

Consequences of Thumb Sucking Habit among School Going Children: A Cross Sectional Study

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ABSTRACT:

Background: Thumb-sucking, a non-nutritive sucking behavior, is a natural reflex seen in infants but can persist into childhood if not addressed leading to various dental and orofacial issues, including malocclusion, dental arch deformities, speech difficulties, and facial asymmetry. The aim of the study was to explore the consequences of thumb-sucking habits among the school going children. **Methods:** This cross-sectional study involved among purposively selected 124 school going children, aged between 5-8 years with their parents attended in the outpatient department of University Dental College at Moghbazar, Dhaka, Bangladesh. The data were obtained through a pretested structured questionnaire and checklist through face-to-face interview from parents regarding background characteristics, consequences of thumbs sucking and oral examination of children respectively. Then, data were analyzed using statistical package for social sciences (SPSS) software version 27 for descriptive analysis (frequency, percentage) and inferential statistics (chi-square test or fisher's exact test) at 5% level of significance ($P < 0.05$). **Results:** The study revealed that 77.4% of children aged 5-6 years and about 41.9% of parents reported that their child had thumb sucking habit. The thumb sucking habit was found to be statistically significant with start of age thumb sucking ($p = < 0.001$), duration of thumb sucking ($p = < 0.001$), pronunciation of word clearly ($p = < 0.001$), proclination of maxillary anterior teeth ($P = 0.002$), asymmetry of face ($P = 0.002$) and seek for dental advice or treatment ($p = 0.002$). Majority of children (21.8%) start thumb sucking at the age 6-7 years. Only 8.1% of the children didn't pronounce words clearly whereas only 5.6% had proclined maxillary anterior teeth, facial asymmetry and sought dental advice or treatment. **Conclusion:** This study found a significant association of thumb-sucking habit among children with notable consequences. It highlights the importance of early intervention and parental education and awareness regarding this habit's potential consequences on children's oral health and overall development.

KEY WORDS: School going children, Thumb sucking habit

INTRODUCTION:

Thumb Sucking is considered as one the comforting behaviors during the early childhood of individuals.¹ According to Gellin Thumb sucking means "placement of thumb or one or more fingers in varying depths into the mouth".² The development of different habits are considered as a part of the normal maturation process in children but can have the potential to become a harmful one, under different circumstances of physical, mental, and socioeconomic stress.³ Thumb-sucking might develop as a habit in young children who might use it to comfort themselves in certain situations like when they feel hungry, restless, afraid, quiet, bored, or sleepy.⁴

The prevalence of sucking habits was 48.36% with the dummy-sucking as the dominant type and had broken their habits in the first few years of life while the more digit-suckers were still persistent at age 5 years reported by Farsi *et al.*² The persistence of thumb sucking habit might leads to several harmful consequences like facial deformity caused by anterior open bite, delayed or abrupt tooth eruption, increased overbite, development of posterior crossbite and speech or phonological problems.⁵ The management protocol of thumb sucking habit is wide spectrum approach that starts from reassurance of the child, application of non-invasive substances (bitter compounds) to thumb guard, habit reminder and habit breaking appliances.⁶

Malocclusion of teeth & jaw is an important dental public health problem its high morbidity potential has brought this problem into the focus of dental health professionals thus the different studies

were carried to figure out the association of thumb sucking habit.^{7,8} The objective of the study is to explore the consequences of thumb sucking habits among the school going children in Dhaka city, Bangladesh.

METHODS

This cross-sectional study was conducted among school going children in the age group of 5 to 8 years of age, at Outpatient department (OPD) of University Dental College & Hospital, Moghbazar, Dhaka. To carry out this study, respondents were selected using non-probability purposive sampling technique. A total of 124 children were enrolled with their parents in the study. The data were collected through a pretested structured questionnaire and checklist through face to face interview of parents and oral examination of the children respectively. Descriptive statistics were done by frequency, percentages and inferential statistics in order to figure out the association between thumb sucking habit with its consequences and demographic variable using chi square and fisher's exact test at 5% level of significance ($P < 0.05$). Data were analyzed using IBM SPSS 27 software.

Ethical considerations were observed throughout the study. Permission was obtained from the hospital director of the University Dental College, and informed consent was obtained from the parents to collect demographic information and conduct oral examinations on their children.

RESULTS

In terms of child age, the distribution showed that 77.4% of children were aged 5-6 years, and 22.6% were aged 7-8 years. The sex distribution of children indicated that 46.7% were male and 53.3% were female. The educational levels of children were categorized as follows: nursery (43.5%), KG (25.9%), class 1-3 (29.0%), and class 4-5 (1.6%). The medium of education for children was reported as follows: Bangla (66.1%), English (30.7%), and Arabic (3.2%). (Table 1).

Table 1: Background information of child (n=124)

Variable	f (%)
Child age (Years)	
5-6	96 (77.4)
7-8	28(22.6)
Sex	
Male	57(46.7)
Female	65(53.3)
Level education	
Nursery	54(43.5)
KG	32(25.9)
Class 1-3	36(29.0)
Class 4-5	2(1.6)
Medium of education	
Bangla	82(66.1)
English	38(30.7)
Arabic	4(3.2)

f= frequency, %= percentage, KG=Kindergarden

Table 2: Background information of parents (n=124)

Attributes	f (%)
Gender	
Male	38 (30.6)
Female	86 (69.4)
Religion	
Islam	114 (91.9)
Hindu	10(8.1)
Highest level of education	
No formal education	2(1.6)
Primary	10(8.0)
SSC	40(32.3)
HSC	40(32.3)
Graduation	16 (12.9)
Post graduation	16 (12.9)
Monthly family income (Taka)	
10000-50000	76 (61.2)
50000-90000	48(38.8)
Occupation	
service holder	30 (24.2)
Doctor	4(3.2)
Business	11(8.9)
Housewife	79(63.7)
Type of family	
Nuclear family	80 (64.5)
Joint family	44 (35.5)
Number of children	
1-2	110(88.7)
3-4	14(11.3)

f= frequency, %= percentage

In Table 2, The gender distribution of the participants revealed that 38 (30.6%) were male and 86 (69.4%) were female. In terms of religion, the majority of participants identified as Islam (91.9%), while a smaller proportion identified as Hindu (8.1%). Regarding the highest level of education attained, the participants' distribution was as follows: no formal education (1.6%), primary education (8.0%), SSC (32.3%), HSC (32.3%), graduation (12.9%), and post-graduation (12.9%). The monthly family income in Taka showed that 61.2% of participants fell within the 10000–50000-taka range, and 38.8% fell within the 50000 to 90000 taka range. In terms of occupation, the participants were distributed across various categories: service holders (24.2%), doctors (3.2%), business (8.9%), and housewives (63.7%). The type of family structure varied, with 64.5% of participants belonging to nuclear families and 35.5% to joint families. The number of children per family was predominantly 1-2 children (88.7%), while a smaller percentage had 3-4 children (11.3%).

Table 3: Association between thumb sucking habit and its consequence

Consequence of thumb sucking	Thumb sucking		P value
	Yes f (%)	No f (%)	
	52 (41.9)	72(58.1)	
Start of age of thumb sucking			< .001**
No age	0(0.0)	72(58.1)	
5-6 year of age	4 (3.2)	0(0.0)	
6-7 years of age	27 (21.8)	0(0.0)	
7-8 years of age	21 (16.9)	0(0.0)	
Duration of thumb sucking			< .001**
No duration	(0.0)	72(58.1)	
Less than one month	24(19.4)	0(0.0)	
1-6 months	16(12.9)	0(0.0)	

6-12 months	12(9.7)	0(0.0)	
Pronunciation of word clearly			< .001**
Yes	10(8.1)	72(58.1)	
No	42(33.9)	0(0.0)	
Breathing through nose			.174
Yes	2(1.6)	0(0.0)	
No	50(40.3)	72(58.1)	
Pattern of disfigurement of thumb			.071
Yes	3(2.4)	0(0.0)	
No	49(39.5)	72(58.1)	
Development Fungal lesion develop			.174
Yes	2(1.6)	0(0.0)	
No	50(40.3)	72(58.1)	
Proclination of maxillary anterior teeth			.002*
Yes	7(5.6)	0(0.0)	
No	45(36.3)	72(58.1)	
Retroclination of mandibular anterior teeth			.174
Yes	2(1.6)	0(0.0)	
No	50(20.3)	72(58.1)	
Asymmetry of face			.002*
Yes	7(5.6)	0(0.0)	
No	45(36.3)	72(58.1)	
Complete closure of lip			.071
Yes	49(39.5)	72(58.1)	
No	3(2.4)	0(0.0)	
Visit to dentist for advice or treatment			.002*
Yes	7(5.6)	0(0.0)	
No	45(36.3)	72(58.1)	

*significant, ** highly significant, f=frequency, %=percentage

Table 3 represents the distribution of participants based on their thumb sucking habit and the observed consequences. Of the participants, 41.9% (n = 52) reported engaging in thumb sucking, while 58.1% (n = 72) did not exhibit this habit. A significant association was found between the age at which thumb sucking began and the habit itself (P <.001). The distribution of start of age thumb sucking was as follows: less than 5-6 years of age (3.2%), 6-7 years of age (21.8%), and 7-8 years of age (16.9%). The duration of thumb sucking also showed a significant association with the habit (P <.001). Among those who engaged in thumb sucking, 19.4% reported doing so for less than one month, 12.9% for 1-6 months, and 9.7% for 6-12 months. Of the participants who engaged in thumb sucking, 8.1% (n = 10) were able to pronounce words clearly, while 33.9% (n = 42) had difficulty, which was found to be statistically significant (p <.001). Moreover, 1.6% (n = 2) reported difficulty breathing through their nose, whereas 40.3% (n = 50) had no such issues. The finding was that there was no statistically significant relation between thumb-sucking habits and breathing through the nose (p =.174). Among thumb-sucking participants, 2.4% (n = 3) showed a disfigurement pattern, while 39.5% (n = 49) did not (p =.071). Whereas only 1.6% (n = 2) developed fungal lesions, while 40.3% (n = 50) did not (p = .174). The

association between thumb-sucking habit and proclination of maxillary anterior teeth is statistically significant (p =.002). Among thumb-sucking participants, 5.6% (n = 7) sought advice or treatment from a dentist, while none of the non-thumb-sucking participants required such assistance. Additionally, 36.3% (n = 45) of non-thumb-sucking participants visited a dentist for advice or treatment. The results also showed that there is a statistically significant correlation between thumb sucking and proclination of the maxillary anterior teeth (p =.002). Upper tooth proclination was seen in 5.6% (n = 7) of the thumb-sucking individuals but not in any of the non-thumb-sucking participants. Additionally, 36.3% (n = 45) of the subjects who did not thumb-suck had protruding upper teeth. Thumb-sucking behavior and mandibular anterior teeth retroclination were not significantly associated (2 = 2.433, df = 1, p =.174). Retroclination of the lower anterior teeth was seen in 1.6% (n = 2) of the thumb-sucking individuals, while it was present in 20.3% (n = 50) of the non-thumb-sucking participants. Statistics show that there is a statistically significant correlation between thumb sucking and facial asymmetry (p =.002). There was a statistically significant association between thumb sucking and facial asymmetry (p =.002). Facial asymmetry was present in 5.6% (n = 7) of thumb-sucking participants but not in any of the non-thumb-sucking subjects. Additionally, 36.3% (n = 45) of the subjects who did not thumb-suck displayed facial asymmetry. Statistics showed that there is no association between the behavior of sucking one's thumb and the capacity to totally seal one's lips (2 = 3.383, df = 1, p =.071). 39.5% (n = 49) of thumb-sucking individuals were able to completely seal their lips, whereas 2.4% (n = 3) had trouble doing so. Moreover, among participants who engaged in thumb sucking, 5.6% (n = 7) sought advice or treatment from a dentist. In contrast, none of the non-thumb-sucking participants required dental assistance. Additionally, 36.3% (n = 45) of participants who did not engage in thumb sucking visited a dentist for advice or treatment, which was statistically significant (p =.002).

DISCUSSION

The current study results indicated that only 21.8% of children have represented thumb sucking habit in 6-7 years old children. Similar result was observed in the study by Johara *et al* regarding attitude of Saudi mothers towards non-nutritive sucking habit.⁹ The study showed prevalence of non-nutritive sucking habit among the children in Saudi preschool children was evaluated in relation to age, occupation, socio- economic condition, mothers level of education etc. The study was carried out through questionnaire & clinical examination. The result showed that the prevalence of digit sucking was 25% among them which is similar to our study. A cross-sectional study was conducted with 1,190 children of both sexes, aged 3 to 5 years, enrolled in day care centres and preschools in Natal, Brazil. A prevalence of 40.2% of non-nutritive sucking habits was obtained; of these, 12.5% were finger-sucking habits which are correlated with present study. In present study maximum number of parents (87.1%) having the knowledge that thumb sucking is bad for child consistent with previous studies.¹⁰ The harmful effect of non-nutritive sucking habits to the child's dentition was recognized by the majority of mothers (88.7%) in Al Johor A. Al-Hussein study. This is comparable with Al-Jobair and Al-Emran¹¹ (2004) findings that suggested mothers noticed the adverse effects of prolonged sucking habits on their children's teeth. Moreover, another study was carried out by Viggiano *et al.* regarding the effects of non-nutritive sucking habit on occlusion

in 3-5 years old children. The result revealed the occlusal problem anterior open bite (4%) in case of non-nutritive sucking habit which is similar (5.6%) to our study as well.¹² A cross sectional study aged 2-5 years old in Hong Kong was carried out by Ling *et al.* The result of the study showed that the child who demonstrated prolonged thumb sucking habit are more associated with the dental occlusal problems like increased overjet, class II relation of incisors and anterior open bite. The results are quite similar with our study that child are suffering for incisor relation problems.¹³ This study shows that the mothers are concerned about sucking habits and recognize the harmful effect on their children; they are in great need for education about ways of preventing the habits in the first place as well as professional advice and help in treatment cessation of those already established. Following the eruption of first permanent teeth, the sucking habit exhibits an irreversible negative effect on facial symmetry, jaw, tooth relation and occlusion.¹⁴ Thus the awareness of parents must be created in order to minimize the adverse effects. Multidisciplinary approach, consent and cooperation are great keys to break thumb sucking habit when its established.¹⁵

CONCLUSION

The findings revealed that a substantial proportion of children engaged in thumb-sucking, with significant correlations identified between the habit and adverse consequences, including delayed speech development, upper tooth proclination, and facial asymmetry. Additionally, a noteworthy number of thumb-sucking children sought dental advice or treatment. These results underscore the importance of addressing and educating parents about the potential implications of thumb-sucking on their children's oral health and overall development. Future studies should use longitudinal approaches to investigate causal links. To educate parents about the possible effects of thumb-sucking and to encourage early intervention and dental treatment, when necessary, public awareness campaigns and educational programs should be created.

LIMITATIONS:

Even though this study offers insightful information, it is vital to recognize some limitations. First off, using cross-sectional data limits our capacity to determine causality or look at long-term trends. Second, the study relied on parental self-reporting, which could induce bias in the reporting. The study was further restricted in its capacity to generalize to larger populations because it was carried out in a single site. Finally, the sample size of the study could not accurately reflect the larger population

CONFLICT OF INTEREST: The authors declare no conflict of interest.

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DATA AVAILABILITY STATEMENT: The data presented in this study are available on reasonable request from the corresponding author.

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