mandibular joints, masticatory muscles and facial structures. We studied the roles which past dental history (swelling, fracture and pain), social history (chewing habits), and yawning habits could have on mouth opening.

This shows that chewing and yawning habits did not alter the range of mouth opening in a clinically significant way among those studied, though an explanation that limitation in mouth opening could be due to an injury of muscle fibres while yawning, difficult extractions and injections of local anaesthetics, had been proffered (4, 5).

The results also revealed that over 85 % could put their three fingers vertically into the mouth. Although this can be used as an alternative way of assessing approximately mouth opening in a patient, its reliability as an acceptable mode of recognising differences in mouth opening is open to question since we found out

that a good number of those measured could insert more than three fingers conveniently into the mouth. The unreliability of this method of assessing mouth opening will become obvious in pathological conditions of the temporo-mandibular joints, infections and maxillofacial tumours associated with slow progressive limitation of mouth opening, there may be a delay in diagnosis if three finger breadth measurement is used in a patient capable of inserting more than three fingers comfortably into the mouth.

It is noteworthy that the mean mouth opening among Nigerians of the age grade between 18 and 35 does not vary significantly with values obtained by other investigators (5, 6, 7) in other countries. Most staple Nigerian diets involve swallowing bolus of food without necessarily chewing them. For instance the food "eba" prepared from cassava is moulded and swallowed with the mouth wide open. Such regular mouth opening exercises have not been shown to increase the range of mouth opening.

Nevertheless, more work still need to be done on the other Nigerian age groups including adults and children.

SUMMARY

The maximum mouth openings of 512 Nigerian adults aged 18 - 35 years were measured using a pair of special dividers and a graduating scale. Chewing, yawning habits and other factors such as facial pain and swelling were also considered and compared with investigations carried out elsewhere.

Key-words : Mouth opening, yawn, chew, habit

RESUME***A propos de l'ouverture buccale chez les Nigériens***

La plupart des ouvertures de la bouche de cinq cent douze (512) Nigériens adultes âgés de dix-huit (18) à trente cinq (35) ans ont été analysées à partir d'un certain nombre de méthodes de mesure bien codifiées : l'habitude de mâcher, de bailler et bien d'autres facteurs tels que la douleur faciale et l'œdème, comparativement aux résultats des autres chercheurs.

Mots-clés : ouverture buccale, bailler, chiquer, habitude

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