

## The prevalence of finger sucking habit among preschool children in Kerman, Iran

*Hamid Reza Poureslami DDS, MSc<sup>1</sup>, Mohammad Reza Abolbashari DDS, MSc<sup>2</sup>, Hoda Shamsadin<sup>3</sup>, Hamid Sharifi DVM, PhD<sup>4</sup>, Parnian Poureslami<sup>5</sup>*

### Original Article

#### Abstract

**BACKGROUND AND AIM:** The purpose of this study was to determine the prevalence of finger sucking habit among three-six-year-old children from kindergartens of Kerman, Iran.

**METHODS:** This descriptive, cross-sectional study used census sampling to select 1000 children from 40 kindergartens. Data was collected by a checklist and clinical examination. Chi-square test in SPSS<sub>16</sub> was used for statistical analysis.

**RESULTS:** The prevalence of finger sucking habit was 3.4%. There was no statistically significant relation between gender and the habit. Pacifier sucking habit was not an influencing factor in finger sucking habit. Most children (47.06%) had received exclusive breastfeeding. Anterior open bite was seen in 50.00% of the children with finger sucking habit.

**CONCLUSIONS:** This study showed the decreased prevalence of finger sucking habit compared to similar studies. This difference might have been caused by the type of feeding (about 50% of the children in the present study were breast-fed).

**KEYWORDS:** Finger and Thumb Sucking, Prevalence, Oral Habits, Breast-Feeding

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Non-nutritive sucking, that is a the sucking of fingers, an empty breast, etc., starts during the 16<sup>th</sup> to 29<sup>th</sup> weeks of a baby's life and may continue in different forms to satisfy a baby's needs to touch.<sup>1</sup> The need for sucking fingers is the highest in the first three months after birth and reduces gradually. However, the sucking habit which is still persistent in the sixth month has another reason. Bottle-fed babies and those with limited access to breast feeding satisfy their sucking instinct by

sucking pacifiers or fingers and taking things like blankets, sheets, and toys into their mouth. This brings them pleasure, confidence, and security. Even when the sucking motive (breast milk) diminishes due to reduced mother's milk or increased ability of the baby to eat, sucking fingers may still be used as a way of relaxation.<sup>2</sup>

Finger sucking does not necessarily indicate an illness or lack of environmental adaptation. Many studies have in fact reported opposite relationships between this

1- Associate Professor, Kerman Oral and Dental Diseases Research Center, Department of Pedodontics, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran

2- Assistant Professor, Department of Prosthodontics, School of Dentistry, International Campus, Tehran University of Medical Sciences, Tehran, Iran

3- Resident, Department of Pedodontics, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran

4- Assistant Professor, Research Center for Modeling in Health, Institute of Futures Studies in Health, Kerman University of Medical Sciences AND Department of Food Hygiene and Public Health, School of Veterinary Medicine, Shahid Bahonar University of Kerman, Kerman, Iran

5- Student of Dentistry, School of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran

Correspondence to: Hamid Reza Poureslami DDS, MSc

Email: hamid42pour@yahoo.com

habit and psycho-mental disorders. In many babies, this is a imitative habits.<sup>3</sup> A baby's tendency to suck usually gets satisfied by sucking the mother's breasts. Longer duration of sucking due to decreased amount of mother's milk, e.g. in many poor developing nations where mothers do not have enough milk, is associated with lower prevalence of finger sucking habit. However, access to milk and food or the use of pacifiers will change sucking habits in children. Since long-term sucking of fingers can lead to permanent maxillary incisor protrusion and open bite, abandonment of this habit before the growth of permanent incisors will prevent further problems. Although various treatment protocols have been proposed, the chance of success will be higher when the child shows interest in quitting the habit.<sup>3</sup>

Several studies from around the world have evaluated finger sucking habit. Warren et al. reported 50.0% of babies to develop the habit at age two, 30.0% at age three, and 20.0% at age four.<sup>4</sup> Larsson suggested a direct relationship between the education of parents and finger sucking habit in babies.<sup>5</sup> A study in Saudi Arabia found the habit to start during the ages of three to five in 10.5% of children.<sup>6</sup> In Iran, 21.0% of five-year-old children had this habit and the rates were the same in males and females.<sup>7</sup> As it is crucial to prevent the effects of finger sucking on permanent dentition, this study determined the prevalence of finger sucking habit in three-six-year-old children in kindergartens of Kerman (Iran) and investigated the factors affecting this habit.

### Methods

In this descriptive, cross-sectional study, census sampling was used to select 1000

children from all the three-six-year-old children in kindergartens of Kerman. First, consent was obtained from the participants and the desired information was collected by asking parents and recorded in a checklist. Then, an expert examined the children's mouth using a tongue blade and under the light of a 100 W bulb. Variables such as gender, age, duration and frequency of sucking, dental arch relationships, use of pacifiers, mother's job, and type of feeding in infancy were evaluated. At last, the necessary instructions about the children's health were given to the parents. Data was analyzed with chi-square test in SPSS for Windows 16.0 (SPSS Inc., Chicago, IL, USA).

### Results

Among the 1000 studied children, 3.4% had finger sucking habit (55.88% females and 44.12% males) (Table 1). There was no statistically significant relationship between gender and finger sucking habit ( $P = 0.91$ ).

Table 2 shows the number and percentage of children with finger sucking habit in relation to age, duration of sucking, tooth alignment and occlusion, pacifier sucking, mother's job type, and type of feeding. As it is seen, eight three-six-year-olds, nine four-five-year-olds, eight five-six-year-olds, and nine six-year-olds sucked their fingers. The highest relative frequency of sucking duration was 24 hours (67.65%). Among the children with finger sucking habit, the relative frequency of anterior and posterior correct dental relationship was 50.00%. The frequency of children with anterior open bite was also 50.00%. Neither posterior open bite nor cross bite was observed. Moreover, 52.14% of children with finger sucking habit had used pacifier, 41.00% had housewife mothers, and 47.00% were breastfed.

**Table 1.** The prevalence of finger sucking habit among three-six-year-old children in Kerman, Iran based on gender ( $P = 0.91$ )

Status	Boys (%)	Girls (%)	Total (%)
With sucking habit	15 (44.12)	19 (55.88)	34 (3.40)
No sucking habit	421 (43.58)	545 (56.42)	966 (96.60)
Total	436 (43.60)	564 (56.40)	1000 (100)

**Table 2.** The prevalence of finger sucking habit among three-six-year-old children in Kerman, Iran based on different variables

Variable	Male n (%)	Female n (%)	Total n (%)
Age group			
36-47 months	5 (33.3)	3 (15.8)	8 (23.5)
48-59 months	2 (13.4)	7 (36.8)	9 (26.5)
60-71 months	5 (33.3)	3 (15.8)	8 (23.5)
72 months or more	3 (20.0)	6 (31.6)	9 (26.5)
Time of sucking			
Frequently during day and night	10 (66.7)	13 (68.4)	23 (65.7)
Just when falling asleep	3 (20.0)	3 (15.8)	6 (17.6)
All night	0 (0.0)	3 (15.8)	3 (8.8)
During the day in kindergarten	2 (13.3)	0 (0.0)	2 (5.9)
Tooth alignment and occlusion			
Normal anterior and posterior dental relationship	9 (60.0)	8 (42.1)	17 (50.0)
Anterior open bite	6 (40.0)	11 (57.9)	17 (50.0)
Anterior open bite with posterior crossbite	0 (0.0)	0 (0.0)	0 (0.0)
Pacifier sucking			
Current or past	10 (66.7)	8 (42.1)	18 (52.9)
No sucking	5 (33.3)	11 (57.9)	16 (47.1)
Mother's job			
Housewife	7 (46.7)	7 (36.8)	14 (41.2)
Other	8 (53.3)	12 (63.2)	20 (58.8)
Type of feeding			
Breast-fed	8 (53.3)	8 (42.1)	16 (47.1)
Bottle-fed	2 (13.4)	4 (21.1)	6 (17.6)
Both of the above	5 (13.3)	7 (36.8)	12 (35.3)

## Discussion

In the present study, 3.4% of three-six-year-old children had finger sucking habit. A study in Yazd (Iran) reported this habit among 21% of five-year-old children in kindergartens.<sup>7</sup> Another study examined a number of babies from birth to the age 16 and showed 45.6% of the subjects to have finger sucking habit during this period.<sup>8</sup> In Saudi Arabia, the rate was calculated as 10.46%.<sup>6</sup> Furthermore, finger sucking habit was seen among 40.7% of six-year-old children in Tehran (Iran).<sup>9</sup> Current or past finger sucking habit was found in 10.7% of seven-year-old children in Mashhad (Iran).<sup>10</sup> Digit sucking was observed in 17.0% of children aging four-15 years old from an area in Lagos, Nigeria. This habit was the most common oral habit.<sup>11</sup> The prevalence of sucking habits (pacifier sucking and finger sucking) among three-year-old Swedish children was determined as 66.0%. Obviously, pacifier sucking was more prevalent.<sup>12</sup> A research on

Brazilian children aging 12-36 months old showed the prevalence of pacifier and digit sucking as 61.6% and 8.2%, respectively. From the entire sample, 10.2% received exclusive breastfeeding, 4.9% were just bottle-fed, and 84.9% were breast-fed and bottle-fed.<sup>13</sup> In contrast, a research on Indian American tribes did not find any child with finger or pacifier sucking habits.<sup>14</sup> Controversies between the findings of different studies can be justified by research methods (cross-sectional, longitudinal), number of participants, and cultural and social factors.

In the current study, 55.88% of children with finger sucking habit were female and others were male. In other words, no significant correlation was seen between the habit and sex. Similarly, Kosari and Soleimani reported 50.5% of children with finger sucking habit in Yazd (Iran) to be boys.<sup>7</sup> Likewise, among the 419 children examined by Larsson, four boys and four girls consistently sucked their fingers.<sup>5</sup>

Therefore, sex is not an effective factor in developing finger sucking habit. Environmental factors should hence be taken into account.

In this study, we found out the percentage of age group of babies who sucking their fingers are very close. However, some researchers conferred this habit to the age.<sup>15</sup> In a study among Brazilian children aged 30-59 months, there was a statistically significant relation between sucking habits and gender and age of the children.<sup>16</sup>

In the current study, about half of children with finger sucking habit had a history of pacifier sucking. However, Kosari and Soleimani found that only 28.6% of all children with finger sucking habit used pacifiers, i.e. children with finger sucking habit less commonly used pacifiers.<sup>7</sup> Recent studies on Swedish children have showed increasing use of pacifiers simultaneous with decreased number of children with thumb sucking habit.<sup>17</sup> Baer and Lester suggested the use of pacifiers in the first three months after birth as the best technique to prevent sucking habits in children.<sup>15</sup>

More than 50% of children with the finger sucking habit in the present study were only or predominantly bottle-fed. Numerous studies have reported lower chance of developing finger sucking habit in breast-fed children than in bottle-fed ones.<sup>14, 18</sup>

Finger sucking habit has different types and its length can be different from a child to another and in different ages. While many children stop sucking fingers when they fall asleep, some others keep sucking during their sleep.<sup>19</sup> In the current study, children that sucked their fingers intermittently had the highest frequency. On the other hand, one of the unattended aspects of non-nutritive sucking habit is parasitic diseases. Idowu et al. found 80% of primary school children with a finger sucking habit to have acquired

parasites through the fecal-oral route. This rate was higher than that in children without finger sucking habit.<sup>20</sup> We did not perform any stool examination for the children with finger sucking habit.

Overjet was observed in 33% of Nigerian children with finger sucking habit.<sup>11</sup> Dimberg et al. identified a significant association between sucking habits and anterior open bite, class II occlusion, increased overjet, and posterior crossbite.<sup>12</sup> In the current study, only 50% of the children with finger sucking habit showed anterior open bite. Posterior open bite or crossbite was not observed among them. While anterior open bite is caused by continuous pressure of the thumb on anterior teeth, posterior open bite or crossbite is usually the result of pressure on posterior maxillary teeth through some masticatory muscles as well as pressure on posterior mandibular teeth through borders of the tongue during sucking. It seems that in toddlers and preschool children with finger sucking habit, these pressures are not enough to cause posterior malocclusion. Van Norman showed that 88% of children with finger sucking habit had anterior open bite but only 20% had posterior crossbite in low grades.<sup>21</sup>

### Conclusion

According to this research, the prevalence of finger sucking habit among preschool children in Kerman is lower than the rates reported by previous studies. This difference might have been due to the type of feeding used by mothers in Kerman. Nevertheless, parents in Kerman should receive sufficient information about the future negative effects of finger sucking habits.

### Conflict of Interest

Authors have no conflict of interest.

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