

Association between Breastfeeding and Deleterious Oral Habits with Development of Malocclusions in Pediatric Dental Patients

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ABSTRACT

Purpose: This article evaluates the inter-relationship between the feeding time, presence of deleterious oral habits and the development of malocclusion.

Materials and methods: For this purpose, a document focused on the quantitative aspects and was prepared using forms filled out according to the information available in the medical records of 93 children of both genders, aged between 4 and 12 years old, who were treated at the Dental Clinic of UESB (University of the Southwest State of Bahia), Jequié Campus, in the period from 2006 to 2009. The Chi-square statistical test was applied.

Results: We observed a higher frequency of children who were naturally breast-fed for a period longer than 6 months (47%). There was a significant relationship between the shorter duration of breastfeeding leading to deleterious oral habits, and consequently to the development of malocclusion ($p < 0.001$). The existence of one or more deleterious oral habits also favored the development of malocclusion, even in the group that was breast-fed for longer than 6 months ($p < 0.001$). The habit that appeared most frequently was onychophagy (nail biting; 26%) followed by lingual interposition (17%) and pacifier sucking (14%). The highest prevalence of crowding was found among children with malocclusion (33%).

Conclusion: Mothers should be encouraged to extend the time of breastfeeding and motivate children not to develop deleterious oral habits, as these are crucial factors in diminishing the development of malocclusion.

Keywords: Breastfeeding, Habits, Malocclusion.

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INTRODUCTION

The benefits of breastfeeding are recognized all over the world, as it meets the baby's requirements and plays an important role in combating infant mortality. It offers advantages, such as perfectly balanced nutrients, immunological functions and psychological development, correct craniofacial growth and in performing physiological activities, such as phonation, mastication and deglutition. In addition, it provides the mother with immense personal fulfillment, through the fundamental relationship of affective exchanges and experience of social contact soon after the baby's birth.¹⁻⁷

Through the movements made to extract milk during breastfeeding (protrusion, retrusion, lifting and lowering the mandible), the development and tonification of the masticatory muscles, ligaments and temporomandibular joint (TMJ) occur, preparing them for the arrival of dentition, and leading to distinct effects on the harmonious growth of the maxillae and dental arches, according to Gimenez et al, 2008² and Vigianno et al 2004.⁸

In spite of being a natural act, Radzi and Yahya⁶ affirmed that the practice of exclusive breastfeeding is not easy. There are situations in which some mothers are incapable of feeding their babies, or the child is unable to adapt to breastfeeding. Therefore, with the lack of physiological suction at the breast, the baby fails to receive adequate stimulus in the oral-motor-sensory area, and could develop hypotonia of the perioral and lingual musculature, later leading to deformations in the dental arch and palate, harming the functions of mastication, deglutition, respiration and articulation of the sounds of speech. It is worth mentioning that in artificial feeding, that is to say by means of sucking devices and/or feeding bottles, there is a much greater flow of milk than in natural breastfeeding, therefore, the child is nutritionally satisfied in a shorter time with less muscular effort. Whereas the emotional ecstasy of the neural impulse of sucking, present since intrauterine life is not attained, and thus the child tends to seek other means to satisfy itself, such as sucking fingers, pacifiers and objects, which may stimulate the development of deleterious oral habits.^{3,7,9-11}

Therefore, it has been suggested that there is a significant correlation between the time of natural breastfeeding and the presence of such habits. The longer the period of natural breastfeeding, the less chance there is of a child developing a deleterious sucking habit.^{4,7,12-15}

The habit is nothing more than the result of repetition of an act with a certain purpose, and over the course of time, it becomes resistant to change. For Valdrighi et al¹⁵ Moyers,¹⁶ Silva,¹⁷ deleterious oral habits may create abnormal forces on the dental arches, contributing to the appearance of a large portion of malocclusions. Nevertheless, for this to occur, the degree of imbalance depends on the triad of Graber, which emphasizes the intensity, frequency of the habit and duration, in addition

to being influenced by individual predisposition, age, nutritional conditions and the individual's health.

Warren et al,¹⁸ in their study suggested that there is an even greater risk of developing occlusal problems when the deleterious oral habit persists beyond the time the child is 48 months of age. It is more prudent to break this habit before the child completes 24 months of age.

The Ministry of Health¹⁹ data points out that at 5 years of age, the prevalence of moderate or severe occlusal habits is around 14.5% in Brazil. Therefore, the rate of malocclusions is ranked in third position on the scale of priorities and oral health problems in Brazil. Thus, it is observed that the epidemiological status of oral health in this country presents levels of precariousness that deserve attention.²⁰

Within this context it is necessary to encourage the discontinuation of deleterious oral habits, in order to prevent possible alterations in dental occlusion, or its progression when has already been established, thus diminishing the number of patients referred for orthodontic treatment.^{20,21} Therefore, it is important to know about and discuss the presentation and etiological factors of these habits in younger populations.

Thus, the present study presents the frequency of malocclusion in children in the age range from 4 to 12 years, attended at the Ambulatory Clinic of the Dentistry Unit of 'Universidade Estadual do Sudoeste da Bahia' (UESB), and verifies its relationship with the time of breastfeeding and presence of deleterious oral habits in these cases.

MATERIALS AND METHODS

By means of a documentary study with a quantitative approach, 93 forms were filled out, based on the information available in the medical charts of children aged between 4 and 12 years, with a general mean age of 8.47 years, of both genders, being 61 girls and 32 boys attended at the Ambulatory clinic of the Dentistry Unit at the UESB located on the Jequié Campus, in the period from 2006 to 2008, by spontaneous demand for dental treatment.

The form was composed of seven objective questions with respect to the presence or absence of malocclusion and information about the time of exclusive breastfeeding, being classified as: Less than, equal to or longer than 6 months. It was also noted whether or not the children developed deleterious oral habits, and what type they presented. The habits selected for this research were: Finger sucking, pacifier sucking, feeding bottle use, sucking the lips, biting objects, mouth breathing, tongue interposition, bruise, onychophagia (nail biting).

Seventy-six dental charts were discarded, as they did not comply with the correct standard of filling out the

anamnesis and clinical exam, causing doubts in interpretation or due to lack of information. The discarded charts also comprised syndromic patients with severe systemic problems and those who had already been submitted to orthodontic treatment, which could mask the sample, and patients whose parents did not authorize their participation in the research.

The data found were submitted to descriptive statistical analysis using the Excel program based on percentages. By this method, it was possible to obtain a general overview of the representative values of the sample and comparisons of the most relevant variables found in the research. In addition to the description, the Chi-square test of independence was applied.

The research was conducted in compliance with the criteria established by Resolution CNS 196/96 of the Ministry of Health (Brazil, 1996). Thus, the form was only applied after it was approved by the Research Ethics Committee of the 'Universidade Estadual do Sudoeste da Bahia', protocol number 025/2009.

RESULTS

In the researched sample it was noted that the most frequent age group comprised children from 07 to 11 years (91%) and 61 of the children were girls (66%) and 32 were boys (34%).

According to the charts filled out with the reports of the persons responsible for the children, it was found that the majority of the children (89%) were naturally breast-fed, and of these 42% (39) were fed for a period shorter than or equal to 6 months, and 47% (44) for a period longer than 6 months. Therefore, only 11% (10) of the patients were artificially fed (Table 1).

With regard to the duration of breastfeeding time, it could be observed that of the 39 children who were naturally breast-fed for a period shorter than and equal to 6 months, 66.6% (26) presented some type of malocclusion and 71.8% (28) of the children developed one or more deleterious oral habits. The association between the shorter breastfeeding time and development of deleterious habits favored the presence of malocclusion and consequently was statistically significant ($p < 0.001$) (Table 2).

In the group of children, naturally breast-fed for a period longer than 6 months, which comprised 44 children, 70.4%

Table 1: Frequency of groups of children with regard to period of natural breastfeeding

| Breastfeeding time | n | % |
|--------------------|----|----|
| ≤06 months | 39 | 42 |
| ≥06 months | 44 | 47 |
| Not breast-fed | 10 | 11 |

(31) of them presented malocclusion and 65.9% (29) had a deleterious oral habit. In this group, it was observed that even with the longer time of natural breastfeeding, when there is one or more deleterious oral habits, the development of malocclusion prevails with statistical significance ($p < 0.001$; Table 3).

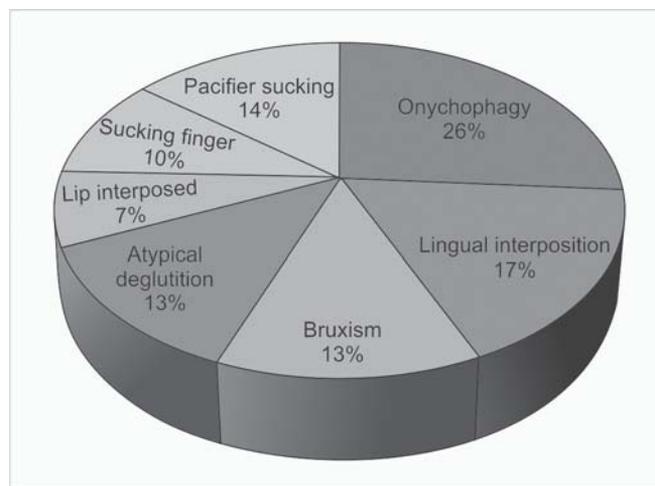
In the smaller group, which comprised children that were not naturally breast-fed (10%), 70% of the patients presented malocclusion and 70% had a habit, and no statistically significant association was found ($p = 0.13$) in the development of malocclusion when the deleterious oral habit was developed in this sample (Table 4).

The most frequently found deleterious habits were lingual interposition (17%), pacifier sucking (14%) and lastly, bruxism (13%) and atypical deglutition (13%) (Graph 1). Other habits investigated, such as use of the feeding bottle, biting lips and objects and mouth breathing were not identified in the sample.

The most frequently found malocclusion was tooth crowding (33%), followed by anterior and/or posterior crossbite (20%) and open bite (19%) (Graph 2).

DISCUSSION

Breastfeeding is an important natural process that offers irreplaceable advantages to the development of a physically



Graph 1: Percentage distribution of deleterious oral habits in the sample studied

and psychologically healthy child. Therefore, it should be encouraged in the first 6 months of life as the child's main source of food, followed by continued breastfeeding for at least 2 years.⁷

In the studied population, a higher percentage (47%) of children who were breast-fed for a period longer than 6 months was found, in disagreement with the findings of Gimenez et al,² Heringer et al³ and Souza et al¹⁴ who obtained higher percentage values of children subjected to

Table 2: Relationship between the presence of deleterious oral habits and malocclusion in the group of children who were breast-fed for the period shorter than or equal to 6 months

| | Without DOH (n = 11; 28.2%) | | 01 DOH (n = 14; 35.9%) | | 02 or +DOH (n = 14; 35.9%) | | Total | |
|----|--------------------------------|------|---------------------------|------|-------------------------------|------|-------|------|
| | n | % | n | % | n | % | n | % |
| MO | 05 | 12.8 | 07 | 17.9 | 14 | 35.9 | 26 | 66.6 |
| NO | 06 | 15.4 | 07 | 17.9 | 00 | 0.0 | 13 | 33.3 |

$p < 0.001$ by the Chi-square test; DOH: Deleterious oral habit; MO: Presence of malocclusion; NO: Normocclusion

Table 3: Relationship between the presence of deleterious oral habits and malocclusion in the group of children who were breast-fed for the period longer than 6 months

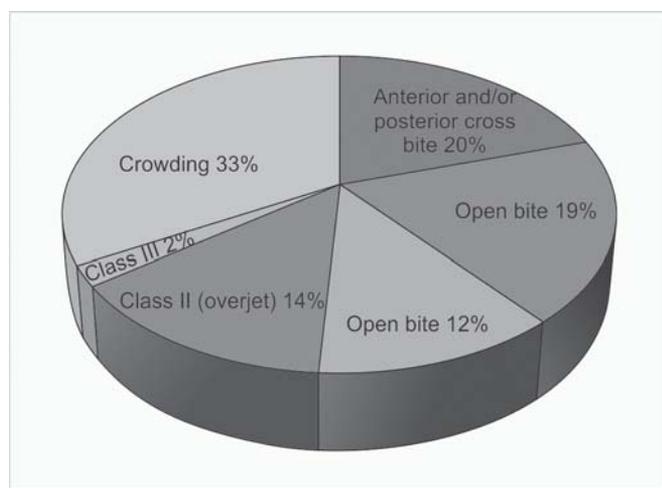
| | Without DOH (n = 15; 34.0%) | | 01 DOH (n = 15; 40.9%) | | 02 or +DOH (n = 15; 25.0%) | | Total | |
|----|--------------------------------|------|---------------------------|------|-------------------------------|------|-------|------|
| | n | % | n | % | n | % | n | % |
| MO | 07 | 15.9 | 13 | 29.5 | 11 | 25.0 | 31 | 70.4 |
| NO | 08 | 18.2 | 05 | 11.4 | 00 | 0.0 | 13 | 29.6 |

$p < 0.001$ by the Chi-square test; DOH: Deleterious oral habit; MO: Presence of malocclusion; NO: Normocclusion

Table 4: Relationship between the presence of deleterious oral habit and malocclusion in the group of children who were not breast-fed

| | Without DOH (n = 03; 30.0%) | | 01 DOH (n = 03; 60.0%) | | 02 or +DOH (n = 03; 10.0%) | | Total | |
|----|--------------------------------|------|---------------------------|------|-------------------------------|------|-------|------|
| | n | % | n | % | n | % | n | % |
| MO | 01 | 10.0 | 05 | 50.0 | 01 | 10.0 | 07 | 70.0 |
| NO | 02 | 20.0 | 01 | 10.0 | 00 | 0.0 | 03 | 30.0 |

$p < 0.001$ by the Chi-square test; DOH: Deleterious oral habit; MO: Presence of malocclusion; NO: Normocclusion



Graph 2: Percentage distribution of malocclusion frequently in the sample

early weaning at 6 months. The percentage for the group of children who were not naturally breast-fed (10%) was high when compared with the study of Almeida et al,¹ conducted in the State of Amazonas with 560 children, in which only 15 children (2.61%) were artificially fed, suggesting that this low percentage was due to a cultural question, since the indigenous population is predominant in this region.

In this same connection, it has been observed that weaning in the initial stage of the child's life frequently occurs. Some authors believe that there is a need for guidance with regard to the importance of the practice of natural breastfeeding and an adequate pattern of suction, as a form of prevention against diseases in general and oral health, as well as to promote orofacial development.^{1,10,11}

The literature has shown that the insufficient duration of natural breastfeeding is associated with the possibility of developing deleterious oral habits.^{1,7,14,22,23} In the present study, 71.8% of the children breast-fed for a period shorter than or equal to 6 months, presented some type of deleterious oral habit, while in the group of children that were breast-fed for a period longer than 6 months, 65.9% of those analyzed were found to have a deleterious habit.

It was also perceived that a relevant number of children in the total sample acquired a deleterious oral habit (68.8%), however, a slightly lower number than that related in the studies of Almeida et al¹ and Serra-Negra et al⁷ with 75%, Medeiros et al¹² with 73.6%, Leite-Cavalcanti et al²³ with 73.4% and Pereira et al²⁴ with 76.47%. It is worth pointing out that 27.9% (26) of the children in the article in questions developed more than one habit.

When associating the duration of breastfeeding for a period longer than 6 months and the presence of deleterious oral habits, it was verified that the majority of the children developed some type of malocclusion. Although a large portion of authors^{2,5,6,22,23} have emphasized that suction at

the breast at the time of breastfeeding promotes positive effects on the child's skeletal, muscular and dental development, Pereira et al,²⁴ when analyzing the occlusion of 105 children in day care centers in suburbs on the periphery of Grande Vitória, did not find this significant association. For Cavassani et al,²⁵ the etiology of malocclusion is of fundamental importance, because its correction depends on removing the causative factors, in addition to making it easier to recognize the pathology and to apply an objective and effective treatment.

With regard to the prevalence of malocclusions, it was noted that 68.8% of the studied children presented occlusal alterations; that is, over half the sample. This is a datum similar to that found in the studies of Pereira et al²⁴ with 70.85%, Sadakyio et al²⁶ with 71.6%, Medeiros et al¹² with a value equal to 80.2%, Cavalcanti et al²⁵ with 80.6% and Mendes et al⁴ with 92.6%.

During the analysis, it was also perceived that of the 68.8% (64) children who developed a deleterious oral habit, 79.7% (51) presented occlusal deviations, a datum even lower than that found by Leite-Cavalcanti et al²³ (87%) and Medeiros et al¹² (92.3%). It should be emphasized that all the children who acquired two or more deleterious oral habits presented malocclusion. Thus, it was verified that there was a higher occurrence of malocclusion in the presence of a deleterious oral habit.^{2,7,11,14}

However, Pereira et al²⁴ found no statistically significant association between the presence of deleterious oral habits and malocclusion. This finding is explained by the fact of malocclusion being multifactorial in nature, and subject to the influence of intrinsic and extrinsic components. Therefore, when bad habits are among the etiologic agents, they are relatively more easily detected and removed, thus reducing the damage they may cause.^{15,17}

As can be seen in Table 4, with reference to the children who were not breast-fed, it was noted that 70% of them developed one or more deleterious oral habits, a datum similar to that found in the municipal day care centers in the city of Campina Grande – PB by Medeiros et al¹² with 67.9%. With further reference to this group, it could be observed that 70% of the sample developed malocclusion.

Based on the survey, the prevalent deleterious oral habit was onychophagia (nail biting; 26%), however, according to the literature this habit has no direct relationship with the development of malocclusions. The researched findings point out pacifier sucking as being the most frequent habit. This information is stated in the article by Gimenez et al² (50%), Mendes et al⁴ (53.7%), Sousa et al¹¹ (56.3%), Medeiros et al¹² (65.4%), Serra-Negra et al⁷ (75.1%), Souza et al¹⁴ (77.9%), however, in the present research this datum was not confirmed, as this habit was ranked in second place.

Attachment form

Child's Identification: _____

Age: _____ years _____ months

Sex: Female Male

1. Person responsible for taking the child to the Dental Unit of UESB
 Father Mother Other

2. Was the child naturally breast-fed?
 Yes No

3. The breastfeeding time was shorter than, equal to or longer than 6 months?
 Period shorter than 6 months
 6 months
 Period longer than 6 months

4. Does the child have deleterious oral habits?
 No, it does not
 It has one habit
 Has two or more habits

5. Which deleterious oral habit(s) does the child present?
 Finger sucking Mouth breathing
 Pacifier use Lingual interposition
 Feeding bottle use Bruxism
 Biting its lips Nail biting
 Biting objects Others

6. Does the child present malocclusion?
 Yes No

7. Which type of malocclusion?
 Anterior and/or posterior crossbite
 Open bite
 Overbite
 Class II (protrusion)
 Class III
 Tooth crowding

Ranked in second and third place, in order of prevalence, the malocclusions crossbite (20%) and open bite (19%) were found, which corroborates the research of Cavalcanti et al²⁵ with schoolchildren in the age range of 6 to 12 years, in the city of Campina Grande/PB, with crossbite (29.3%) and open bite (22.3%) respectively.

Moreover, researches conducted in the cities of Belo Horizonte/MG and Vitória/ES observed that the chance of developing anterior and/or posterior crossbite is four times higher when the child has a deleterious oral habit.^{7,14} A similar trend was found in the present study. It is also suggested that the presence of a deleterious oral habit is associated with the development of open bite, since 94.7% of the patients that presented this malocclusion had developed a habit.

In an epidemiological survey of 1,014 children in the age range between 7 and 11 years, in the city of Jequié, conducted by Souza et al¹⁴ it could also be perceived that 77.7% of the sample developed malocclusions. This

information confirms that the magnitude of occlusal problems in childhood is not restricted to the reality of the public attended at the Dentistry Unit of UESB.

Therefore, providing the mothers with guidance on the importance of breastfeeding could result in prolonging the period of exclusive natural breastfeeding, thereby diminishing the chance of the child acquiring a deleterious oral habit, and consequently developing malocclusion. Furthermore, Valdrighi et al¹⁵ encourage the use of the orthodontic nipple that is similar to the mother's breast nipple, because it is better adapted to the mouth, and is therefore less harmful than the common rubber nipple.

Based on the above discussion, it is possible to perceive the need for public service to give greater attention to preventive and interceptive actions. In addition, as there was high prevalence of malocclusions and deleterious oral habits, it would be extremely important for orthodontics to be included within the scope of the Dental Specialties Center–CEO (Centro de Especialidades Odontológicas).^{27,28}

CONCLUSION

- There is evident need to encourage mothers with regard to prolonging natural breastfeeding.
- Natural breastfeeding for an insufficient period is associated with greater possibility of the child developing deleterious oral habits.
- Children's exposure to the effects of deleterious oral habits leads to greater predisposition to developing malocclusions, and this association is intensified when two or more bad habits are present.
- The deleterious habits most frequently found were lingual interposition and pacifier sucking.
- The most frequently found malocclusions were tooth crowding, anterior and/or posterior crossbite and open bite.

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