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ORIGINAL RESEARCH

Knowledge of Non-nutritive Digit Sucking Among Mothers of Under-Five Children in Ilorin, Nigeria

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Abstract

Background: The sucking habits of infants can be nutritive and non-nutritive sucking. Digit-sucking is normal in babies and young children, but sometimes it may persist into early childhood.
Objective: To determine the burden, knowledge and belief of mothers/caregivers concerning digit sucking among under-five children.
Methods: A cross-sectional study involving children under the age of 5 years attending the University of Ilorin Teaching Hospital, Ilorin, Nigeria, was conducted. The mothers of selected children were surveyed using an interviewer-administered questionnaire.
Results: The prevalence of non-nutritive digit sucking was 45.8%. While 68 (43.9%) of these children sucked their digits, 3 (1.9%) sucked pacifiers. The thumb and two digits were the preferred digits (52.9%). Sucking was done while awake in 36 (52.9%) children while 32 (47.1%) sucked whether awake or sleeping. Most (60.3%) mothers have the wrong perception of digit sucking and had attempted to discourage it.
Conclusions: The prevalence of non-nutritive and digit sucking was high in the population studied. Sucking occurs while awake and asleep, both day and night. Most mothers have the wrong perception of digit sucking and had attempted its stoppage.

Keywords: Children, Digit sucking, Non-nutritive sucking, Oral habit, Nigeria.

Introduction

The sucking habits of infants are described in the literature as nutritive and non-nutritive, with non-nutritive sucking involving sucking of the digits and pacifiers.[1] The sucking reflex is present from an early age, and thumb sucking has been observed in the foetus from as early as 18 weeks of gestation. [1,2] Digit-sucking is normal in babies and young children, and it sometimes persists into the age of three and a half years. [3] Digits preferred for sucking include the thumbs and other fingers. [4]

Although a harmless habit, complications can arise from its persistence. [5] Prolonged digit sucking may cause a child to develop dental problems, such as malocclusion or tooth mal-

alignment, thereby distorting the upper palate. [2] A child may also develop speech problems, including mispronouncing Ts and Ds, lisping, and thrusting out the tongue when talking. [5] Callosities, ulcers, and rotation of the thumb or affected digits may also occur. [5,6] Prolonged digit sucking may be considered a behavioural disorder. [7] It can also predispose a child to nutritional deficiencies and frequent diarrhoeal episodes from directly introducing dirt and harmful microbes into the gastrointestinal tract. [8]

Some studies have been carried out to determine the prevalence and associated risk factors with digit sucking. [3,6,9] Orimadegun and Obokon in southwest Nigeria reported a prevalence of 45.2% among school children. [8] A study among infants in a well-baby clinic in Enugu also reported digit sucking in 30.8% of children.[3] Kerosuo reported the prevalence of sucking habits in Tanzanian, Asian/Arab and Finnish children as l0%, 4% and 10%, respectively. [10] Kolawole *et al.* in southwest Western Nigeria also reported a 7.2% prevalence rate of digit sucking.[5] Two earlier Nigerian studies, both in the eastern part of the country, among preschool and infants reported a prevalence of 23% and 30.8%, respectively. [3,6] The wide disparity in reported prevalence rates and lack of data from Northern Nigeria call for a study in this region. Therefore, this study determined the prevalence of digit sucking, the knowledge and belief of caregivers, and factors associated with digit sucking among under five-year-old children in Ilorin, Northcentral, Nigeria.

Methods

The study was a cross-sectional survey involving children under the age of five years brought for medical consultation at the Children's Out-Patient Clinic of the University of Ilorin Teaching Hospital, Ilorin, Northcentral of Nigeria, between December 2016 and March 2017.

A minimum sample size of 136 was calculated using the Fishers formula [11] using a previously reported prevalence rate of 23%. [6] However, with a 10% non-response rate added to account for incomplete data, a total of 155 children were recruited. Children with physical or mental disabilities were excluded from the study. Ethical approval for the study was obtained from the Ethical Review Committee of the University of Ilorin Teaching Hospital. Written informed consent was obtained from the caregivers after providing them with the details of the study.

One hundred and fifty children were selected via systematic sampling from the list of children attending the clinic on study days. With an average of forty children seen weekly (every Tuesday) and the study designed to last for four months (December to March), ten children were recruited weekly (150/16 weeks). A sampling interval of 4 (40/10) was used; thus, one in every four children seen was drafted, and the next in line was recruited for those who declined consent. An interviewer-administered questionnaire was used to interview the caregivers of the recruited children. The questionnaire comprised questions on child's age, parent's educational status/occupation, family size, type of infant feeding from birth, breastfeeding duration, history of pacifier sucking, the onset of digit-sucking habit (if present at the time of data collection), as well as questions on the specific digit (s) sucked and the observed predisposing factors. The socio-economic classes of the respondents were determined using Oyedeji's model. [12]

Data analysis was carried out with SPSS statistical software version 20 (I.B.M. Corp. 2011 Washington). Categorical data were presented in frequencies and percentages. The caregivers' knowledge and belief on digit sucking were presented in tables as frequencies and percentages. Comparison of outcome variables

(categorical) with some associated factors was performed using the Chi-Square test. Comparisons with significant relationships were further subjected to multinomial/polynomial logistic regression. After a bivariate analysis, the parameters with a p-value <0.05 were also used for a binomial logistic regression analysis that compared children with digit sucking and those without digit sucking. Statistical significance was defined when $p < 0.05$.

Results

Socio-demographic profile of the subjects

The children comprised 75 (48.4%) males and 80 (51.6%) females. The median (IQR) age of the children was 9 (6-15) months. Two-thirds (67.4%) of the children were either of the middle or the lower socio-economic status. Six (3.9%) children belonged to polygamous families, while 149 (96.1) belonged to monogamous families. Other socio-demographic variables of the children are shown in Table I.

Table I: Distribution of socio-demographic profile of the subjects

Variable	*Frequency (%)*
Age group (months)	
2-<6	27 (17.4)
6-<12	75 (48.4)
12-<24	18 (11.6)
24-<36	9 (5.8)
36-<48	9 (5.8)
48-<60	8 (5.2)
60	9 (5.8)
Socio-economic classes	
Upper	49 (31.6)
Middle	65 (41.9)
Lower	41 (26.5)
Family type	
Monogamous	149 (96.1)
Polygamous	6 (3.9)

Prevalence of digit sucking

The prevalence of non-nutritive sucking was 45.8% (71/155); 68 (43.9%) sucked their digits, while 3 (1.9%) sucked pacifiers. Of the 68 children with digit sucking, the thumb and two other digits (the index and the middle fingers) were the preferred digits among 36 (52.9%) and 30 (44.1%) children, respectively, and the preferred digit was not stated for two (3.0%) children. Thirty-six (52.9%) sucked digits while awake, while 32 (47.1%) sucked while awake and or sleeping. Concomitant activities of the children while sucking digits included hair pulling (48/68; 70.6%), clothes drawing (9/68; 13.2%), and rubbing parts of the body (6/68; 8.8%). Five (7.4%) children had no concomitant activities during digit sucking.

Knowledge, attitude and belief of mothers about digit sucking

Twenty-seven (39.7%) of the mothers of children that sucked their digits believed it was a good practice. Close to a third (30.3%) felt digit sucking is soothing to the child. None of the

parents had ever sought medical care for their child, and none thought it required medical care. Bandaging the digit sucked was the most common home management instituted by 32 (47.21) of the mothers. Two-thirds (65.8%) of the caregivers believed it might lead to digit malformation. Other beliefs are shown in Table II.

Table II: Knowledge, attitude and belief of mothers about digit sucking

Variable	*Frequency (%)*
Mothers perceived reasons for digit sucking (n=68)	
When about to fall asleep	18 (26.5)
Habit	29 (42.6)
When hungry	15 (22.1)
No reasons	3 (4.4)
When angry	3 (4.4)
Mother's opinion of digit sucking (n=68)	
Bad	41 (60.3)
Good	27 (39.7)
Any beneficial effect of digit sucking?	
It soothes the child	47 (30.3)
Makes the child sleep more soundly	18 (11.6)
None stated	90 (58.1)
Home management for digit sucking (n=68)	
Bandage the finger	32 (47.1)
Engage the child in other activities to distract the child	3 (4.4)
Punish the child for finger sucking	6 (8.8)
Not known	3 (4.4)
Rub a bitter substance on the finger	24 (35.3)
Adverse effects stated by mothers	
Not known	39 (25.2)
Digit malformation	102 (65.7)
Frequent wound/infection of the affected finger	2 (1.3)
Tongue protrusion	6 (3.9)
Tooth malformation	6 (3.9)
Belief about digit sucking	
Not known	15 (9.7)
Finger sucking is a sign of a developmental disorder	6 (3.9)
Finger sucking is a sign of maternal deprivation	24 (15.5)
Finger sucking is a sign of teething	21 (13.5)
Finger sucking is inherited	89 (57.4)

Night only digit sucking, and big toe sucking were not considered.

Bivariate analysis of socio-demographic factors, feeding practice and digit sucking

Age group was statistically significantly associated with digit sucking as only three of the children that sucked digits were older than two years ($p < 0.001$). Significant associations were also found between digit sucking and socio-economic status, numbers of mothers' children and frequencies of feeds per day ($p = 0.033$, 0.003, <0.001 respectively), as shown in Table III.

Multi-nominal logistic regression analysis of factors independently associated with digit sucking

A binary multivariable logistic regression with age group, socio-economic status, family type and exclusive breastfeeding used as potential independent predictors of digit sucking is shown below in Table IV. Children aged 12 months or older had 28 times higher odds of digit sucking than the age group below 12 months. Children of mothers who were civil servants had seven times

higher odds of digit sucking than children whose mothers were housewives or students (Table IV).

Discussion

This study determined the burden, knowledge, attitude, and belief of caregivers (often the mothers) concerning digit sucking. A high load of digit sucking was found. Most mothers required health education and awareness as their knowledge, attitude and beliefs towards digit sucking was poor.

The prevalence of non-nutritive sucking and digit sucking in the current study were 45.8% and 43.9%, respectively. This is comparable to findings of 45.2% reported in Ibadan, [8] but higher than the 7.2%, 17%, 23% and 30.8% reported in Ife, Lagos, and Enugu, respectively, all in Nigeria. [3,5,6,13] It is equally higher than the 24.8% found in a study in Bitoli, Southern Europe. [14]

Table III: Bivariate analysis of socio-demographic factors, feeding practice and digit sucking

	Digit Sucking			
Variable	**Yes**	**No**	**χ^2**	**p-value**
Age group (months)				
<12	53	51	22.130	<0.001
12-24	12	6		
>24	3	30		
Gender				
Female	35	45	0.001	0.975
Male	33	42		
Maternal educational level				
None/primary	17	39	6.845	0.033
Secondary	39	39		
Tertiary	12	9		
Maternal occupational group				
Business	6	24	29.814	<0.001
Civil servants	39	15		
Artisan	5	15		
Petty trader	9	12		
Housewife	9	21		
Paternal educational level				
None/ primary	6	18	4.296	0.117
Secondary	30	36		
≥Tertiary	32	33		
Paternal occupation group				
Business	3	21	14.564	0.002
Civil servant	39	30		
Artisan	20	30		
Petty trader	6	6		
Number of mothers' children				
≥5	6	24	8.608	0.003
≤4	62	63		
Frequency of feeds per day				
≤5	45	30	22.673	<0.001
6-10	9	6		
>10	14	51		

Table IV: Multi-nominal logistic regression analysis of independent predictors of digit sucking

Variable	*B*	*p*	*OR (95% C.I)*
Age group (months)			
<12*			
≥12	3.342	0.002	28.26 (3.33-39.95)
Maternal educational level			
None/primary	-0.419	0.600	0.66 (0.14-3.14)
Secondary	0.276	0.687	1.32 (0.35-5.02)
Tertiary*			
Maternal occupational group			
Business	.380	0.618	1.46 (0.33-652)
Civil servant	1.916	0.003	6.79 (1.90-24.24)
Artisan	.393	0.627	1.48 (0.30-7.22)
Petty trader	1.052	0.228	2.86 (0.52-15.82)
Housewife/student*			
Number of children in the family			
≥5	0.124	0.875	1.13 (0.24-5.26)
≤4*			
Feeds per day			
≤5	0.622	0.258	1.86(0.63-5.47)
6-10	1.000	0.193	2.72(0.60-12.25)
>10*			

*** Reference group, B - predictive factor, OR - Odds ratio, C.I - Confidence Interval**.

This broad diversity in the prevalence rates reported from different parts of Nigeria and other countries may reflect geographical differences. The Nigerian studies were in the Southern part of the country (Southwest and Southeast). This had been earlier reported that digit sucking varied among different cultures based on the child-rearing practices. [10]

The variation in the studied age group may also explain the observed differences; while the present study was among children under five years, some of the earlier studies were among infants, toddlers, and preschool-age children. The similarity of the current research with the Ibadan study may be attributed to the fact that most of the subjects in the present study were aged 12 to 24 months, which are the age groups studied in Ibadan. The survey in Enugu enrolled preschool-aged children only compared with the present study, which may explain the observed difference.

About half of the children who sucked their digits in this study did so when they were either about to fall asleep or when perceived to be hungry. This is comparable to the findings by Ibekwe *et al.* in Enugu among infants. [3] The exact reason for the similarities is not known as the age groups studied are different, albeit both are hospital-based studies. Most of the mothers in the present study had a negative perception of digit sucking. Almost all of them attempted to stop the habit by discouraging or meting out punishments. This is similar to the findings by Ibekwe, *et al.* in Enugu, Southeast Nigeria. [3]

The fact that the use of pacifiers was low in the current study could have contributed to the higher prevalence of digit sucking as the other studies reported higher prevalence rates of pacifier usage. [3,6,8,9] The digits are readily accessible to the child as pacifiers are not offered; thus, a possible higher tendency for digit sucking.

Also, the current study showed a decrease in digit sucking with increasing age which is similar to earlier reports. [8,10] This finding of decreasing digit sucking with age may be attributed to the maturation, self-awareness and effects of schooling that accompany age advancement. It has been reported that there is a reduction in the prevalence of non-nutritive sucking with increasing age, thus explaining the higher prevalence in the current study.[10]

The current study showed that children of mothers who were civil servants had higher odds of digit sucking than children of mothers who were housewives and are readily available, similar to the report from other studies. [4,6] Perhaps, the civil servants' mothers have limited time for their children and often may have to drop the children in nurseries and crèches. Thus, the children learn to derive comfort from digit sucking.

Conclusions

There was a high burden of non-nutritive and digit sucking in the population studied, particularly among children aged 12 to 24 months. The higher odds of digit sucking among children of civil servants mothers may suggest digit sucking for comfort from some form of emotional deprivation. Interestingly, most mothers in the present study have negative perceptions about digit sucking. The high burden of digit sucking makes hand hygiene and environmental cleanliness a needed priority to safeguard against infections such as respiratory and diarrheal diseases. There is a need for more awareness creation and health education of caregivers/mothers on digit sucking in early childhood.

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