

ORIGINAL ARTICLE

Prevalence of Dental Caries Among Paediatric Patients in Holy Family Red Crescent Medical College Hospital

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Abstract :

A cross sectional, descriptive study was done to find the incidence of dental caries among paediatric patients by age, oral hygiene and correlation to the parent's occupation, education status. Total 400 children aged 2-12 years who attended the Holy Family Red Crescent Medical College Hospital, Dhaka during the study period were included in the study. Among them the number of boys and girls were 194 (48.5%) and 206 (51.5%) respectively. The children of 6-7 years old had the highest caries score both for primary and permanent teeth. It indicated that children at this age group were more vulnerable to dental caries. It may be because they were too young to take care of their teeth at the same time their parents may not aware about the information regarding eruption time of permanent teeth in the mouth. The study results also revealed that parent's occupation had a great impact on their oral hygiene status where the business and teaching occupation had a negative and positive influence on their children respectively. Therefore, education may have a great role about maintaining better life-style.

Introduction :

Dental caries may be defined as irreversible progressive microbial disease of calcified tissues of teeth that leads to demineralization of the inorganic components followed by the subsequent breakdown

of the organic constituents of tooth (enamel, dentin and cementum). All types of dental caries of children especially in infants and toddlers are now collectively known as Early Childhood Caries (ECC). During the first three years of life, any sign of dental caries on tooth surface is defined as ECC. The biology of ECC production may differ from other types of coronal smooth surface caries in some respects even though the etiology of all of them is similar. In young infant, the bacterial flora and host defense systems are in the process of being established; in addition the tooth surfaces of newly erupted teeth still remain immature like hypoplastic state¹. Thus infants and young children may always be at unique risk for caries development. The factors responsible for the development of caries

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are: i) Susceptible tooth ii) Acid- producing micro-organisms (especially from dental plaque) and iii) Substrate (fermentable carbohydrate like sugar). Interaction among all the three factors must be necessary for the initiation of caries. Sucrose is the most cariogenic because of its special ability to be converted into extra cellular polysaccharides which become a part of the dental plaque. Moreover, saliva definitely has some inhibitory role against the development of caries. Its action is both mechanical, via cleaning effect, and chemical, via specific interactions with bacteria, acid, carbohydrate and the tooth surface. Saliva has influences on caries not only by its composition, but also by its rate of flow and other properties.

Decreased salivary flow increases the susceptibility to caries by reducing the rate of clearance of food around the teeth as well as reducing other buffering and antiseptic actions².

Streptococci are essential microbes for development of caries, especially, streptococci-mutans, streptococcus sobrinus, streptococcus salivarius. Streptococcus mutans strains are a major component of plaque in human mouth, particularly in persons with a high dietary sucrose intake and high caries activity. Viridans streptococci vary in their ability like, to attach to different types of oral tissues, to ferment sugars (particularly sucrose), and to produce concentrated acid. Essential requirements for development of dental caries are: cariogenic bacteria, bacterial plaque, stagnation areas, fermentable bacterial substrates (sugar) on susceptible tooth surfaces.

Furthermore, surface imperfections such as deep fissures or pits will determine the areas where carbohydrates and micro-organism would be stagnated and thus initiated caries. In this situation, careful measure should be taken especially to prevent the caries occurrence. Early screening of children could identify any signs of caries development. Therefore, it could be possible to

assist the parents providing adequate information about the risk of developing caries for their children as well as could offer prompt treatment for already established caries. In addition, it will also create an opportunity to promote oral health education to prevent the occurrence of dental caries. The educational aspects of a program will give stress on the importance of preserving the teeth particularly the deciduous. Furthermore, high risk children could also be targeted with a professional preventive program that includes fluoride varnish application, fluoridated dentifrices, fluoride supplements, pits and fissure sealants, diet counseling and chlorhexidine mouth wash³.

Materials and method :

A cross sectional, descriptive study was done to find the incidence of dental caries among paediatric patients by age, oral hygiene and correlation to the parent's occupation, education status. Total 400 children aged 2-12 years who attended the Holy Family Red Crescent Medical College Hospital, Dhaka during the study period from January to June 2011 were included in the study. Raw data was collected by face to face interview along with oral examination. After examining the child, the investigator was taken an interview from the mother. During interviewing the investigator was used both structured and semi structured questionnaire to get more reliable information. Statistical analysis was done by using SPSS version 15.0.

Results:**Table-I :** Distribution of study population according to age group (n = 100)

Age of the Patient	Frequency	Percent (%)
2.00	8	2.0
2.50	4	1.0
3.00	3	.8
3.50	11	2.8
4.00	19	4.8
4.50	15	3.8
5.00	38	9.5
5.50	18	4.5
6.00	58	14.5
6.50	11	2.8
7.00	62	15.5
7.50	6	1.5
8.00	37	9.3
8.50	2	.5
9.00	36	9.0
9.50	4	1.0
10.00	25	6.3
11.00	20	5.0
11.50	1	.3
12.00	22	5.5
Total	400	100.0

The study includes 400 patients between 2-12 years of age. As seen in Table I out of 400 patients, higher percentage of the patients 137 (34.25%) were in the age group of 6-7 years where the most of the respondents were in the age of 7 years which is 62 (15.5%). The least number of patients were in 11.5 years age group. The mean age of patients was 7.06 ± 2.40 .

Table II : Frequency of DMFT (decayed missing filled teeth) of primary teeth

DMFT	Frequency	Percentage
.00	21	5.3
1.00	15	3.8
2.00	54	13.5
3.00	115	28.8
4.00	85	21.3
5.00	52	13.0
6.00	39	9.8
7.00	2	3.0
8.00	7	1.8
Total	400	100.0

Table II displays the distribution of dmft among the respondents. From this table it has been found that most of the children 115 (approximately 29%) of this study had 3 dmft and only 5.3% (21) of study children had no caries.

Table III : Frequency of DMFT of permanent teeth

DMFT	Frequency	Percentage
.00	203	50.8
1.00	40	10.0
2.00	69	17.3
3.00	49	12.3
4.00	30	7.5
5.00	6	1.5
6.00	1	.3
7.00	1	.3
10.00	1	.3
Total	400	100.0

Table III demonstrates that more than 50% (50.8%) had no caries on their permanent teeth and the highest DMFT score was 2 among 17.3% (69) of children. Since in comparison to primary teeth the number of permanent teeth was less among this study population probably this is the reason for this figure.

Table IV : Distribution of DMFT by different occupation of parents

DMFT	Business professional			Teaching Professional	Total
	Low income	Medium income	High income		
.00	3	5	10	3	21
1.00	2	7	4	2	15
2.00	8	25	15	6	54
3.00	25	39	38	13	115
4.00	15	19	36	15	85
5.00	10	13	15	14	52
6.00	9	11	11	8	39
7.00	6	1	1	4	12
8.00	0	4	3	0	7
Total	8	124	133	65	400

In Table IV, 115 patients had the highest score about caries experience (dmft = 3) where the children of business man and medium category service holder (approximately 31%) had 3 dmft.

Table V : Distribution of DMFT by time of clean teeth

DMFT	Before breakfast	Before going bed	Total
.00	17	4	21
1.00	9	6	15
2.00	47	7	54
3.00	111	4	115
4.00	81	4	85
5.00	52	0	52
6.00	39	0	39
7.00	12	0	12
8.00	7	0	7
Total	375	25	400

Table V compares the difference between those children who clean their mouth before breakfast and the children who clean their mouth before going to bed after dinner. It has been found that the children whose dmft was 0, 81% of them clean their teeth before breakfast and the rest 19% clean their teeth before going to bed. Although this is against the current concept of dental caries incidence but it happens in this study. Under reporting or over reporting may play a role here.

Discussion :

The present study included 400 patients between 2-12 years of age where 137 (34.25%) were in 6-7 years old aged children and the highest number of respondents 62 (15.5%) were in the age of 7 years and the least number of children were among 11.5 years old aged group. The mean age of the patients was 7.06 ± 2.40 .

Among the study subjects most children 115 (29%) had 3 dmft and only 21 (5.3%) had no caries experience on their primary teeth and more than 50% (50.8%) children had no caries experience on their permanent teeth and the highest score of caries status was 2 among 69 (17.3%) children.

Since in child's mouth the number of primary teeth is more than the number of permanent teeth, might be the reason for this.

Another prevalence study of dental caries among 5-13 years old children was carried out in Mangalore City. Where 5-7 years old age group children constitutes the highest number.

Nearly a similar study conducted in Mangalore City showed equally high caries prevalence in school going children both in primary and permanent teeth.

The present study also revealed no significant difference in caries prevalence between the two genders. This result resemble exactly with the study conducted by Shetty, Tandon and Jai⁴.

Another different result obtained by Vacher, Auckland and Bjelkaroe, a higher caries experience among boys than girls⁵. In contrast, girls showed higher caries prevalence than the boys by another similar study carried out by Mishra and Shee⁶. The present study depicted that caries experience was both in primary and permanent teeth highest in the 6-7 years old age group.

Since at the age of 6-7 years the permanent tooth erupts in the mouth when the children are too young to take care of their teeth. Further more, most parents do not have any idea about the eruption of permanent teeth in such an early age. According to present study it was detected that the missing teeth component due to caries (mt) was zero in 42.5% (170) children. Again amongst these 170 patients, the children of teaching profession

showed the lowest number (15%) in comparison to business man who showed the highest (36%). Contrarily, the children of teaching profession showed least number (10.6%) 8 of decayed component (dt) of dmft while the children of business man and medium category job showed the almost highest

38.6% (29) and 36% (27) respectively. It might be that the children of business man was leading a more luxurious life (in terms of having more sugar and snacks) comparing to the children of teachers. On the other hand, the children of teaching profession may maintain a healthy life style due to ideology of teachers.

The result of this study showed that among 400 study children 60% (239) and amongst the child who liked chocolate more, nearly 97% children had caries experience. In a study conducted in Bangalore City concluded that the caries prevalence was increased in the increasing number of sugar exposure.

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