

Prevalence of dental caries in the primary dentition among under five children

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Abstract

Dental caries is the most important dental health problem in developing countries. The study aimed to estimate the prevalence of dental caries in primary dentition among under 5 years children. A simple random sampling method was used. Study population was under 5 children attending dental department of Khulna Medical College Hospital from January to June 2010. A total of 672 children were examined. The prevalence of dental caries was 44.34%. Caries prevalence was higher in the boys than the girls and it was statistically significant ($P < 0.05$). It was also found that primary second molars were the highest carious tooth. The prevalence of dental caries among under 5 children was high. There is a need to generate awareness about oral health and the prevention of dental caries.

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Introduction

Dental caries is progressive bacterial damage to teeth exposed to the saliva and is one of the most common of all diseases and major cause of loss of teeth¹. It is an important dental public health problem and most prevalent oral disease among children in the world. This disease not only cause damage to teeth but is also responsible for several morbid conditions of the oral cavity and other systems of the body². Oral health is an integral component of general health and is essential for wellbeing. There is evidence to prove the interrelationship between oral and general health³. Many general health conditions have oral manifestations that increase the risk of oral disease which, in turn, is a risk factor for many systemic diseases, such as diabetes, cardiovascular diseases etc. The prevalence of dental caries not only varies with age, sex, socioeconomic condition, geographic location, race, food habits and oral hygiene practices but also within the oral cavity.

Dental caries is the major oral health condition in developing countries, affecting 60-90% of the school children and vast majority of adults⁴. The world health organization recommends basic oral health surveys in five selected age groups (i.e. 5 years, 12 years, 17-18 years, 35-44 years and 65-74 years) in order to estimate the magnitude of the problem and to plan intervention activities⁵.

Despite great success in improving the oral health of populations globally, problems still remain in many communities around the world, particularly among the under privileged groups in developing countries. Dental caries and periodontal diseases have historically been considered an important component of the global disease burden. Both can be effectively prevented and controlled through a combination of community professional and individual actions. The prevalence of dental caries is of great interest for long

and is a principal subject of many epidemiological researches carried out all over the world. But in Bangladesh regarding this crucial condition actual data is not available. A limited survey was done but real scenario was not reflected. Therefore, keeping in mind the paucity of literature on dental problems among 5 years old school children and the public health importance of dental caries, this study was planned to provide some information on the oral health needs of the 5 years old school children attending in dental department of Khulna Medical College Hospital.

Materials and methods

A Cross sectional study was conducted on 5 years old school children attending Dental Department of Khulna Medical College Hospital. A simple random sampling method was followed. The study was conducted from January to June 2010. A total of 672 children were taken as a study population. Among them 352 were boys and 320 were girls. Data collection included a clinical examination and structured questionnaire. The clinical examination was performed by single investigator under head lamp illumination using oral probe and mirror. The study population were examined and dental caries were registered following WHO criteria. All questionnaires and data forms were checked for completeness and consistency. The data were computerized and analysed applying the Statistical Package for the Social Sciences (SPSS) program.

Results

The study population was 672 school going children of the age below 5 years and among them 352 boys and 320 girls. Caries prevalence was 44.34%. Sex wise comparison revealed that caries prevalence was higher in boys (47.44%) than in girls (40.94%) and the difference was significant statistically ($P < 0.05$) Table-I.

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Table I

Prevalence of dental caries among study population

Age in years	Sex	Examined	Caries		P-value
			N	%	
<5	Boys	352	167	47.44	<0.05
	Girls	320	131	40.94	
	Total	672	298	44.34	

Caries prevalence was 26.64% in the maxillary arch and 36.76% in the mandibular arch. Among boys, the mandibular arch showed a higher caries level (38.64%) than the maxillary arch (30.97%) and the difference was significant statistically ($P < 0.05$). Similarly among girls, the mandibular arch showed higher caries prevalence (34.69%) than the maxillary arch (21.88%) and the difference was statistically significant ($P < 0.01$) Table-II

Table II

Arch wise prevalence of dental caries

Sex	Examined	Maxillary arch caries		P-value	Mandibular Arch caries		P-value
		N	%		N	%	
Boys	352	109	30.97	<0.05	136	38.64	<0.01
Girls	320	70	21.88		111	34.69	
Total	672	179	26.64		247	36.79	

Among boys caries prevalence was 40.34% and 40.91% for right and left sides respectively. Among girls caries prevalence was 34.38% and 35.63% for right and left sides respectively. The differences was not significant (Table-III).

Table III

Dental caries prevalence on right and left side of oral cavity

Sex	Examined	Right side caries		Left side caries	
		N	%	N	%
Boys	352	142	40.34	144	40.91
Girls	320	110	34.38	114	35.63
Total	672	252	37.50	258	38.39

In both the sexes, when caries was compared between the anterior and posterior teeth, caries prevalence was higher in the posterior segment than the anterior segment. When the caries prevalence of the anterior teeth was compared between the sexes, boys showed higher caries prevalence than girls and the difference was statistically significant ($P < 0.01$) Table-IV

Table IV

Tooth wise and sex wise prevalence of dental caries.

Type of tooth	Boys' examined	Caries N	P-Value	Girl examined	Caries N	Total examined	Caries		P-value	
							%	N		%
Central Incisor	1389	109	7.80		1269	53	4.1	2658	162	6.69
Lateral Incisor	1404	48	3.42	<0.001	1278	25	1.96	2682	73	2.72
Canine	1407	30	2.13		1280	15	1.17	2627	45	1.67
I Molar	1403	235	16.74		1278	161	12.60	2681	396	14.77
II Molar	1400	249	17.79		1275	207	16.24	2680	457	17.05

Comparison of caries between the arches caries occurred more frequently in the posterior teeth. Comparison of caries between the arches in the anterior segment revealed that caries attack was higher in the maxillary arch and the difference was significant statistically ($P < 0.01$). On the other hand, comparison of caries prevalence was higher in the mandibular arch. The difference was significant statistically ($P < 0.001$).

Table V

Tooth wise prevalence of dental caries.

Type of tooth	Maxillary arch examined	Caries		P-value	Mandibular arch examined	Caries		P-value
		N	%			N	%	
Central Incisor	1335	156	11.69	<0.001	1332	7	0.53	<0.001
Lateral Incisor	1340	71	5.30		1338	2	0.15	
Canine	1340	34	2.61		1340	10	0.74	
I Molar	1340	130	9.70		1340	265	19.78	
II Molar	1340	143	10.67		1340	318	23.73	

Discussion

In the present study the number of boys is slightly higher than the girls and the percentage is 52.38% and 47.62% respectively. Of them caries was significantly more prevalent in boys than in girls which suggest that dental caries show some predilection for sex. Same findings were detected by Zerfo Wski M et al¹⁶. But opposite scenario was shown by MS Ullah et al but in that study the age of the children was 12 years.⁷

Inter arch comparison revealed that caries prevalence was higher in mandibular arch and in both the sexes it was statistically significant. Jaw. adekar S.J et al reported same findings.⁸ Higher caries prevalence in upper arch was reported by P.V. sathe.⁹ Caries prevalence in relation to right and left side of the oral cavity it is evident that dental caries occurs predominantly as a bilateral phenomenon. Similar findings were observed by Dunning J M.¹⁰ In our study caries attack was 4 times and 6 times more in the posterior teeth than anterior. Almost same findings were observed by chawla HS et al.¹¹ This is due to complex morphological nature of posterior teeth.¹²

In this study it was found that the 2nd molar (Primary dentition) is the tooth with highest caries experience. In cases of children 2nd deciduous molar erupts at a later date. The findings of Goran K et and pinkham were similar.¹³ This difference in individual tooth susceptibility is due to the fissure topography of

molars. The pits and fissure in second primary molars are deeper and less completely coalesced.¹⁴

In the present study "Nursing caries" were found in maxillary primary incisors, maxillary and mandibular primary molars but mandibular primary incisors are almost unaffected.¹⁵ The primary lower incisors are protected by the tongue and the opening of major salivary ducts but upper molar teeth is not protected by the opening of parotid glands. Carious attack was higher in mandibular arch than maxillary arch in the molar teeth. Similar findings were found by sarker S et al.¹⁶

Conclusion

This study showed that the prevalence of dental caries in primary dentition was 44.34% among the study population. Boys were found more affected than the girls. Mandibular molars, maxillary anterior were the predominantly affected teeth. But the mandibular anterior teeth was least affected. There is a need for accessible and affordable oral health services to be provided to the community.

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