

# Knowledge and Attitudes of Parents Regarding Digit Sucking Habit in Children in Pune: A Questionnaire-based Cross-sectional Study

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## ABSTRACT

**Introduction:** Digit sucking is a most common oral fixation observed in children, which involves placement of thumb or fingers into the mouth. Knowledge of the risk factors for the presence of this habit helps to provide a better understanding of the phenomena and is of great significance to the establishment of preventive measures, which can avoid the damage caused by the persistence of these habits.

**Aim:** To evaluate the knowledge and attitude of parents of children aged between 3-6 years regarding digit sucking habit.

**Materials and Methods:** A cross-sectional study was carried out in the Department of Paediatric and Preventive Dentistry, belonging to urban and semi-urban area of Pune, Maharashtra, India from December 2020 to May 2021. A total of 310 parents of children, aged between 3-6 years were included. A close-ended questionnaire was administered to parents to assess their knowledge and attitude regarding digit sucking habit in children. Completely filled questionnaires were considered for result synthesis. The data obtained was tabulated and

descriptive data were statistically analysed using software International Business Machines (IBM) Statistical Package for the Social Sciences (SPSS) version 21.0.

**Results:** Although 229 (73.9%) of parents agreed that for achieving good oral health prevention of digit sucking habit is essential, but 197 (63.5%) parents were unaware of the predisposing factors for digit sucking habit. A total of 195 (62.9%) parents did not agree that inadequate parental attention may lead to thumb sucking habit. A total of 197 (63.5%) parents agreed that prolonged digit sucking can cause misaligned teeth but majority of the parents 205 (66.1%) and 166 (53.5%) disagreed on its effects on facial growth and speech, respectively. A total of 219 (70.6%) parents did not receive any scientific information or counselling from healthcare worker regarding sucking habit. A total of 299 (96.5%) of parents agreed that guidance from healthcare workers is needed regarding oral habits in children.

**Conclusion:** Present study concluded that the attitude towards learning about digit sucking habit was good the knowledge of the study participants was poor.

**Keywords:** Awareness, Guardian, Oral health, Thumb sucking

## INTRODUCTION

Digit sucking is a non nutritive sucking habit, which involves placement of thumb or fingers into the mouth. It is a rhythmically repeated practice which retains for a prolonged duration, it is considered normal in children under three years of age, commonly seen in infants which starts around at 29<sup>th</sup> week of gestation, and it peaks at 18-21 months [1]. As stated by many psychologists, this habit is a characteristic reflex of newborn babies as a calming technique and for relaxation to fight anxiety in the first month of life. Other factors responsible for retention of this habit is to comfort the child when they are bored, tired, worried, or stressed in order to provide happiness and a sense of security [2].

The prevalence of this habit is variable across different societies and culture, it is usually observed in urban and rarely in few regions of Africa, Asia and among eskimos [3]. Factors influencing this habit are child's age, sex, socio-economic level, geographic area and racial background [4]. Relative prevalence rate of digit sucking habit in school-going children from 8.7% of Maharashtra population to 12.8% of Bhubaneswar population [5,6]. According to Duncan prevalence rate of non nutritive sucking beyond three years is around 40-76% [7]. There is a spontaneous cessation of this habit with age often observed by 3-4 years. Also, there is lower prevalence for non nutritive sucking habit mostly observed in children aged 3-6 years who were breastfed for nine months or longer [8].

According to Graber's triad prolonged digit sucking with sufficient frequency, intensity, and duration can contribute to detrimental changes in occlusion and facial development [9]. The most common detrimental effects are anterior open bite due to placement of thumb which hampers the eruption of anterior teeth, posterior cross bite, increase in overjet and overbite, and there is a high tendency to develop Class II molar relation and muscular imbalance. This habit can also serve as a source of infection and effect social acceptance among peers and self-esteem of the child [10,11]. Few deleterious effects associated with the digit sucking may be digital deformation, tooth malposition, disturbed breathing habits, difficulties in speech, psychological problems, imbalance of the facial musculature, and impeded osseous growth [12].

Attitude of different ethnic groups towards oral habits varies since there is disparity in their beliefs, culture, and awareness, as well as socio-economic development and caring level [13]. According to Van Norman RA parent's negligence and hesitancy towards acceptance of digit sucking is an important predisposing factor for prolonged digit sucking [14]. Digit sucking habit is considered to be a normal phenomenon in early childhood period, parental knowledge about the time of cessation of the habit, causes for prolonged digit sucking and its detrimental effect on oral health are important for timely intervention and prevention of digit sucking habit. Counselling of the parents regarding oral habits is also an integral part of anticipatory guidance. In an article by

Johnson SK, uploaded in the newsletter section of American Academy of Paediatric Dentistry (AAPD) (2010) has suggested for launching an intervention program named “plan of attack” in order to counsel and guide the parent regarding immediate and longterm effects of this habit on the craniofacial complex and dentition [15].

Very few studies were conducted to evaluate the knowledge and attitude of parents regarding digit sucking habit in children in India [3,16]. Therefore, the current study was undertaken to evaluate the knowledge and attitude of parents regarding digit sucking habit in children. This study will help in developing approaches for educating parents regarding the prevention of pernicious oral habits so that they can identify and seek timely intervention to curtail these habits developed in their children.

## MATERIALS AND METHODS

This cross-sectional questionnaire based study was done in Department of Paediatric and Preventive Dentistry, Dr. DY Patil Dental College and Hospital, Pune, Maharashtra, India over a period of six months from December 2020-May 2021. Permissions from Institutional Ethical and scientific Committee (IEC) were taken prior to the study (IEC approval no: DYPCH/IEC/164/152/20).

**Inclusion criteria:** Parents of children aged between 3-6 years reporting to the outpatient department and those who agreed to participate were included in this study.

**Exclusion criteria:** Parents who lacked cognitive abilities to respond to questionnaire were excluded and incompletely filled questionnaires were also removed before result synthesis.

**Sample size calculation:** Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [17] were used to ensure accurate reporting of this questionnaire. The sample size was calculated to be 310, with a margin of error 5% and a confidence level of 95%.

### Study Procedure

Before the development of questionnaire, a preliminary exploratory study using open-ended questionnaire and one to one interview with parents was done to identify the domains under which the questionnaire needs to be prepared. The exploratory study was carried out until the saturation of domains was reached. To devise the questionnaire, previous study on the similar topic was also reviewed by the researchers [12]. The 22 prefinal questions were then pretested for face validity and reliability. The questions reported a consistency of 0.84 (Cronbach's Alpha value) among the six experts, two of the questions reported a lower score and hence had to be removed from the questionnaire. After understanding the response of the participants in the pretest, the ambiguity of options was evaluated. Consequently, the questionnaire was then modified and used for this study. The final questionnaire consisted of 20 closed-ended questions, and the respondents were allowed to choose only one option.

Knowledge score of the parents was calculated by summing up the correct responses for the 10 knowledge questions. Each correct question was allotted a score of 1 and the minimum and maximum score for knowledge questions ranged from 0-10. A knowledge score of 0-2 was graded as poor, 3-5 as average, 6-8 as good and 9-10 as excellent.

## STATISTICAL ANALYSIS

The data obtained was tabulated and analysed using software IBM SPSS version 21.0. Categorical variables were expressed as the number and the percentage. Continuous variables were expressed as mean and standard deviation.

## RESULTS

**Population characteristics:** The total responses filled were 310, out of which 237 (76.5%) were filled by mothers and 73 (23.5%) filled by fathers. The mean age of the children was 5.11±0.94 years with an age range of 3-6 years. The mean age of mothers was 26.7±5.23 years and of fathers was 34.2±3.90 years. The majority of the mothers had intermediate level education followed by the secondary education, whereas majority of fathers were educated till institute and college level i.e., 201 (64.8%). When enquired about the occupational status of the mothers, it was found that the majority of the mothers of the study children were housewives whereas all fathers were employed. Majority of parents had two children [Table/Fig-1].

Variables	Mean±SD/n (%)
<b>Age (years)</b>	
Children	5.11±0.94
Mother	26.7±5.23
Father	34.2±3.90
<b>Educational status of Mothers</b>	
Primary	41 (13.2)
Intermediate	120 (38.7)
Secondary	98 (31.6)
Institute and college	51 (16.5)
<b>Educational status of Fathers</b>	
Intermediate	48 (15.5)
Secondary	61 (19.7)
Institute and college	201 (64.8)
<b>Working status of Mother</b>	
Employed	46 (14.8%)
Unemployed	264 (85.2%)
<b>Working status of Fathers</b>	
Employed	310 (100)
Unemployed	0
<b>No. of children</b>	
1 child (single child)	84 (27.1)
2 children	167 (53.9)
3 children	59 (19.0)

[Table/Fig-1]: Population characteristics.

**Knowledge based questions:** Majority of the parents considered digit sucking to be normal upto the age of 1-2 years 235 (75.8%), starting from toddler period 198 (63.9%). The main reason behind this habit was not known by most of the parent 197 (63.5%). A total of 211 (68.1%) of the study population agreed that retained digit sucking habit was due to insufficient breast feeding and 36 (11.6%) parents felt that other contributing factors can be the urge to suck digit in order to engage themselves, whereas 195 (62.9%) of parents disagreed that lack of attention can be one of the add on factor to this habit. When talked about the effects of digit sucking, 197 (63.5%) of parents thought it may lead to malalignment of permanent teeth. The effect on the facial growth, appearance of the child was recognised by 205 (66.1%) of parents and speech defects by 166 (53.6%). However, 187 (60.3%) of the parents were not aware of the psychological effects of digit sucking [Table/Fig-2].

The cumulative overall knowledge score was found to be poor as observed in 242 (78.3%) of the sample population [Table/Fig-3].

In present study, majority of the parents had positive attitude. A total of 229 (73.9%) of parents agreed that prevention of digit sucking habit is important to maintain good oral health in children.

S. No.	Knowledge related question	Options	n (%)
1.	Digit sucking normally starts in which stage of childhood?	Infancy period (from birth to 1 year old)	80 (25.8)
		Toddler period (1-3 years of age)	198 (63.9)
		Preschool period (3-5 years of age)	6 (1.9)
		School period (after 5 years of age)	3 (1.0)
		Don't know	23 (7.4)
2.	Children suck their fingers to?	Engage themselves	36 (11.6)
		Avoid food	18 (5.8)
		Soothe self	33 (10.7)
		Get attention	11 (3.6)
		All of the above	15 (4.8)
		Don't know	197 (63.5)
3.	Upto what age is thumb sucking considered normal in children?	1-2 years	235 (75.8)
		3-4 years	25 (8.1)
		5-6 years	1 (0.3)
		6-7 years	24 (7.7)
		Not acceptable at any age	25 (8.1)
		Don't know	0
4.	Do you agree with the statement "Insufficient breast feeding can lead to digit sucking"?	Yes	211 (68.1)
		Maybe	24 (7.7)
		No	41 (13.2)
		Don't know	34 (11.0)
5.	Do you think that if digit sucking habit is NOT stopped early it leads to deep rooted habit and is difficult to stop?	Yes	30 (9.7)
		Maybe	24 (7.7)
		No	4 (1.3)
		Don't know	252 (81.3)
6.	Does attention deficiency and inadequate parental care towards child plays a role in development of digit sucking habit?	Yes	48 (15.5)
		Maybe	56 (18.1)
		No	195 (62.9)
		Don't know	11 (3.5)
7.	Can digit sucking habit have an effect on facial growth and appearance of child?	Yes	38 (12.3)
		Maybe	205 (66.1)
		No	38 (12.3)
		Don't know	29 (9.3)
8.	Thumb sucking habit can have a psychological effect on the child?	Yes	42 (13.5)
		No	21 (6.8)
		Maybe	60 (19.4)
		Don't know	187 (60.3)
9.	Can prolonged thumb sucking cause permanent misalignment of teeth?	Yes	197 (63.5)
		No	32 (10.3)
		Maybe	40 (13)
		Don't know	41 (13.2)
10.	Can prolonged/retained digit sucking result in speech defects?	Yes	31 (10.0)
		No	166 (53.6)
		Maybe	50 (16.1)
		Don't know	63 (20.3)

[Table/Fig-2]: Responses of knowledge based questions.

Grading score	Mean±SD
Poor (0-2)	1.7±0.5
Average (3-5)	4.0±0.7
Good (6-8)	6.1±0.4
Excellent (9-10)	0

[Table/Fig-3]: Knowledge score of the participants.

According to 248 (80%) of the parents a healthcare professional will have a better approach for prolonged digit sucking habit. Preponderant 299 (96.5%) parents were keen to be guided by professionals regarding digit sucking habit and there deleterious effects [Table/Fig-4].

S. No.	Attitude related question	Response	n (%)
1.	Is oral health an integral part in child's healthcare?	Yes	251 (81.0)
		No	23 (7.4)
		Maybe	2 (0.6)
		Don't know	34 (11.0)
2.	Is prevention of digit sucking habit important to maintain good oral health in children?	Yes	229 (73.9)
		No	20 (6.5)
		Maybe	39 (12.6)
		Don't know	22 (7)
3.	According to you does digit sucking require an immediate intervention to stop the habit?	Yes, irrespective of the age of the child	222 (71.6)
		Yes, but depending on the age of the child	50 (16.1)
		No intervention required	12 (3.9)
		Don't know	26 (8.4)
4.	Do you think parents have a key role in early identification and timely management of digit sucking habit?	Yes	223 (71.9)
		No	25 (8.1)
		Can't say	62 (20)
5.	According to you, how should the child with digit sucking habit is to be approached?	Scolding the child	4 (1.3)
		Giving punishments	3 (1.0)
		Encouraging the child to stop the habit	261 (84.2)
		Don't know	21 (6.8)
6.	If your child gets involved in prolonged digit sucking habit what will you do to stop the habit?	Wrap the hand with cloth	6 (1.9)
		Application of bitter substance, glove or nail polish on fingers	19 (6.1)
		Refer to a healthcare professional	248 (80.0)
		Don't know	37 (12)
7.	Do you think "digit-sucking" is a condition which needs medical attention by doctors?	Yes	228 (73.5)
		Maybe	35 (11.3)
		No	26 (8.4)
		Don't know	21 (6.8)
8.	Do you want to learn more about digit sucking habit, its prevention and management?	Yes	262 (84.5)
		No	8 (2.6)
		Can't say	40 (12.9)
9.	What is your source of your information about digit sucking habit?	Internet/ Social media	24 (7.7)
		Newspapers/Magazines	2 (0.7)
		Friends	23 (7.4)
		Colleagues	11 (3.6)
		Healthcare professional	31 (10.0)
		None	219 (70.6)
10.	Do you think healthcare workers should guide you regarding oral habits and its harmful effect?	Yes	299 (96.5)
		No	0
		Can't say	11 (3.5)

[Table/Fig-4]: Responses for attitude based questions.

## DISCUSSION

This digit sucking habit is a characteristic reflex for children which are considered to be normal upto the age of 2-3 years with a reported prevalence of 20-30% [18]. Early and timely intervention is necessary to effectively manage this habit, as with time this habit becomes deep rooted which in turn is difficult to manage.



Since children are dependent population on their parents, their awareness regarding oral habits and how to intervene it at an early stage of development may be an important consideration in attempts to improve children's oral health. However, previous researches have stated that parents often lack the proper knowledge and motivation to cope with the causes of this condition, and fail to request assistance from dentists when necessary [16,19]. Interestingly, Van Norman RA suggested that older children who request assistance to quit the habit are already emotionally wounded because of the habit itself and because of the negative responses resulting from their environment [14].

In present study, it was observed that the parents had poor knowledge regarding digit sucking habit. This was in agreement with a study performed by Shah K and Parikh U, they showed average knowledge among parents about digit sucking habit in Ahmedabad [16]. This major lacunae in the knowledge score was in regards to normal age upto which digit sucking is considered normal, aetiology behind retained digit sucking and the effect of prolonged digit sucking on speech defects.

In present study, majority of the respondents considered that digit sucking is normal till only 1-2 years of age. The thumb sucking habit which begins since birth is considered physiologically normal upto 2 years of age as stated by Davidson L and upto four years according to Al-Hussyeen AJ [11,13]. In their study, they found that 48% of the mothers did not considered digit sucking normal at any age while 24% accepted it till age of two years. Similarly in 2010 a study by Al Johara A concluded that, 69% mothers never tolerated the non nutritive sucking habits [20].

Van Norman RA has reported that when a child tries to control sucking activity during school time, he starts showing signs of disruptive behaviour and may have difficulty in sitting still [14]. This could further impact the focus on subject, writing and communication skills. However, in present study maximum parents were unaware of the psychological effects of digit sucking habit.

When the knowledge score was compared with the educational status of the parents insignificant results were obtained. A contrasting result was observed by Al-Hussyeen AJ that educated and unemployed mothers had more concern for the effects of these habits when compared with highly educated mothers, the reason quoted was due to lack of attention given by working mothers to the child [13] and Warren JJ et al., observed that it may be due to insignificant attitude of mothers with high and low educational status towards the habit [13,21].

In present study, it was found that despite having a poor knowledge score, the parental attitude towards the habit correction was good. Similar to present findings Antony TL et al., also reported in their study that 78% were keen to prevent their children from this habit [22]. Another author Vadiakas G et al., also reported in their study that 71% of the mothers attempted to stop the behaviour [23]. On the contrary in a study conducted by Chopra A et al., the attitude of only 32% of the mothers was acceptable and they were aware of the proper measures taken against the habit, and to prevent there side-effect [3]. Al-Hussyeen AJ in their study reported that on paediatric consultancy, the mothers were advised that there is no need to intervene in the process of development of this habit, and children will stop it by themselves [13]. Similar results were also concluded by Vadiakas G et al., paediatrician had lack of information regarding management of this habit and the role of dentist, only few (0.05%) of them referred effected children to dentists [23]. This may be due to the fact that these paediatricians wanted to safeguard children from any punitive measures that parents may employ [1].

## Limitation(s)

The main limitation of the study was that all the study subjects were taken from the outpatient department of a tertiary care hospital, therefore the study participants were of almost similar socio-demographic characteristics. Studies including participants from different socio-demographic sections are needed to clearly understand parental perceptions towards digit sucking habit.

## CONCLUSION(S)

In present study, it was found that the knowledge of the sample participants was poor irrespective of their educational status. The attitude towards learning about digit sucking habit was good among study participants. Based upon the results of this study, there is a need to organise awareness programs through our existing healthcare system to enhance the knowledge among parents regarding this deleterious habit. The awareness among the parents can be created through Anganwadi workers, multipurpose healthcare worker and paediatricians.

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