

Effects of Oral Habits on the Occlusion of 5-12 year Old Children in Lagos State, Nigeria

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Abstract

Background: Oral habits can interfere with regular facial growth and persistence of the habit may result in varying degrees of malocclusion. This study sought to find out the prevalence and effects of oral habits on the occlusion of 5-12 year old children in Lagos State, Nigeria.

Methods: The study was descriptive and cross sectional in nature. A total of 1000 children randomly selected by a multistage sampling technique were interviewed and examined for oral habits and malocclusion. **Results:** Overall 33% of the sample population reported one or more oral habits. The most common habit was nail biting (41.4%), while the least common was bruxism (2.8%). A statistically significant relationship was observed between the age of the respondents and the thumb/digit sucking habit ($p < 0.05$). The relationship between the thumb/digit sucking habit and crossbite was statistically significant ($p < 0.05$). There was also a statistically significant relationship between overbite and thumb/digit sucking ($p < 0.05$), tongue thrusting ($P < 0.05$), tongue sucking ($P < 0.05$) and anterior resting position of the tongue ($P < 0.05$). **Conclusion:** The positive relationship between oral habits and malocclusion observed in this study suggests the need for early identification of these habits in children and early intervention. The education of mothers on the deleterious effects of oral habits is suggested as well as regular screening for children who are five years and older.

Key Words: Oral Habits, Occlusion, 5-12 year-olds

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Introduction

Oral habits can be described as any repetitive behavioural pattern which utilize the oral cavity such as digit sucking, tongue sucking/thrusting, lip sucking and bruxism. They can interfere with regular facial growth and persistence of the habit may result in varying degrees of malocclusion¹. The thumb sucking habit has been associated with an anterior open bite, proclination of upper incisors, posterior crossbite and retroclination of the lower incisors². While tongue thrusting and abnormal tongue position has been associated with anterior open bite, abnormal speech, and anterior protrusion of the maxillary incisors^{3,4}, lip sucking however has been associated with proclination of upper incisors and retroclination of lower incisors.

Studies in Oyo and Lagos States, Nigeria have reported varying prevalence of oral habits among children with prevalence of 9.9% and 34.1% respectively^{5,6}. These studies also noted

that thumb/digit sucking habit was the most prevalent of all oral habits observed^{5,6}. Similarly, tongue thrusting was found to be the most prevalent oral habit in Delhi⁷. In a Tanzanian population however, nail biting was reported to be the most common oral habit⁸. In the literature there is very little information on the nail biting habit and in cases where this habit has been reported, there are conflicting views in literature as to its effect on the occlusion. Most studies conducted in Nigeria did not explore the effects of nail biting on the oral tissues.

The aetiology of oral habits is multifactorial and includes central factors such as emotional stress, parasomnias, neurologic disabilities and anxiety⁹. Thus the management of oral habits may consist of simple habit control, myofunctional therapy, habit breaker appliances, fixed orthodontic therapy, and in some cases surgery^{4,10}. Early intervention is important in the management of oral habits in order to limit the degree of the resulting malocclusion thereby precluding the need for more complicated orthodontic treatment in future¹¹.

This study was therefore designed to determine the effects of oral habits on the occlusion of 5-12 year old children in Lagos

State, Nigeria. This would assist in designing appropriate intervention procedures for school children.

Materials and Methods

The study was conducted in Lagos State, Nigeria. The state comprises of people of diverse ethnicity, culture and socioeconomic status. At the time of this study, the state consisted of twenty local governments of which ten were randomly selected by balloting for the purpose of this investigation.

The study was descriptive and cross sectional in nature. A multistage sampling technique was employed for the selection of the ten local government areas. The local government areas selected included Apapa, Eti-osa, Ikeja, Kosofe, Lagos Island, Lagos Mainland, Mushin, Oshodi/Isolo, Somolu and Surulere. In each local government, a list of all the schools was obtained and two schools (one public and one private) were selected using simple random sampling technique totalling twenty schools. In all, twelve pupils were selected from each school using the class register.

Written consent was obtained from the State Primary Education Board, the school authorities and parents/guardian of the pupils. Only pupils whose parents/guardians consented were included in the study. Any child with a history of orthodontic intervention was excluded from the study.

All examination and data recording were undertaken by one researcher and intra examiner reliability was determined ($\kappa=0.65$). The questionnaire consisted of two parts: The first section recorded socio-demographic information and history of oral habits of the study participants, the second section was for the clinical orthodontic findings. Angle's classification¹² was used to determine the postero-anterior relationship of the jaws and also to classify the occlusion of the participants. In the absence of the first molars, the incisor relationship was used to determine the occlusion. The horizontal relationship of the upper and lower incisors,

with the teeth in centric occlusion, was measured from the labial surface of the lower incisor, to the labial surface of the upper incisor. The distance was measured in mm as the overjet, using callipers. Any value above 3mm was taken as an increased overjet and less than 1mm as reduced overjet^{13,14}. In the children with only primary dentition, the relationship between the upper and lower primary second molars was used¹⁵.

The overbite is the vertical relationship between the upper and lower incisors in centric occlusion and this was measured using the degree of upper incisal coverage of the lower incisors.¹⁶ It was regarded as reduced, if the coverage was less than one third of the crown of the lower incisors and increased if it was more than one half. It was regarded as an open bite, if there was an actual vertical gap between the upper and lower incisors¹⁶.

A participant was diagnosed as having buccal cross bite, if the buccal cusps of the maxillary molars did not occlude buccal to those of the mandibular molars and the lingual cusps of the maxillary molars did not occlude in the fossae of their lower counterparts.

Data entry and analysis was done using Epi info version 6.04 statistical software. Frequency distribution was generated for all variables, measures of central tendency and dispersion were generated for numerical variables. Statistical significance was set at $p<0.05$.

Results

Socio-demographic

A total of 1000 children, 553 (54.8%) male and 447 (45.2%) female aged 5-12years from private and public schools in ten different local government areas in Lagos were examined. There were 510 children between the ages of 5-8years and 490 were between the ages of 9-12years. (Table 1)

Table 1: Socio-demographic distribution of respondents

	Frequency (n)	Percentage (%)
Age Category		
5-8	510	51
9-12	490	49
Gender		
Male	548	54.8
Female	452	45.2
Ethnic Group		
Yoruba	540	54.0
Hausa	50	5.0
Ibo	188	18.8
Others	222	22.2
School Type		
Private	410	41.0
Public	590	59.0
Total	1000	100.0

Distribution of oral habits

The results showed that 33% of the sample population reported being engaged in one or more oral habits. The most common habit was nail biting (41.4%), followed by thumb/digit sucking(12.7%), tongue sucking (11.6%), tongue thrusting (10.9%), lip sucking (8.1%), anterior resting posture of the tongue (5.8%),cheek biting (5.5%) and the least common was bruxism (2.8%) (Fig.1). Figure 2 shows the various forms of malocclusion that was observed during the survey.

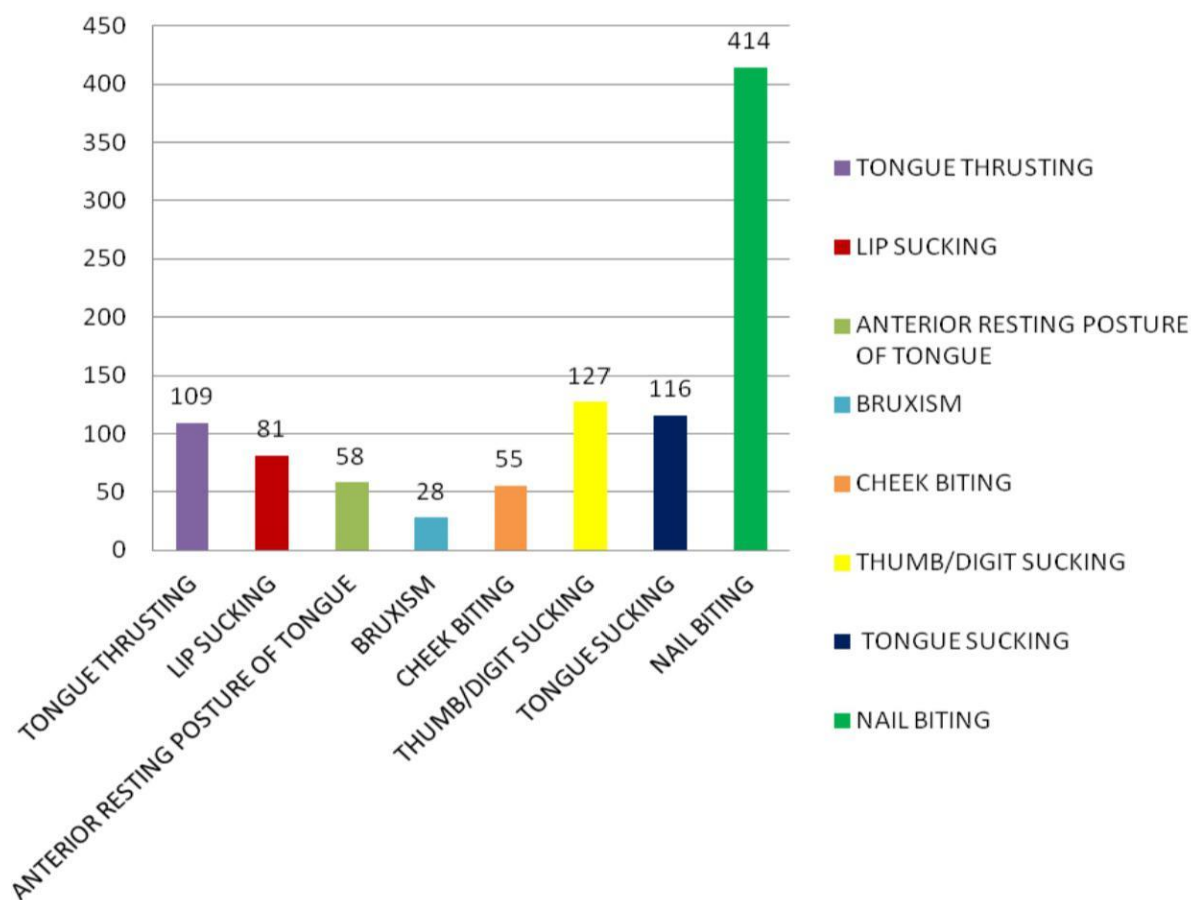


Fig.1: Distribution oral habits in the study population

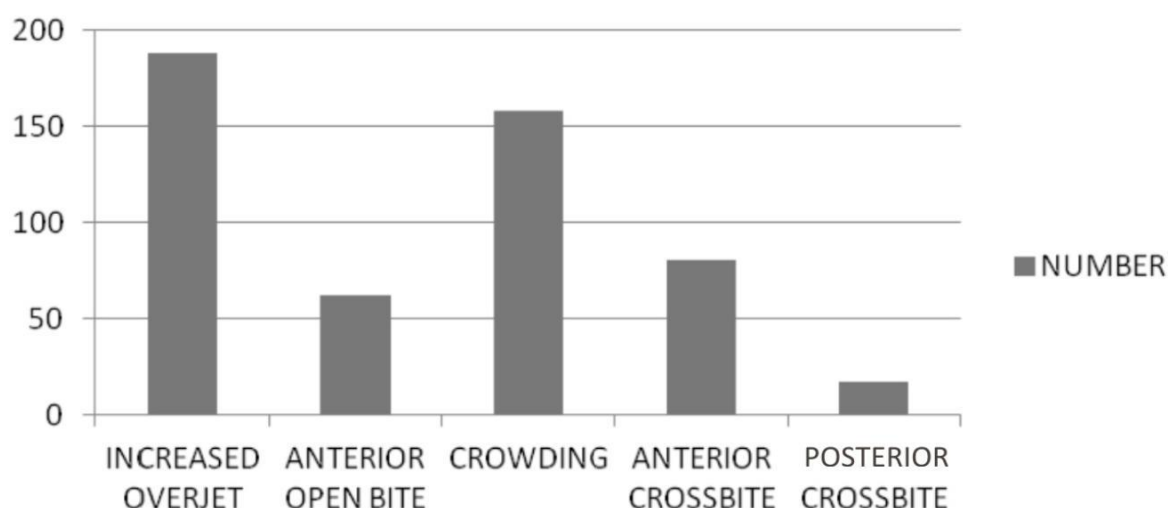


Figure 2- Malocclusion observed among study participants

Relationship between socio-demographic characteristics and oral habits

A statistically significant relationship was observed between the age of the respondents and the thumb/digit sucking habit ($p < 0.05$).

The prevalence of the habit was observed to be lower in the older age group (Table 2). There was no significant association between the sex of the participants and the observed habits

Table 2 Relationship between thumb sucking and age

	Thumb/digit sucking					
	Present N	%	Absent N	%	%	
Age group						
5-7	64	16.6	322	83.4	386	39.1
8-10	47	12.3	336	87.7	383	38.8
11-12	14	6.5	204	93.2	218	22.0
Total	125	12.7	862	87.3	987	
Chisquare = 12.97 DF = 2 P Value = 0.0015						

Relationship between oral habits and malocclusion

The relationship between the Thumb/digit sucking habit and crossbite was statistically significant ($p < 0.05$). (Table 3) There was also statistically significant relationship between overbite and thumb/digit sucking ($p < 0.05$), tongue thrusting ($P < 0.05$), tongue sucking ($P < 0.05$) and anterior resting position of the tongue ($P < 0.05$). Most of the pupils who exhibited this habit had reduced overbite or anterior open bite (Table 4).

A significant relationship was also observed between overjet and thumb/digit sucking ($P < 0.05$), tongue thrusting ($p < 0.05$), tongue sucking ($P < 0.05$) and anterior resting position of the tongue ($P < 0.05$). Most of the patients who exhibited this habit had an increased overjet. (Table 5). Nail biting was not associated with any deleterious effect on the occlusion in this study.

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Table 3 - Relationship between thumbsucking and crossbite

Crossbite	Thumb/Digit Sucking (Present)		Thumb/Digit Sucking (Absent)	
	n	%	n	%
Present	7	5.5	10	1.2
Absent	120	95.0	863	98.8
Total	127	100.0	873	100.0

Fischers Exact =0.003

Table 4- Relationship between Oral Habits and Overbite

Habits	Complete		Overbite Incomplete		Anterior Open bite		Total		P Value
	n	%	N	%	n	%	n	%	
Thumb/Digit sucking									
Present	75	59.3	30	23.7	22	16.9	127	12.7	$\chi=35.92$ p< 0.05
Absent	714	81.8	114	13.0	45	5.2	873	87.3	
Total	789	78.9	144	14.4	67	6.7	1000	100	
Tongue thrusting									
Present	48	44.1	31	28.4	30	27.5	109	10.9	$\chi=102.06$ P<0.05
Absent	738	82.8	114	12.9	38	4.3	891	89.1	
Total	786	78.6	145	14.5	68	6.8	1000	100	
Tongue sucking									
Present	71	60.9	28	24.5	17	14.5	116	11.6	$\chi=25.03$ P<0.05
Absent	719	81.3	114	12.8	51	5.8	884	88.4	
Total	790	79.0	142	14.2	68	6.8	1000	100	
Anterior resting posture of tongue									
Present	31	52.8	13	22.6	14	24.5	58	5.8	$\chi=36.81$ P<0.05
Absent	764	81.1	132	14.0	47	5.0	942	94.2	
Total	794	79.4	145	14.5	61	6.1	1000	100	

Table 5 Relationship between Oral Habits and Overjet

Oral Habits	Normal		Overjet Reduced		Increased		Total		P value
	n	%	N	%	n	%	n	%	
Thumb/Digit sucking									
Present	65	51.2	10	7.9	52	40.9	127	12.7	X=10.01 P<0.05
Absent	573	65.6	51	5.8	249	28.6	873	87.3	
Total	638	63.8	61	6.1	301	30.1	1000	100	
Tongue thrusting									
Present	48	44.0	11	10.1	50	45.9	109	10.9	$\chi=20.39$ p<0.05
Absent	588	66.0	50	5.6	253	28.4	891	89.1	
Total	636	63.6	61	6.1	303	28.3	1000	100	
Tongue sucking									
Present	62	53.4	10	8.6	44	37.9	116	11.6	$\chi=6.16$ P<0.05
Absent	576	65.1	51	5.8	257	29.1	884	88.4	
Total	638	63.8	60	6.0	295	29.5	1000	100	
Anterior resting posture of tongue									
Present	26	44.8	4	6.9	28	48.3	58	5.8	$\chi=10.10$ P<0.05
Absent	612	65.0	57	6.1	273	29.0	942	94.2	
Total	638	63.8	61	6.1	301	30.1	1000	100	

The prevalence of oral habits in this study was found to be 33%. Other studies have also shown a high prevalence of oral habits in children, 34.1% in Eti osa local government in Lagos⁵. and 25.5% in Delhi school children⁷. However a prevalence of 9.9% was found in children 7-10 year old in Ibadan, Nigeria⁶. The

difference observed could be due to the fact that we examined a wider age range which included a younger age group compared to the other study and habits have been found to be positively related to age. The prevalence of oral habits has been observed to be lower in the older age group¹⁷.

This study found nail biting to be the most prevalent oral habit and this is in agreement with some other studies^{8,18}. In a study done in Delhi on 5-13 year old children, tongue thrusting was found to be the most prevalent. However most studies done in Nigeria, have noted the thumb/digit sucking habit to be the most prevalent although it should be noted that nail biting was not considered an oral habit by these authors and thus was not investigated^{5,6}. However, despite the high prevalence of the nail biting habit found in this study, there was no deleterious effect on the occlusion observed among the study participants who admitted to the nail biting habit, this agrees with a study done in Tanzania⁸.

A statistically significant relationship was observed between the age of the respondents and the thumb/digit sucking habit. A plausible reason for this is that as children get older, a lot of them discontinue the habit, this may be related to the fact that the children get jeered at and they become quite embarrassed and so they may discontinue the very obvious habits and replace them with less obvious ones¹⁷.

In this study there was a significant relationship between the thumb sucking habit and crossbite. This is in agreement with some other studies^{19,20}. Even though others have noted no significant relationship between crossbite and digit sucking habits, especially in deciduous dentition²¹.

There was also a significant relationship between thumb/digit sucking, tongue thrusting, tongue sucking, anterior resting position of the tongue and reduced overbite. This is in agreement with several other studies^{6,17,19,21}.

A positive relationship was also observed between thumb/digit sucking, tongue thrusting, tongue sucking, anterior resting position of the tongue and increased overjet.

Conclusion

There is a high prevalence of oral habits among 5-12 year old children in Lagos State. These habits as expected have deleterious

effects on the occlusion. Nail biting though very common did not have any effect on the occlusion. It is therefore important that children who exhibit these habits are found early and the habit discontinued to prevent more severe damage to the occlusion. This study recommends, oral health screening of children at regular intervals from the age of five years and oral health education of mothers of young children on the deleterious effects of these habits, so they can start early management procedures at home to discontinue the habits or bring in the children early to the dental clinic, to achieve this purpose.

Contributors

Adegbite KO was responsible for the concept and design, data acquisition, drafting of article. Isiekwe MC was responsible for revision and editing of the article. Adeniyi AA was responsible for critical revision and final approval of version to be published.

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