Validation of Association Between Breastfeeding Duration, Facial profile, Occlusion of Children in Chennai Population:-A Cross Sectional Study

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Abstract

Introduction: Malocclusion is not a disease and is considered as a developmental disorder of the craniofacial complex.It may cause functional and esthetic disturbances in affected individuals.Environmental factors like dietary habits,nonnutritive sucking habits, bottlefeeding, and reduced duration of breastfeeding have often been implicated with various developmental disorders[1]. The .increased breastfeeding duration in preventing the development of malocclusion,and establishing a correct occlusal relationship by stimulating the facial muscles during suckling have a great importance.

Aim: The aim of this study is to assess the relationships among breastfeeding duration,nonnutritive sucking habits,convex facial profile,nonspaced dentition,and distoclusion in the deciduous dentition.

Materials and methods: A sample of 250 children aged 4 to 6 years from south Indian population was clinically examined. Information about breastfeeding duration and nonnutritive sucking habits was obtained from the parents and data was compiled.

Results: From this study it was found that a statistically significant association was observed between breastfeeding duration and nonnutritive sucking habits. Nonnutritive sucking habits had a statistically significant association with distoclusion and convex facial profile. But the occurrence of convex facial profile and distoclusion was not associated with breastfeeding duration.

Conclusion: Thus this study hypothesize that nonnutritive sucking habits may act as a dominant variable in the relationship between breastfeeding duration and occurrence of convex facial profile and distoclusion in deciduous dentition.

Keywords: *Breastfeeding duration, Facial profile, Non nutritive sucking,Occlusion.*

Introduction

In addition to the well-recognized nutritional, immunological and psychological benefits, breastfeeding promotes adequate development of the oral myofunctional structures.Moreover, the association between decreased breastfeeding duration and increased prevalence of non-nutritive sucking habits has already been demonstrated.Several authors have alsoreported the close relationship between the non-nutritive sucking habits and the development of malocclusions[2].

Although shorter breastfeeding practices play an indirect role in the etiology of malocclusions, the extent to which breastfeeding duration periods and the development of malocclusions in primary dentition are associated still remains a matter of concern. Warren and Bishara in the year 2002 compared of mean dental arch measurements and occlusal traits of non-breastfed children and those who were breastfed over three

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periods: shorter than 6 months, from 6 to 12 months, and longer than 12 months[3].

The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life to achieve optimal growth, development and health[4]. These recommendations are supported by a systematic review which states the benefits of breastfeeding for six months for minimizing the risk of gastrointestinal infection and growth deficits in young children. Despite the medical benefits of breastfeeding, no systematic review has evaluated the long-term benefits of breastfeeding for oral health, especially related to malocclusion in the primary dentition[5].

When analyzing malocclusion in the primary dentition the interaction between genetic and environmental factors has to be considered. The most frequently reported environmental factors are changes in feeding habits. Furthermore, it is known that early sucking activity might influence the growth of the craniofacial complex.It is important to keep in mind that malocclusions have negative effects on oral health-related quality of life, predominantly in the dimensions of social and emotional wellbeing[6].

Breastfeeding is reported to be a nutritive sucking habit that protects against malocclusion in the primary dentition.Nevertheless, a consensus on this subject has not been established in the literature. Some authors report that prolonged breastfeeding decreases the risk of malocclusion others have not found such an association[7]. Moreover, there is no consensus on the length of time newborn children should be breastfed to protect against malocclusion, as some studies report that six months are sufficient and others report the need for longer periods (6 to 12 months).

Non-nutritive sucking is a common behaviour among young children in various populations.Its prevalence is quite variable and depends on several factors, including gender, age, feeding method and socioeconomic status[8]. There is an agreement among a number of authors that non-nutritive sucking habits can be a consequence of industrialisation and modernisation, with more women working and a shorter breastfeeding period, which favours the adoption of digital and pacifier sucking[9,10].

Controversial findings may be related to a positive history of persistent non-nutritive sucking habits while breastfeeding. The present study evaluated the association between different breastfeeding patterns and prevalence of non nutritive sucking habits,convex facial profile and distoclusion.

Materials and Method

A sample of 150 children in the age group 2-6 years in South Indian population was clinically examined. Information about breast feeding duration, Dental Occlusion, sucking habits was obtained.The information such as name, age, sex were also noted. The collected data was compiled to calculate the percentage and graphs were drawn for the individual data.

Information about mother's health during pregnancy and type of delivery was also gathered and only full-term and normally born children were included in the study. The inclusion criteria formulated for the study was as under:

-Age 2 to 6 years

-A student studying at one of the two chosen schools for the study

-Normal number, size, and shape of teeth present

-Absence of root stumps and teeth with poor prognosis

-Unerupted or partially erupted permanent first molars not in occlusion

The exclusion criteria formulated was as under:

-Presence of any local or systemic disease in the child which may affect bone metabolism

-Any anomaly in the number, shape, or size of the teeth

-Presence of rampant caries and teeth with poor prognosis

-Fully erupted permanent first molars

-Parental refusal to fill the written questionnaire.

Based on the above-mentioned criteria, 150 children (50 males and 100!females) were finally selected for the study. The children were divided into two groups: Group 1 (children exclusively breastfed $\geq$ 6 months (n = 55)) and group 2 (children exclusively breastfed $\leq$ 6 months (n = 95)). A retrospective investigation was made for the length of time that children were exclusively breastfed in the study. Information on nonnutritive sucking

habits was also included.Data were accumulated from the questionnaires as well as findings of the clinical examination and recorded in excel sheets. A chi-square test ($p < 0.05$) was performed to verify associations between (1) breastfeeding duration and prevalence of nonnutritive sucking habits, (2) breastfeeding duration and convex facial profile, (3) breastfeeding duration and distoclusion of deciduous second molars, (4) breastfeeding duration and nonspaced dentition, and (5) nonnutritive sucking habits and all the above mentioned parameters..

Results

The prevalence of distoclusion, convex facial profile, and nonnutritive sucking habits was 37.3,8 and 72% respectively. The frequency of breastfeeding for < 6 months duration was 55(36.6%), and the frequency of breastfeeding > 6 months duration was 95(63.3%) (Table-1).On statistical analysis it was found that there was no significant association was observed between breastfeeding duration and convex facial profile and there was a small significance association between breastfeeding duration and distoclusion.A higher incidence of malocclusion was observed with reduced breastfeeding duration. However, the association between breastfeeding duration and nonnutritive sucking habits was statistically significant.

Table:-1 Frequency of breastfeeding duration

Breastfeeding duration	Number	Percentage
Below 6 months	55	36.6%
Above 6 months	95	63.30%

Table :-2 Type of occlusion

OCCLUSION	Number	Percentage
Distoclusion	56	37.3%
Non distoclusion	94	62.5%

Table:-3 Type of sucking habit

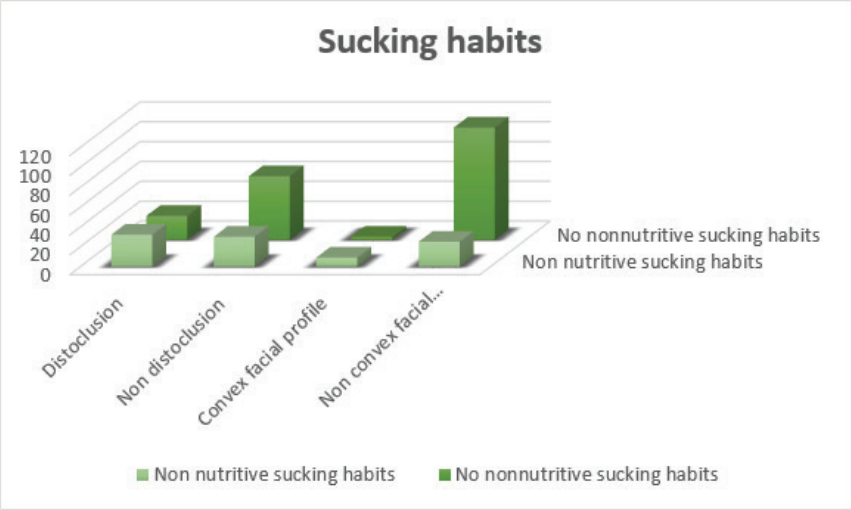
Sucking habits	Number	Percentage
Non nutritive	72	48.6%
No nonnutritive	78	52%

Table:-4 Association between breast feeding nutrition and occlusion,facial profile and sucking habits.

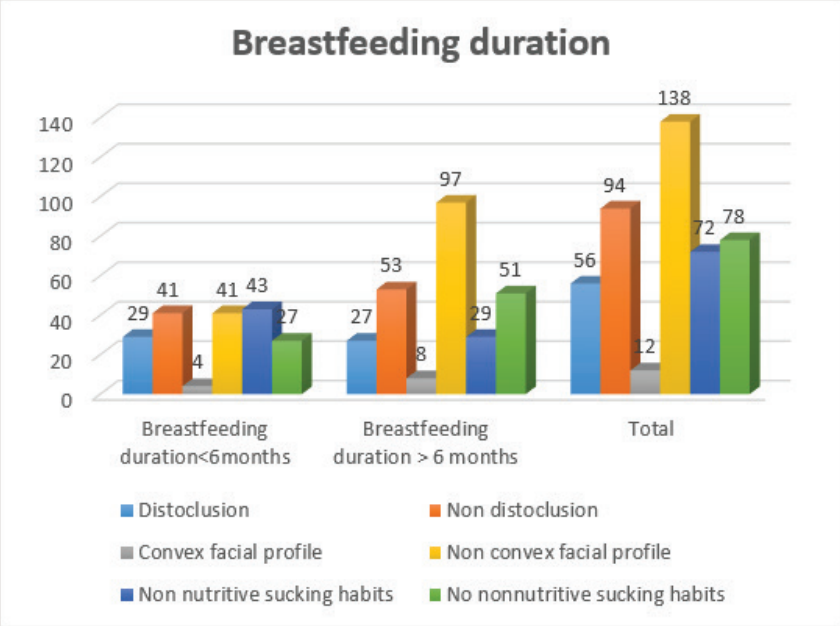
	Breastfeeding duration<6months	Breastfeeding duration > 6 months	Total
Distoclusion	29	27	56
Non distoclusion	41	53	94
Convex facial profile	4	8	12
Non convex facial profile	41	97	138
Non nutritive sucking habits	43	29	72
No nonnutritive sucking habits	27	51	78

Table:-5 Association between sucking habits and occlusion, facial profile

	Non nutritive sucking habits	No nonnutritive sucking habits
Distoclusion	32	24
Non distoclusion	30	64
Convex facial profile	9	3
Non convex facial profile	25	113



Graph:-1 Association between sucking habits and occlusion, facial profile



Graph:-2 Association between breast feeding nutrition and occlusion,facial profile and sucking habits.

Discussion

Breastfeeding positively affects physiological as well as the psychological development of children. Mother's milk provides all required nutrition which could promote proper immunological protection and therefore prevent chronic diseases and respiratory infections[11]. It is also associated with growth and development of the maxillomandibular complex by the act of sucking which induces perioral muscle activity[12,13].

On the other hand, nonnutritive sucking habits could cause occlusal abnormalities especially if it is prolonged for longer duration[14]. Some authors showed that the prevalence of non nutritive sucking habits is influenced by many factors such as sex, birth order, feeding method, and socioeconomic status[15]. The results of the present study could not identify such relationship but it was found that the reduced duration of breastfeeding was related to the non nutritivesucking habits below the year of four.Though information regarding breastfeeding relating to Non nutritive sucking habits is somewhat contradictory,the Results of this study indicated that the prevalence of non nutritivesucking habits were lower in children who were breastfed longer which might suggest this assumption that breastfeeding time has a preventive effect on non nutritivesucking habit development. An explanation is that the less time of breastfeeding induces more time of bottle feeding which in turn increases the chance of other external object sucking. In other words, bottle feeding gives children this opportunity to be addicted in sucking other external objects[16].

In the current study the dental examination was also performed and the association between non nutritive sucking habits and malocclusion prevalence was documented. Numerous studies identified significant association between sucking habits and anterior open bite, class II occlusion, increased overjet, and posterior crossbite [17].

In this study a significant association between breastfeedingduration and nonnutritive sucking habits and also between nonnutritive sucking habits and convex facial profile and distoclusion were observed. In a study conducted by Bishara et al a higher incidence of malocclusion associated with breastfeeding duration of less than 6 months was observerd[18]. This was similar to our study in which 29 children had distoclusion with a duration of breastfeeding less than 6 months and 27 children had distoclusion with a duration of breastfeeding more than 6 months. Comparing the facial profile it was observed that 97 of children had nonconvex facial profile with a breastfeeding duration more than 6 months.Out of 72 children with non nutritive sucking habits 43 patients were with a breastfeeding duration of less than 6 months and 29 were with a breastfeeding duration of more than 6 months.

There is no doubt that breastfeeding has benefits for general health; nevertheless, the relationship of breastfeeding on oral health is still inconclusive[19]. Although the growth and development of the facial bones is strongly associated with genetic factors [20], it is also believed that environmental factors such as breastfeeding and oral parafunctional habits also affect facial growth[21]. Our findings also point to a hypothesis that nonnutritive sucking habits may act as a dominant factor in the relationship between breastfeeding duration and convex facial profile and distoclusion of the dentition.

Conclusion

From this study it was observed the occurrence of convex facial profile and distoclusion was not associated with breastfeeding duration but with non nutritive sucking habits.However,there was a significant association between reduced breastfeeding duration and nonnutritive sucking habits.Nonnutritive sucking habits may be hypothesized as a dominant variable in the relationship between breastfeeding duration and convex facial profile and distoclusion of the dentition.

Ethical Clearance: Department of research, Saveetha Dental college

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Conflict of Interest: Nil

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