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ORAL HABITS AMONG 7-10 YEAR-OLD SCHOOL CHILDREN IN IBADAN, NIGERIA
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ABSTRACT

Objective: **To assess the prevalence of oral habits among 7-10 year-old children in Ibadan, Nigeria.**
Design: **An epidemiological survey of randomly selected school children. Criteria for social class was based on registrar general's social class.**
Setting: **Primary schools from different parts of Ibadan city, Nigeria.**
Subjects: **493 school children aged 7-10 years consisting of 237(48.1%) boys and 256 (51.9%) girls.**
Main outcome measures: **Only children still actively involved in oral habits were coded positive.**
Results: **In all, 49 (9.9%) of the children were involved in one type of oral habit or the other with digit sucking being most prevalent 40(8.1%). Lip sucking was observed in 6(1.2%) while 1(0.2%) had an unusual sucking habit - sucking of left forearm with resultant severe anterior open bite (10 mm). The relationship between the oral habits anterior open-bite and increased overjets were very significant statistically ($p<0.01$). No significant associations were noted between the habits and social class as well as Angle's classification of molar relations. None of the children examined had gone for routine dental check-ups before except for the 62(12.6%) who had previous dental consultations due to toothaches.**
Conclusion: **Oral habits especially digit sucking needing management was revealed by this study and none of them had been to a dentist for help. This suggests that there is need to intensify oral health education in our environment, targeted at both parents and school children to enable them benefit from interceptive orthodontic care which has numerous advantages.**

INTRODUCTION

Disorders such as open-bite and posterior cross-bite are reported to be particularly prevalent among children with oral habits especially digit sucking(l-3). The sucking habit must be considered to have a direct influence on the developing occlusion, as well as indirectly by changing the swallowing pattern(4). Beyond the age of three years, oral habits especially digit (thumb or finger) sucking calls for attention but before this age it may be considered as normal early developmental response(5-7).

Opinions differ as to whether oral habits especially digit sucking is learned or innate. Usually it starts very early in childhood, being evident within a very short time after birth, and there is evidence to suggest that it may begin before birth(8,9). Ayer *et al.*(7) presents evidence supporting the theory that prolonged digit sucking is a learned activity. Bakwin(10) in a study of monozygotic and dizygotic twins, concluded that there is unlikely a genetic basis for finger sucking activity which persists after the third birthday. However, few children persist in the habit to the point where the behaviour justifies psychological investigation.(11)

In addition to digit sucking altering the angulation of the maxillary plane and causing downward movement from the posterior region leading to increased lower facial height (l2). Angle's class II molar relationship has been reportedly prevalent in children with sucking habits(l3,15).

Increased use of pacifiers in some civilized countries of the World has resulted in marked reduction in the prevalence of digit sucking(1,16,18), with increase in age being related to a decrease in the prevalence of the habit(12, l9). Malocclusion has been reported to be related to social class (20). Oral habits constitute a major factor in the aetiology of malocclusion and have been related also to social class(l9).

There is increasing emphasis on early recognition of conditions predisposing young children to malocclusion worldwide and corresponding preventive and interceptive procedures(2l, 26). Adequate information is therefore, essential on this important aspect of modern orthodontics in any health sector of a growing population such as

Nigeria. Kerosuo(2,7) reported the prevalence of sucking habit on an African group (Tanzanians) as l0% while 4 and 10% for Asian/Arab and Finnish children respectively.

ln Nigeria, the only study(28) on the prevalence of oral habits involving children in the first special vigilance age group (3-5 years) in regard to developing occlusions reported this to be 13-14% with obvious need for dental counselling/education for the children and their parents. Early detection of oral habits and the usual occlusal discrepancies associated with them with possible interceptive orthodontic treatment must be encouraged.

Among the advantages of interceptive orthodontic care over comprehensive orthodontic treatments are: relative cheapness, no root resorption, no decalcification and no soft tissue problems(2l).

The aim of this study was therefore, to assess the prevalence of oral habits among the school children in Ibadan, Nigeria who are in the second special vigilance age group in the study of occlusal development.

MATERIALS AND METHODS

The study sample consisted of 493 school children chosen by random selection from different primary schools in Ibadan, Nigeria. The second stage was to examine all the children within the ages of seven and ten years in classes one to six. They were 237(48.1%) boys and 256(51.9%) girls from different socio-economic groups.

Permission to carry out the study was obtained from the relevant schools authorities. The examination was done in well-ventilated rooms with adequate daylight in their school compounds. Each child was seated on an ordinary table chair facing the examiner while biting in centric occlusion. Dental mirrors and probes, plastic rulers, dividers and cotton wool rolls (where necessary) were used during the examination. They were questioned on whether they were involved in any form of oral habit or the other. The class teachers and other schoolmates also helped in confirming some of the oral habits engaged in by some of the pupils.

The author examined all the children and the criteria applied to assess the children were based on the report by Richardson(2l) on interceptive orthodontics which agrees with the proceedings of the workshop discussions on early treatment by the College of Diplomates of the American Board of Orthodontics(23). The socio-economic classification of the children was according to registrar general's social class(29). All the information obtained were entered into a pre-structured form.

Statistical Analysis: Chi-square statistic (X^2) was used to analyse the data. P values less than 0.05 were considered statistically significant. All the analyses were done using the statistical package for social sciences (SPSS 10.0 for windows).

RESULTS

Table 1 shows the age and gender distribution of the study sample while the distribution of the oral habits according to gender is shown in Table 2. In all, 49(9.9%) of the children were involved in one type of oral habit or the other. Digit sucking accounted for 40(8.1%) while lip sucking was observed in 6(1.2%). One eight year-old girl (0.2%) was sucking the left forearm resulting in hyperkeratosis of the area of the hand involved and severe anterior open-bite of ten millimetres (figures 1a and 1b)

Table 1

Age and gender distribution of the study sample

Age(years)	Gender					
	Males		Females		Total	
	n	%	n	%	n	%
7	80	47.1	90	52.9	170	34.5
8	59	47.6	65	52.4	124	25.2
9	59	47.6	65	52.4	124	25.2
10	36	52.0	36	48.0	75	15.2
Total	237	48.1	256	51.9	493	100.0

Table 2

Distribution of the Oral Habits according to gender

Oral Habit	Gender								
	Males		Females		Total				
	n	%	n	%	n	%	x2	df	p-value
Digit sucking	21	52.5	19	47.5	40	8.1	5.07362*	4	0.27983
Lip sucking	4	66.7	2	33.3	6	1.2			
Forearm sucking	-	-	1	100.0	1	0.2			
Tongue sucking	-	-	2	100.0	2	0.4			
No oral habits	212	47.7	232	52.3	444	90.1			
Total	237	48.1	256	51.9	493	100.0			

* The gender differences were not significant at 0.05 level

Table 3

The relationship between oral habits, occlusal discrepancies and other dental anomalies observed among the children

Occlusal discrepancy	Oral Habits					
	No oral Habits	Digit sucking	Lip sucking	Hand sucking	Tongue sucking	Total
No obvious occlusal discrepancies	372(94.4)	18(4.6)	2(0.5)	-	2(0.5)	394(79.9)
Increased Overjet	16(66.7)	6(25.0)	2(8.3)	-	-	24(4.9)*
Anterior open bite	1(7.7)	10(76.9)	1(7.7)	1(7.7)	-	13(2.6)*
Scissors Bite	3(100.0)	-	-	-	-	3(0.6)
Crossbite	46(90.2)	5(9.8)	-	-	-	51(10.3)
Atrrition	-	-	1(100.0)	-	-	1(0.2)
Fracture	6(85.7)	1(14.3)	-	-	-	7(1.4)
	444(90.1)	40(8.1)	6(1.2)	1(0.2)	2(0.4)	493(100.0)

X^2 = 222.61033*; df= 24, * Significant at 0.01 level

Table 4

The relationship between oral habits and social class of the children

Oral habit	social class					
	Middle class	Working class	Total	X^2	df	p-value
No oral habit	192(43.2)	252(56.8)	444(90.1)	7.81330*	4	0.09866
Digit sucking	21(52.5)	19(47.5)	40(8.1)			
Lip sucking	4(66.7)	2(33.3)	6(1.2)			
Forearm sucking	1(100.0)	-	1(0.2)			
Tongue sucking	2(100.0)	-	2(0.4)			
	221(44.8)	272(55.2)	493(100.0)			

All the observed oral habits were found nor to be significant (p>0.05) in relation no social class

Table 5

The association between oral habits and Angle's classification of molar relations.

Oral habit	Molar relations based on Angle's classification						
	Class I	Class II	Class III	Total	X^2	df	p-value
No oral habit	351(79.1)	65(14.6)	28(6.3)	444(90.1)	3.78477*	8	0.08760
Digit sucking	30(75.0)	7(17.5)	3(7.5)	40(8.1)			
Lip sucking	4(66.7)	1(16.7)	1(16.7)	6(1.2)			
Hand sucking	1(100.0)	-	-	1(0.2)			
Tongue sucking	2(100.0)	-	-	2(0.4)			
	388(78.7)	73(14.8)	32(6.5)	493(100.0)			

*All the observed oral habits were found not to be significant (p>0.05) in relation to Angle's classification of molar relations.

Figure 1 a

Intra oral view of an 8 year-old girl showing the anterior open bite of 10 millimetres due to sucking of the left forearm

Figure 1 b

Clinical photograph of the left forearm of the 8 year-old showing the hyperkeratosis due to sucking

Generally, the relationship between the oral habits and anterior open-bite and increased overjets were statistically highly significant as shown in Table 3 ($p<0.01$).

Table 4 shows the relationship between oral habits and social class of the children, which was not statistically significant ($p>0.05$). The association between oral habits and Angle's classification of molar relations was not found to be statistically significant ($p>0.05$) as shown in Table 5.

DISCUSSION

Documented in several studies from different parts of the world is the fact that one of the contributory factors in the establishment of occlusions is the child's oral habits(l-5,2l,24-28,30-34). The prevalence of sucking habits varies between different countries(33). Scandinavian studies report the frequency of sucking habits to be slightly above 80%, with dummy sucking as the predominant type. In contrast to digit (finger or thumb) sucking, the use of pacifiers decreased considerably during the pre-school period and at the age of four the majority of children had given up their dummy sucking habit.(l,18,26,39). The Nigerian study(28) on pre-school children did not record any child using pacifier. The breakdown of the types of oral habits practiced by the children in the present study revealed that digit (thumb or finger) sucking was the dominant habit having a prevalence of 8.1% out of the 9.9% for the overall prevalence of oral habits. So, this is consistent with the previous report(28). This present result in similar to the report of Kerosuo(27) and Fukutua *et al.*(35) reported elsewhere in the world.

The present finding of digit (finger and thumb) sucking being the predominant habit seems to be a reflection of the cultural and social differences between Nigeria and the Western countries in oral habit behaviours. The pattern is likely to remain except if, with the increasing westernisation of the Nigerian population, the privileged social class in the country starts to introduce the use of pacifiers for their children. The present study also did not observe any significant differences in the oral habits in relation the social classes ($p >0.05$) supporting the fact that there is no much difference in the practice of oral behaviour between the two socio-economic groups in the country.

No significant gender differences were found in relation to the oral habits but it should be noted that more boys than girls were involved in oral habits generally and in digit sucking in particular. The same pattern was observed among the three to five year-old Nigerian children(28). In addition, the same earlier Nigerian report(28) showed that more females were involved in tongue thrusting than the males, which was statistically significant. The present study has shown the same sex difference though not statistically significant.

Worthy of note in this study is the eight year-old girl whose oral habit was unusual sucking of the left forearm with marked hyperkeratosis of the region involved and severe anterior open bite of ten millimetres. To the author's knowledge, this type of oral habit is particularly rare.

Although the present finding on the relationship between oral habits and Angle's classification of molar relations was not statistically significant, digit sucking was found to be most frequent in subjects with class II molar relationship. This supports the works of Popovich *et al.*(15) and Brenchley(l4) although the observed difference in frequency was not statistically significant.

The significant relationship between the oral habits and the observed occlusal discrepancies in this study population is in line with the previous epidemiological report(28,36) as well as a clinical material(37). Among the major sequelae of oral habits are anterior open bite, proclination of the upper incisors, retroclination of lower incisors and lateral cross bite. Anterior open bite is considered one of the most commonly seen malocclusion among digit suckers(16,35,38). The present study supports this claim.

Considering the time, cost and manpower needed to treat most of these conditions later in life, it is needful to emphasise the importance of preventive/ interceptive aspects of orthodontics in developing countries like Nigeria where many cannot afford the cost of comprehensive orthodontic care. Although early orthodontic treatment does not always prevent future need for comprehensive orthodontic care, they have been reported to reduce the extent and duration of fixed orthodontic therapies(2l,23). For spontaneous correction of associated anomalies to occur, the cessation of the oral habits especially digit sucking must take place at least before the pubertal growth spurt ceases(l2,l6). When the habit persists despite a period of observation, some interceptive procedures may be required and many deterrents have been recommended. These include spiked appliances to prick the thumb, fixed bars in the upper arch (inverted 'goal post') and other forms of barrier(l2,l6,21).

It must be noted with concern that only 62(12.6%) of the children examined had visited a dentist for dental check-up previously and this was due to toothaches.

RECOMMENDATIONS

Oral habits especially digit sucking needing management were revealed by this study and none of them had been to a dentist for help. This suggests that there is need for intensified oral health education in our environment, targeted at both parents and school children to enable them benefit from interceptive orthodontic care which has numerous benefits.

REFERENCES

1. Ravn, J. J. The prevalence of dummy and finger sucking habits in Copenhagen's children until the age of three years. *Community Dent Oral Epidemiol.* 1974; **2:** 316-322.
2. Larsson, E. Dummy and finger sucking habits with special attention to their significance for facial growth and occlusion. 4. Effect on facial growth and occlusion. *Swed. Dent. J.* 1972; **65:**605-634.
3. Larsson, E. Dummy and finger sucking habits with special attention to their significance for facial growth and occlusion. 7. The effect of earlier dummy and finger sucking habit in 16-year-old children compared with children without earlier sucking habits. *Swed. Dent. J.* 1978; **2:**23-33
4. Melsen, B., Stensgaard, K., Pedersen, J. Sucking habits and their influence on swallowing pattern and prevalence of malocclusion. *Eur. J. Orthod.* 1979; **1:**271-280.
5. Graber, T. M. Thumb and finger sucking. *Am. J. Orthod.* 1959; **45:**258-264.
6. Ayer, W. A., Gale, N. E. Psychology of thumb sucking. *J. Am. Dent. Ass.* 1970; **80:**1335-1337.
7. Fletchen, B. T. Etiology of finger sucking: Review of literature. *J. Dent. Child.* 1975; **42:**293-298.
8. Illingworth, R. S. The normal school child. London Heinemann, 1964.
9. Gosell, A. Morphologies of mouth and mouth behaviour. *Am. J. Orthod.* 1942; **28:**367.
10. Bakwin, H. Persistent finger sucking in twins. *Develop. Med. Child Neurol* 1971; **13:**308-309.
11. Houston, W. J. B., Tulley, W. J. A text book of orthodontics. 3rd edn. London, 1996; pl40.
12. Schneider, P. E, Peterson, J. Oral habits; considerations in management. *Paed. Clin. North. Am.* 1982; **29:**523-545
13. Humphreys, H. F., Leighton, B. C. A survey of antero-posterior abnormalities of the jaws in children between the ages of two to five and a half years. *Br. Dent. J.* 1950; **88:** 3-5
14. Brenchley, M. L. Is digit sucking of significance? *Brit. Dent. J.* 1991; **171:** 357-362.
15 Popovich, F., Thompson, G. W. Thumb and finger sucking. Its relation to malocclusion. *Am. J. Orthod.* 1973; **63:**148-155.
16. Larsson, E. The effect of finger sucking on the occlusion: A review. *Eur. J. Orthod.* 1987; **9:** 15-23.
17. Larsson, E. F, Dahlin, K. G. The prevalence and aetiology of the initial dummy and finger sucking habits. *Am. J. Othod.* 1985, **87:**432-435.
18. Larsson, E., Ogaard, B., Lindersten, R. Dummy and finger sucking habits in young Swedish and Norwegian children. *Scand. J. Dent. Res.* 1992; **100:**292-295.
19. Infante, P. F. An epidemiologic survey of finger habit in pre-school children as related to malocclusion, socio-economic status, race, sex and size of the community. *J. Dent. Child.* 1976; **43:**33-38.
20. Corruccini, R. S., Kaul, S. S., Chopra, S. R. K., *et al.* Epidemiological survey of occlusion in North India. *Brit. J. Orthod.* 1983; **10:**44-47.
21. Richardson A. Interceptive Orthodontics 3rd edn. London Macmillan Publishers. 1995.
22. Ackerman, J. L., Proffit, W. R. Preventive and interceptive orthodontics: strong in philosophy, weak in practice. *Angle. Orthod.* 1980; **50:** 75-87.
23. Bishara, S. E., Justus, R. Graber, T. M. Proceedings of the Workshop Discussions on Early Treatment. *Am. J. Orthod. Dentofacial. Orthop.* 1988;**113:** 5-6.

24. Linder, A, Modeer, T. Relation between sucking habit and Dental characteristics in Pre-school children with unilateral crossbite. *Scand. J. Dent .Res.* 1989; **97:**278-283.
25. Bowden, B. D. The effects of digital and dummy sucking on arch widths, over bite and overjet: a longitudinal study. *Aust. Dent. J.* 1996; **11:** 396-404.
26. Larsson, E. Dummy and finger sucking habits with special attention to their significance for facial growth and occlusion. Incidence study. *Swed. Dent. J.* 1971; **64:**667-672.
27. Kerosuo, H. Occlusion in the primary and early mixed dentition in groups of Tanzanian and Finnish children. *J. Dent. child.* 1990; **7:**293-298.
28. Onyeaso, C. 0., Sote, E. O. Prevalence of oral habits in 563 Nigerian Pre-school children aged three to five years. *Nig. Postgrad. Med. J.* 2001; **8:**193-195.
29. OPCS (office population censuses and surveys). Standard occupational classification. HMSO. London. 1990.
30. Hanson, M. L., Bernard, L. W., Case, J. L. Tongue thrust in pre-school children. *Am. J. Orthod.* 1969; **56:**60-69.
31. Hanson, M. L., Bernard, L. W., Case, J. L. Tongue thrust in pre-school children. Part Tl: Dental Occlusal Patterns *Am. J. Orthod.* 1970; **57:**15-22
32. Sillman, J. H. Serial study of occlusion (Birth to Ten years of age). *Am. J. Orthod.* 1948; **34:**969-979.
33. Helle, A., Haavikko, K. Prevalence of earlier sucking habits revealed by anamnestic data and their consequences for occlusion at the age of eleven. *Proc. Finn. Dent. Soc.* 1974; **70:**191-196.
34. Kabue, M. M., Moracha, J. K., Ng'an'ga P. M. Malocclusion in children aged three to six years in Nairobi, Kenya. *East Afr. Med. J.* 1995; **72:**210-212.
35. Fukutua, O., Braham, R., Katsumi, Y., Kazuo, K. Damage to the primary dentition resulting from thumb and finger (digit) sucking. *J. Dent. Child.* 1996; **63:**403-407.
36. Onyeaso, C. O., Sote, E. O, Arowojolu, M. O. Need for preventive and interceptive orthodontic treatment in three to five year-old Nigerian children in two major cities. *Afr. J. Med. Sci.* 2002; **31:**115-118.
37. Onyeaso, C. O., Aderinokun, G. A., Arowojolu, M. O. The pattern of malocclusion among orthodontic patients seen in Dental Centre, University College Hospital, Ibadan, Nigeria. *Afr. J. Med. Sci.* 2002; **31:**208-211.
38. Gellin, M. E. Digital sucking and tongue thrusting in children. *Dent. Clin. North. Am.* 1978; **22:**603-619.
39. Myllarniemi, S. Oral and dental state in Helsinki pre-school children. III. Prevalence of dummy and finger sucking habits. *Proc. Finn. Dent. Soc.* 1973; **69:**47-51.