

Association between sociodemographic factors and nutritive and non-nutritive sucking habits among Iranian girls

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الترابط بين العوامل الاجتماعية والديموغرافية وبين عادات المصّ التَغذوية وغير التَغذوية في البنّات الإيرانيات

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الخلاصة: يمكن أن يصبح تطاول أمد مصّ الأصابع واللاهيات من عوامل الاختطار لتطور بنية الفم والوجه، والإطباق السنّي. وقد هدّقت هذه الدراسة إلى تقييم معدّل انتشار العادات التَغذوية وغير التَغذوية لمصّ الأصابع، وترابط هذه العادات مع بعض العوامل المساهمة لدى البنّات في عمر السابعة في منطقة مشهد في جمهورية إيران الإسلامية. واستخدم الباحثون استبياناً يقوم الوالدان بإملائه شمل 436 طفلة في المدارس، ووجدوا أن معدّل مصّ اللاهيات يبلغ 26.6٪، ومعدّل مصّ الأصابع يصل إلى 10.6٪، واتضح أن مرتبة الطفلة بين إخوتها وعددهم ومستوى التعليم لدى الأبوين ذات ارتباط واضح باستخدام اللاهية ولو لمرة واحدة، ولكنها لا ترتبط بمصّ الأصابع. وكان أعلى معدّلات الانتشار لاستخدام اللاهية ولو لمرة واحدة بين الطفلات اللاتي يرضعن من الثدي واللاتي يَلْتَمَن زجاجة الإرضاع على حد سواء. أما مصّ الأصابع وحدها فيشيع بين من اقتصروا على الرضاعة من الثدي.

ABSTRACT Prolonged duration of finger- and pacifier-sucking may be a risk factor for maldevelopment of orofacial structures and dental occlusion. This study assessed the prevalence of nutritive and non-nutritive sucking habits and their association with some contributing factors among 7-year-old girls in Mashhad, Islamic Republic of Iran. Based on a questionnaire to the parents of 436 schoolgirls, the rate of current or previous pacifier-sucking was 26.6% and of finger-sucking was 10.6%. Child's birth rank and number of siblings and parents' educational level were significantly related to ever pacifier-sucking but not to finger-sucking. The highest prevalence of ever pacifier-sucking was among children who had been breast- and bottle-fed but finger-sucking was more common among exclusively breastfed children.

Association entre les facteurs démographiques et les habitudes de succion nutritive et non nutritive chez les fillettes iraniennes

RÉSUMÉ La succion du pouce – et de la tétine – pendant une période prolongée peut représenter un facteur de risque pour le mauvais développement des structures orofaciales et l'occlusion dentaire. Cette étude portait sur la prévalence des habitudes de succion nutritive et non nutritive et leur association avec certains facteurs qui y contribuent chez les filles de 7 ans à Mashhad (République islamique d'Iran). D'après un questionnaire soumis aux parents de 436 filles, le taux de succion de la tétine au moment de l'étude ou auparavant était de 26,6 % et celui de succion du pouce était de 10,6 %. Le rang de naissance de l'enfant, le nombre de frères et soeurs et le niveau d'instruction des parents étaient significativement liés à la succion de la tétine au moins une fois mais pas à la succion du pouce. La plus forte prévalence de succion de la tétine à un moment donné de leur existence se trouvait chez les enfants qui avaient reçu une alimentation mixte sein et biberon mais la succion du pouce était plus courante chez les enfants nourris exclusivement au sein.

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Introduction

Although non-nutritive sucking behaviours in infants may be a sign of psychological and physiological needs for nutrition [1], it may be a risk factor for maldevelopment of orofacial structures and dental occlusion. Prolonged finger-sucking has been associated with a higher incidence of anterior open bite, maxillary incisor protrusion, class II canine relationship, distal-step molar relationship, posterior crossbites, lip incompetence, increased tongue thrust and speech defects [2]. Similarly, although pacifier (dummy) use has been suggested to reduce the risk of sudden infant death syndrome, it can cause accidents, breastfeeding failure, anterior open bite, class II molar relationships and recurrent acute otitis media. The development of latex allergy, tooth decay, oral ulcers and sleep disorders are other problems encountered with pacifier use [3–5]. In contrast, Bishara et al. showed that children who have pacifier- or finger-sucking habits lasting less than 12 months did not have significantly different occlusal characteristics than children who were breast-fed for 6 to 12 months [6].

Several authors believe that the method of feeding has no appreciable influence on the acquisition of non-nutritive sucking habits in infants, while others have suggested that there is a reduced prevalence of these habits among breastfeeders [7–18]. In contrast, Paunio et al. reported a greater risk of finger-sucking [19] and Vadiakas et al. found higher rates of pacifier-sucking and lower rates of finger-sucking [10] among children who had been breast-fed for a long time.

There is convincing evidence that some factors, such as the educational level of parents, the child's birth rank and number of siblings, have an influence on finger- and pacifier-sucking habits [9,20]. It has been claimed that children of higher socioeconomic status

demonstrated finger-sucking more frequently than children of lower socioeconomic status, whereas dummy-sucking was more prevalent in the lower socioeconomic groups [21]. According to Warren et al. older maternal age and higher maternal education level and having no older siblings were the most important factors in children developing prolonged non-nutritive sucking habits [1].

The aims of the present study were to determine the prevalence of nutritive and non-nutritive sucking habits and the association of sucking habits with some socioeconomic factors in an Iranian sample.

Methods

This cross-sectional study was conducted using a survey questionnaire. A sample of 436 7-year-old girls were selected from schools in Mashhad, Islamic Republic of Iran using a stratified cluster randomized sampling technique. The schools were stratified by housing density and housing/living conditions of each school district. Nine schools were selected randomly and random number tables were used to select the girls within the schools.

The questionnaires were delivered to parents by the pupils with a covering letter requesting that the forms be completed by the mother (with the assistance of a literate family member if necessary). The questionnaire included questions about the mother's and father's educational level and the child's birth rank, number of siblings, history and duration of breast- or bottle-feeding during the first 2 years of life and the children's previous or current non-nutritive sucking habits.

The results from the questionnaires were carefully reviewed by the authors and if 1 or more questions had not been answered, or one of the parents was deceased or divorced, the questionnaires

were excluded and replacement students were selected from the same schools.

The data were analysed using SPSS, version 10 software, and chi-squared tests to analyse the effect of contributing factors on the prevalence of sucking habits.

Results

Of the 436 girls, 116 (26.6%) had a previous or current pacifier-sucking habit while 46 (10.6%) had a previous or current finger-sucking habit. The children's history of non-nutritive sucking showed that pacifier-sucking was mostly practised during the first 2 years of life (by 81.9% of pacifier-suckers) and very few were still using a pacifier after 4 years of age (0.9%). Among finger-suckers the rates were 37.3% practising the habit for < 2 years, 29.4% for 2–4 years and 33.3% for > 4 years respectively (Figure 1).

Girls whose birth rank was 4th or more were significantly less likely to have a pacifier-sucking habit (7.8%) than those who were the 1st child (45.7%) and 2nd or 3rd child (46.6%) ($P = 0.012$), but the rate of finger-sucking not significantly associated with a child's birth rank (17.4% for birth rank 4th+, 41.3% for rank 1st or 2nd and 41.3% for 3rd rank) ($P = 0.780$).

The number of siblings in the family played a strong role. The rate of pacifier-sucking was 8.6% for girls with 5+ siblings compared with 38.8% with 3 or 4 siblings and 52.6% with 1 or 2 siblings ($P = 0.005$). However, there was no significant association between finger-sucking and number of siblings ($P = 0.928$).

The rates of non-nutritive sucking tended to increase with increasing educational level of parents, although this was only significant for pacifier-sucking not for finger-sucking (Table 1).

A total of 65.4% of the girls had been exclusively breastfed, 27.3% breast- and

bottle-fed and 7.3% exclusively bottle-fed in the first 2 years of their life (Table 1). The prevalence of pacifier-sucking was significantly higher among girls who had been exclusively breast-fed (39.7%) or breast- and bottle-fed (46.6%) than children who were exclusively bottle-fed (13.8%) The rates of finger-sucking, however, were not significantly affected by the type of feeding in the first 2 years of life; the corresponding figures were 65.2% 13.0% and 21.7% respectively.

Discussion

The main aims of this cross-sectional study were to evaluate the prevalence of previous or persisting finger- and pacifier-sucking habits and determine the association between these habits and some contributing factors among 7-year-old girls in Mashhad.

This study showed that the prevalence of current or previous pacifier and finger-sucking habits were 26.6% and 10.6% respectively. The prevalence of pacifier-sucking in our study was lower than that reported by some investigators: 40%, 37% and 40% in the United States of America, Norway and Saudi Arabia respectively [6,13,14]. These differences in the total prevalence of pacifier-sucking habits among different cultures warrant further investigation of the etiology of the habit. In contrast, the prevalence of finger-sucking was very similar to other studies: 12%, 10% and 11% in Norway, Sweden and Saudi Arabia respectively [13,22,23]. These findings suggest that the etiology of finger-sucking remains the same in different populations and cultures.

Our study demonstrated that a majority of children were pacifier-sucking in the first 2 years of life (81.9%), but fewer (17.2%) between ages 2–4 years, while only 0.9% practised the habit after 4 years of age. Similarly, Bishara et al. showed that pacifier-sucking decreased

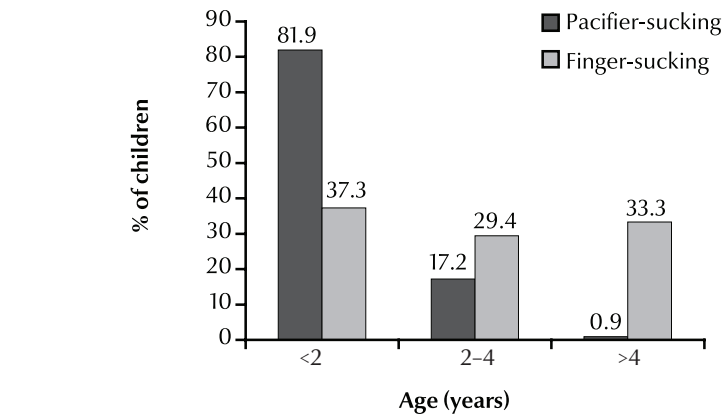


Figure 1 Mothers' reports of the child's history of ever finger- and pacifier-sucking by age among 7-year-old girls in Masshad ($n = 46$ for finger-sucking; $n = 116$ for pacifier-sucking)

from 20% for 1–2-year-olds to almost zero after age 5 years [6]. Although the pacifier-sucking habit was more prevalent in the first 2 years of life, the prevalence of finger-sucking changed less with age, remaining around one-third of girls. Bishara et al. found that the prevalence of pacifier-sucking decreased between 3–8 years of age from 10% to 0.3%, whereas that of finger-sucking decreased from 14% to 4% [6]. Duncan et al. also reported that at 15 months of age, 63.2% of children had a reported non-nutritive sucking habit that reduced to 40% by the age of 36 months [5].

The distribution of sucking habits according to parent's education showed that the higher the level of parent's education, the higher the probability that the child was a pacifier-sucker, except for parents with college level education whose children had a lower prevalence of sucking habits. These observations are similar to Farsi and Salama who found dummy-sucking to be more prevalent among the children of parents of higher educational levels [14]. Aarts et al. found that maternal age and education only slightly modified the association between pacifier use and breastfeeding duration [24]. It is unclear why less educated parents were less likely than others to have children with a pacifier-sucking habit; however it could

be due to the greater time that educated mothers spend working outside the home. On the other hand, the prevalence of finger-sucking did not show a significant association with the level of parent's education. This finding is in agreement with Farsi and Salama [14] and in contrast to Wolf and Lozoff's study [25].

Our study showed a significant relationship between birth rank and prevalence of pacifier-sucking. We demonstrated that children with 4 or more siblings were less likely to have a pacifier-sucking habit. It has been suggested that a family with 4 children represents the optimum number from a psychological perspective [26]. These results agree with Bayardo et al., who showed that a single child was more likely to develop a sucking behaviour while children with 5 or more siblings were the least likely to do so [26].

The results of our study contradict reports that the method of feeding in infancy has no substantial influence on the acquisition of non-nutritive sucking habits [8,9,11,15]. Data about the role of breastfeeding in non-nutritive sucking habits is contradictory. Some authors assume that infants who are breastfed for a reasonably long period of time are less likely to become finger-suckers than babies who have no breastfeeding experience [13,18,23]. But the results of our

Table 1 Rates of ever finger- and pacifier-sucking in relation to various contributing factors among 7-year-old girls in Mashhad, Islamic Republic of Iran

Factor	Total sample (n = 436)		Finger-sucking (n = 46)		Pacifier-sucking (n = 116)		
	%	%	χ^2 -value	P-value	%	χ^2 -value	P-value
Father's education			2.1	0.717		10.2	0.036
No formal education	1.1	0.0			1.7		
Primary school	1.8	0.0			9.0		
Guidance school ^a	35.4	37.0			25.0		
High school	39.8	37.0			50.0		
College	21.9	26.0			22.4		
Mother's education			1.2	0.875		9.3	0.050
No formal education	1.4	2.2			0.9		
Primary school	5.3	6.5			2.6		
Guidance school	34.9	30.4			26.7		
High school	42.6	47.8			52.6		
College	15.8	13.0			17.2		
Birth rank			0.50	0.870		8.9	0.012
1st child	38.1	41.3			45.7		
2nd or 3rd child	46.1	41.3			46.6		
4th+ child	15.8	17.4			7.8		
No. of siblings			0.15	0.928		10.5	0.005
1 or 2	43.6	41.3			52.6		
3 or 4	38.5	39.1			38.8		
5+	17.9	19.6			8.6		
Type of feeding in first 2 years of life			2.8	0.245		46.4	< 0.0001
Bottle	7.3	13.0			13.8		
Breast	64.5	65.2			39.7		
Bottle & breast	27.3	21.7			46.6		

study disagreed with this hypothesis, as the prevalence of finger-sucking was not significantly different among children who were exclusively breastfed, exclusively bottle-fed or both breast- and bottle-fed. In contrast, the prevalence of pacifier-sucking was significantly higher among children who had been breast- and bottle-fed than children who were exclusively bottle-fed. These results agree with Paunio et al. [19]. This could be because feeding a child with both bottle and breast causes greater frustration to the child than experiencing no breastfeeding at all. Similarly, Aarts showed more frequent use of a pacifier is associated with shorter breastfeeding duration, even among mothers who

were highly motivated to breastfeed [24]. Howard et al. suggested that the decreases in breastfeeding duration associated with pacifier use may be a consequence of less frequent breastfeeding among women who introduce pacifiers to their infants [27].

Conclusions

From the data collected in this study, the following conclusions may be drawn. Parents' educational level was positively related to pacifier-sucking habits with no substantial effect on finger-sucking. Child's birth rank and number of siblings had a significant effect on prevalence of

pacifier-sucking habits but no significant effect on finger-sucking. The highest prevalence of pacifier-sucking habit was among children who were breast- and bottle-fed and the finger-sucking habit tended to be among exclusively breast-fed children.

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