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Assessment and Prevention of Dental Caries in Children Who Were on Artificial Feeding

Jalilova Fariza Rasuljanovna¹, Murtazaev Saidmurodkhon Saidialoevich²

¹Basic Doctoral Student, Pediatric Dentistry Department, Tashkent State Dental Institute, Uzbekistan; ²Associate Professor & Head, Pediatric Dentistry Department, Doctor of Medical Sciences, Tashkent State Dental Institute, Uzbekistan.

ABSTRACT

Background: Dental caries is among the most frequently occurring dental diseases in children. In the present study, we assessed the prevention of dental caries in children who were on artificial feeding.

Methods: The present study was conducted on 1560 children age ranged 3-5 years of both genders and assessment of dental caries was done using dentition status and treatment need as per criteria laid by World Health Organization (WHO).

Results: Out of 1560 children, boys were 840 and girls were 720. Age group 3 years had 120 boys and 160 girls, 4 years had 270 boys and 300 girls and age 5 years had 450 boys and 260 girls. Out of 840 boys, 360 had caries and out of 720 girls, 390 had caries. The mean dm ft score in boys was 1.60 ± 0.58 and in girls was 1.54 ± 0.56 . Maximum caries was seen in which age of starting of bottle feeding was <6 months seen in 140, 6-12 months in 180 and 1-2 years seen in 210 children. Maximum caries was seen in children in which the duration of bottle-feeding/ day was 3 hours (260), 2 hours (160) and 1 hour (160). Maximum caries was seen in children in which 1-2 tsp were added (230) followed by 1 tsp (220) and 0 tsp (80). Maximum caries was seen in children in which bottle was used throughout the night in 220, only during feed in 70 and sometimes in 50. Maximum caries was seen in children in which frequency of tooth brushing was occasionally seen in 300, once in 440 and twice seen in 10 children. The difference was significant ($P < 0.05$). Pit and fissure sealant was used in 60% and GIC restoration in 40% of children.

Conclusion: Authors found that bottle feeding is one of the risk factors for early childhood caries. Mother care and awareness regarding child oral hygiene are of paramount importance in preventing the occurrence of dental caries.

Key Words: Bottle feeding, Dental caries, Pit, Fissure

INTRODUCTION

Dental caries is among the most frequently occurring dental diseases in children. It is the disease of calcified hard tissue characterized by destruction of organic and demineralization of the inorganic portion of the tooth.¹ It has infected 60-90% of school-going children and adults.² It is found that feeding practices have a profound role in causing dental caries. Apart from this, the intake of low fibre and high sugar is another factors. In the first few years, the breastfeeding, use of bottles for milking and complementary foods use have served as aggravating factors.³

Early childhood caries (ECC) affects the child quality of life with the increased risk of infecting permanent teeth too. ECC is considered to be a public health problem. Determinants such as socioeconomic, sociobehavioural and sociocultural

are thought to be affected by specific risk factors for ECC like oral hygiene, dietary and feeding practices and dental attendance patterns.⁴

In India due to rapid change of lifestyle including change of dietary habits has significantly increased the dental caries incidence in children. Mothers play an important role in preventing the occurrence of dental caries in children. It is found in the literature that mothers who have insufficient knowledge about feeding habits have their child more dental caries pattern.⁵ In the present study we assessed the prevention of dental caries in children who were on artificial feeding.

MATERIALS AND METHODS

The present study was started after obtaining ethical approval from the ethical committee of the institute. All

Corresponding Author:

Jalilova Fariza Rasuljanovna, Basic Doctoral Student, Pediatric Dentistry Department, Tashkent State Dental Institute, Uzbekistan.

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parents of 1560 children age ranged 3-5 years of both genders were informed and their written approval was obtained (Table 1). Demographic data such as name, age, gender etc. was recorded. A questionnaire was prepared and distributed among parents regarding feeding habits such as breastfeeding duration, artificial feeding duration etc. A thorough oral examination by an expert dental surgeon was assessed dental caries using dentition status and treatment need as per criteria laid by the World Health Organization (WHO). Assessment of dental caries was done using mouth mirror, probe and explorer. Dmft status such as decayed, missing and filled teeth was recorded in all children. Results of the study were tabulated and subjected to statistical assessment using SPSS version 19 (IL, Chicago, USA). P<0.05 value was considered significant.

RESULTS

Demographic characterization

Total 1560 children were enrolled and 840 were boys and 720 girls. Table 2 shows that age group 3 years had 120 boys and 160 girls, 4 years had 270 boys and 300 girls and age 5 years had 450 boys and 260 girls.

Table 1: Gender wise distribution of children

Gender	Total-1560	
	Boys	Girls
Number	840	720

Table 2: Age-wise distribution of children

Age group (Years)	Boys	Girls	Total
3	120	160	280
4	270	300	570
5	450	260	710
Total	840	720	

Method of prevention on dental caries

Figure 1 shows that pit and fissure sealant was used in 60% and GIC restoration in 40% of children.

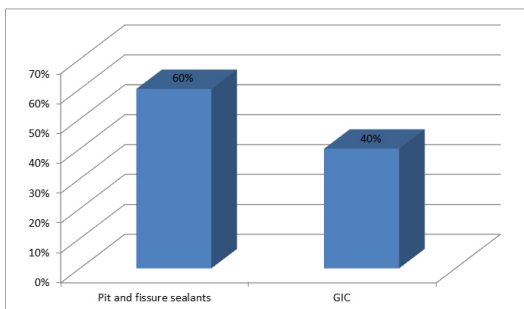


Figure 1: Method of prevention on dental caries.

Prevalence of dental caries

Table 3 shows that out of 840 boys, 360 had caries and out of 720 girls, 390 had caries. The mean dmft score in boys was 1.60± 0.58 and in girls was 1.54± 0.56. Table 4 shows that maximum caries was seen in which age of starting of bottle feeding was < 6 months seen in 140, 6-12 months in 180 and 1-2 years seen in 210 children. Maximum caries was seen in children in which the duration of bottle-feeding/ day was 3 hours (260), 2 hours (160) and 1 hour (160). Maximum caries was seen in children in which 1-2 tsp were added (230) followed by 1 tsp (220) and 0 tsp (80). Maximum caries was seen in children in which bottle was used throughout the night in 220, only during feed in 70 and sometimes in 50. Maximum caries was seen in children in which frequency of tooth brushing was occasionally seen in 300, once in 440 and twice seen in 10 children. The difference was significant (P< 0.05).

Table 3: Prevalence of dental caries

Gender	Caries free	Caries affected	Dmft (mean± SD)
Boys	480	360	1.60± 0.58
Girls	330	390	1.54± 0.56
Total	810	750	2.06± 2.98

Table 4: Caries based on feeding habits and oral hygiene habits

Parameters	Variables	Total	Caries free	Caries affected	P-value
Age of starting of bottle feeding	<6 months	300	160	140	0.02
	6- 12 months	240	60	180	
	1-2 years	310	100	210	
Duration of bottle feeding/ day	Not introduced	710	490	220	0.05
	1 hour	220	80	160	
	2 hour	210	50	160	
Sugar added	3 hour	280	70	210	0.04
	None	710	490	220	
	0 tsp	200	120	80	
Frequency of child falling asleep with bottle	1 tsp	340	120	220	0.05
	1-2 tsp	350	120	230	
	No	670	470	220	
Frequency of tooth brushing	Throughout night	320	100	220	0.01
	Only during feed	180	110	70	
	Sometimes	190	40	50	
Frequency of tooth brushing	Never	870	460	410	0.01
	Once	1020	580	440	
	Twice	80	70	10	
	Occasionally	460	200	300	

DISCUSSION

Dental caries pattern in high prevalence in school going children as compared to adults. The reason can be multiple.⁶ The high sugar intake, lack of maintenance of oral hygiene, failure to adhering to brushing by mothers, frequent and prolonged use of bottle feeding etc are few contributing risk factors.^{7,8} It is evident in many studies that children who start bottle feeding early in life tend to have more prevalence of dental caries as compared to those who start late or never. It is also demonstrated in various studies that the use of sugar mixed in milk is the leading cause of dental caries and the amount of sugar added determines the caries prevalence.^{9,10} The present study was conducted to determine caries prevalence and method to control it in children who were on artificial feeding.^{6,7}

In the present study, the age group 3 years had 120 boys and 160 girls, 4 years had 270 boys and 300 girls and age 5 years had 450 boys and 260 girls. We observed that out of 840 boys, 360 had caries and out of 720 girls, 390 had caries. The mean dmft score in boys was 1.60 ± 0.58 and in girls was 1.54 ± 0.56 .^{8,9} A study on mothers' practices regarding feeding and oral hygiene practices and found that there was a 48% prevalence of ECC with 2.03 ± 2.99 dmft scores. 57% of boys and 43% girls were affected which was found to be statistically significant ($P < 0.05$). Caries prevalence was statistically significant ($P < 0.05$) and high among those who were breastfed for during nighttime, longer duration, those fed with additional sugar in milk, and those falling asleep with a bottle.^{10,11}

We found that maximum caries was seen in which age of starting of bottle feeding was < 6 months seen in 140, 6-12 months in 180 and 1-2 years seen in 210 children. Maximum caries was seen in children in which the duration of bottle-feeding/ day was 3 hours (260) followed by 2 hours (160) and 1 hour (160). Felden et al.¹² in their study on 345 children of different age groups found that as compared to children with 12-month infrequent bottle use and breastfeeding, 38-month ECC prevalence was 1.8-times higher in children breastfed >3 times/day. Results showed that ECC prevalence was 1.4-times higher in children bottle-fed >3 times/day and 1.5-times higher with breastfeeding together and combined high frequency of bottle ($p=0.04$), but the association with consuming other foods/drinks >5 times/day was not statistically significant. Severe-ECC prevalence was significantly associated with frequent breastfeeding.

We observed that maximum caries was seen in children in which 1-2 tsp were added (230) followed by 1 tsp (220) and 0 tsp (80). Maximum caries was seen in children in which bottle was used throughout the night in 220, only during feed in 70 and sometimes in 50. Maximum caries was seen in children in which frequency of tooth brushing was occasionally seen in 300, once in 440 and twice seen in 10 children. The difference was significant ($P < 0.05$).

We observed that method of caries prevention used as pit and fissure sealant in 60% and GIC restoration in 40% of children. It is found in the present study that those who were not on bottle feed had less prevalence of dental caries as compared to those who started earlier in their life.¹² The shortcoming of the study is the small sample size. The type of brushing method used was not recorded.

CONCLUSION

Bottle feeding is one of the risk factors for early childhood caries. Mother care and awareness regarding child oral hygiene are of paramount importance in preventing the occurrence of dental caries.

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