

Role of feeding practices on the oral health of preschool children of gram panchayat, Anoo, Hamirpur, Himachal Pradesh

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Abstract

AIM: To investigate the relationships between feeding habits and the prevalence of early childhood caries in preschool children. **METHODS:** children enrolled in six anganwadi units of gram panchayat Anoo (Hamirpur, H.P) were selected for the study. Clinical examinations were carried out by the examiner using dmft index. Questionnaires for information related to the dietary history of the children were completed by their mothers. **RESULTS:** Caries was seen in 55.38% of the children. Children who were breast fed on demand or were made to sleep with bottle were affected with caries more than children who were fed at fixed intervals only. **CONCLUSION:** The association between the pattern of feeding the child and extensive caries should be a consideration in any local infant feeding policies or health promotion strategies. The duration for appropriate breast- or bottle-feeding should be emphasized.

Key Words: - Brest-feeding, Bottle feeding, Dental caries, Dietary habits

Introduction

Dental caries is the single most common chronic childhood disease. Dental problems in early childhood have been shown to be predictive of not only future dental problems but also on growth and cognitive development by interfering with comfort, nutrition, concentration and school participation.¹ In pre-schoolers, early childhood caries (ECC) which is defined as "the presence of one or more decayed, missing (due to caries) or filled tooth surface in any primary tooth in a child 71 months of age or younger (American academy of Pediatric Dentistry)" is a major cause of dental abscesses and tooth aches. The factors found to be positively associated with ECC include-nocturnal breast feeding² putting the child to sleep with a bottle in mouth, weaning at later age³ enamel hypoplasia² increased frequency of sugar snacks⁴ inadequate oral hygiene⁵, later age of commencement of tooth brushing, lack of parental help with tooth brushing and medically compromised children.¹ Early childhood caries is described as a social, political, behavioral, medical and dental problem. It is a social problem because it clusters in the disadvantaged members of society. Childhood diseases, hunger, and lack of education, family support and parental employment are some of the problems facing families where ECC is endemic.⁴ ECC is a medical problem because infants with ECC continue to grow at a slower pace compared with caries-free infants.⁵ Children born after maternal complications during pregnancy or who have had traumatic births are at risk of developing ECC.⁶ Preventive methods are not applied to many vulnerable children, who later develop serious dental problems.⁷ Moreover children with severe ECC often require costly treatment in a hospital under sedation or general anesthesia.⁸ The present study has been attempted to find out the relationship between feeding practices and early childhood caries in preschool children in Anoo village, Hamirpur district.

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Materials and Method

The study was conducted on total 65 children in the age group of 1 to 5 years, enrolled in six anganwadi units of gram, Anoo (Hamirpur). Anganwadi is the focal point for the delivery of services at community levels to children below six years of age, adolescent girls, pregnant women and nursing mothers. Prior to the study an approval was taken from the Child Development Project Officer, Hamirpur. A verbal consent was also taken from the anganwadi workers and parents of the children. The children were asked to sit on a chair and examined with the help of mouth mirrors and explorers in natural day light. Mothers were allowed to describe how they fed their children and specific questions were asked either to verify the validity of the information, or help the mother to remember details. Questions like whether mothers gave any food or water other than breast milk during first 6 months were specifically asked. Almost all mothers did not have difficulty in remembering the details about feeding. Before starting data collection, agreements were made regarding what questions to be asked during the interview and how the questions would be explained to mothers, to minimize the inter-observer bias. Exclusive breastfeeding was defined as feeding the child only with breast milk, without giving solids or any other food (not even water) for a specified period since birth, but giving vitamins, medicines, minerals and oral rehydration solution was allowed. Age of starting complementary feeding was defined as the age at which solids and semi-solids were introduced to the child in addition to breast milk. Overnight feeding was defined as a child continuing to feed with bottle or mother's milk while sleeping during the night, without rinsing the mouth with water after the feed.

Apart from questions on duration and exclusivity of breastfeeding, duration of bottle feeding and age of introduction of complementary foods (i.e. solids and non-milk beverages) questions related to nocturnal milk feeding have been added and a short food frequency questionnaire had also been added to assess the intake of extrinsic sugars (cariogenic foods).

Clinical examination of an uncooperative child was done using knee to knee position with mother holding the child in her lap. The caries experience of present primary teeth was recorded using dmft index. Children having one or more decayed, missed (due to decay) or filled teeth were considered as affected with ECC. Data regarding risk factors was assessed using a modified form of questionnaire (Annexure 1) that was used by Malvania AE in her study on early childhood caries in preschool children in Gujarat. The interviewers themselves recorded the answers of the questionnaire in order to minimize misinterpretation of questions and to ensure uniformity in data.

Result

A total of 65 children participated in the study of which 30 were males and 35 were females. To evaluate the statistical significance of the data, MINITAB 13.2 was used.

55.38% of study subjects were found to be affected with caries. 19 out of 33 who were breast fed only (57.5%) and 16 out of 29 (55.17%) who were both bottle and breast fed were affected with caries. None of the children had infant formula feed for 1st year of life. One out of three children who were only bottle fed was affected with caries. However the result was not statistically significant. { $\chi^2 = 0.655$, $p > 0.05$, D.F=2}

Complementary foods like boiled dal, rice and vegetables were added to the diet. All bottle fed children were provided with milk to which sugar was added.

Overnight feeding with mother's milk was done in 44 children. Out of 44, 26 were found to be affected with caries. 18 children were using nocturnal bottles while sleeping. Out of 18, 8 were affected with caries. The result was statistically significant. (Table 1)

Table 1: - Relationship between overnight feeding and caries

Overnight feeding with	Unaffected	Affected	Total
Mother's Milk	18	26	44
Bottle	10	8	18

p < 0.01, statistically significant association between overnight feeding and early childhood caries

The subjects who were weaned after 2 years of age had more caries (63.33%) than those who were weaned before 2 years of age (48.51%). However, the result was not statistically significant. (Table 2) { $\chi^2 = 1.425$, $p > 0.05$, D.F=1}

Table 2: - Prevalence of early childhood caries according to weaning age

Weaning age	Unaffected	Affected	Total
Less Than 2 Years	18	17	35
More Than 2 Years	11	19	30
Total	29	36	65

P > 0.05, statistically not significant

Caries was higher among children who consumed snacks on demand (91.67%) than those who consumed snacks once (28.57%), twice (50%) or thrice (77.78%). The result was statistically highly significant. { $\chi^2 = 12.378$, $p < 0.01$, D.F=3}(Table 3)

Table 3: - Prevalence of early childhood caries according to the frequency of eating snacks in a day

Frequency of eating snacks per day	Unaffected	Affected	Total
Once	10	4	14
Twice	5	5	10
Thrice	2	7	9
On demand	1	11	12
Total	18	27	45

p < 0.01, statistically highly significant association between frequency of eating snacks per day and early childhood caries

Discussion

From this study it was found that 55.38 % of study subjects were found to be affected with early childhood caries which is similar to the study conducted by Malvania AE⁴.

Highest prevalence was noted among 5 year old children. With age the prevalence was found to be increasing. The lowest prevalence at 1 year of age could be due to less duration of exposure to cariogenic factors and due to protective nature of mother's milk.

Children who were breast fed had more caries than children who were only bottle fed or fed with both. It could be due to nocturnal breast feeding. Children who were breast fed on demand or were made to sleep with bottle were affected with more caries than children who were fed at fixed intervals only.⁹ Continuing too frequent breast feeding especially on demand and offering breast feeding when a child refuses a main meal will result in child developing lack of interest in solids. This will result in diminished growth of the child as breast milk alone cannot support growth of child beyond 6 years of age.

Children who were weaned after 2 years of age had significantly more caries. Such results might be due to progressively diminished protection from breast milk after 12 months of age with depletion of its protective elements.

Snacks when consumed thrice or on demand resulted in high rate of caries among children. The interesting observation that was made during this study was that none of the children had healthy snacks like fruits routinely in their diets. Food stuffs rich in extrinsic sugars like biscuits, chocolates candies and chips were found to be the preferred snacks by the children. Studies have shown that a high frequency of sugar consumption in infancy was related to the occurrence of caries in 3 years of age. The high frequency of sucrose eating increases the acidogenicity of plaque and enhances the establishment and growth of aciduric mutans streptococci. In this study, an interesting finding was that none of the children had ever visited any dentist before. This observation shows the lack of awareness regarding oral health among the study population.

Conclusion

Advice is required on avoidance of bottle-feeding and importance of breast-feeding. Also parents need to be educated on avoidance of sugar especially in bottle fed children. Parents should be made aware of the harmful effects of cariogenic feeding patterns. They should be advised on healthy feeding practices and good oral hygiene habits. There should be more emphasis on oral health and this should be integrated into general health.

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ANNEXURE I

- I. What is / was the pattern of feeding the child?
 - a. breast fed only
 - b. mixed- breast fed and bottle fed
 - c. bottle fed only
- II. Was the child exclusively breast fed?
 - a. yes
 - b. no
- III. What is / was the pattern of breast feeding?
 - a. on demand
 - b. on fixed intervals

- IV. Till what age was the child fed with mother's milk?
 - a. less than 2 years old
 - b. greater than 2 years of age
 - c. don't know
- V. Is/was the child taking mother's milk at night while sleeping?
 - a. yes
 - b. no
- VI. Does the child have a habit of having milk at night?
 - a. yes
 - b. no
- VII. If yes, what form of milk is given to child?
 - a. plain
 - b. with sugar
 - c. with honey
 - d. if others, specify.
- VIII. Who cleans the teeth of child?
 - a. child himself
 - b. mother
 - c. others
 - d. Does not brush
- IX. What are the measures used for cleaning the teeth?
 - a. finger
 - b. toothbrush alone
 - c. toothbrush with toothpaste
 - d. If other, specify.
- X. At what age was brushing started?
 - a. less than 1 years of age
 - b. 1.5 years of age
 - c. 2 years of age
 - d. 3 years of age
 - e. 4 years of age & above
- XI. Does the child have the habit of having snacks between meals?
 - a. yes
 - b. no
- XII. If yes (in XII), what is the frequency of having snacks per day?
 - a. once
 - b. twice
 - c. thrice
 - d. On demand.
- XIII. What types of snacks are taken?
 - a. chocolates & candy
 - b. biscuits
 - c. chips
 - d. fruits
 - e. others, specify