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CARIES PREVALENCE AND SUSCEPTIBILITY OF SURFACES ON INDIVIDUAL PRIMARY TEETH IN CHILDREN OF NELLORE TOWN.

Dental Science

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ABSTRACT

Aim: To assess surface prevalence and susceptibility of dental caries on individual primary teeth surfaces.
Methods: 800 children of 5-12 years age from four different schools in different areas of Nellore town were examined for pattern and susceptibility of teeth surfaces to caries in a classroom setting with dental mirrors and blunt sickle-shaped explorers under natural and adequate illumination.
Result: The study showed that primary mandibular first molars were most susceptible to caries than any other primary molars.
Conclusion: Knowledge of the pattern of dental caries in children is important in designing the preventive clinical procedures, community-based programmes and formulation of appropriate treatment strategies for these children.

KEYWORDS

Dental caries, prevalence, susceptibility

INTRODUCTION

Dental caries is the most prevalent health problems affecting 60 to 90% of school aged children and adults. The prevalence of teeth surface caries differs between countries and with respect to geographic location, occupation, income, social class, ethnic group, education, lifestyle, etc. It was observed that a greater number of caries was experienced in younger age groups, and this rate decreases with age.

Susceptibility of teeth to caries depends on various factors. It was found that susceptibility to caries rises rapidly to the maximum rate approximately 2 to 3 years post-eruption. In 1941, Klein and Palmer[1] were the first to describe the relative susceptibility to dental caries of various morphological tooth types.

Individual tooth surfaces have vastly different susceptibilities to caries, with the pit and fissure (occlusal) surfaces the most susceptible, and the smooth (labial and lingual) surfaces the least susceptible.[2,3]

Many studies have also shown that the various tooth types and surfaces showed variable vulnerability to dental caries.[4,5] Such site variability has been linked to many factors which include: (a) tooth anatomical configuration, e.g. pit and fissures, (b) the volume of saliva, and (c) the type of bacterial ecology at the sites.[6,7,8]

In primary and permanent dentitions two general patterns of caries can be found
1. Enamel defect associated lesions
2. Smooth surface lesions

Information on surface-specific dental caries patterns is a useful source in deciding which ***preventive strategies*** to use. So in the present study the prevalence and pattern of dental caries were assessed.

Methodology

The present study was conducted in 800 children of 5-12 years age from four different schools in different areas of Nellore town. The teachers and parents were informed about the purpose of this study and consent was obtained. All the children were examined for pattern and susceptibility of teeth surfaces to caries in a classroom setting with dental mirrors and blunt sickle-shaped explorers under natural and adequate illumination.

The surfaces recorded were as follows:

1. Distal
2. Mesial
3. Lingual/Palatal
4. Labial/Buccal
5. Occluso-buccal
6. Occluso-lingual
7. Occlusal
8. Mesio occlusal
9. Disto occlusal

RESULTS

- Of the total 16000 teeth examined caries was present in **887** teeth.
- The results of the present study showed that the overall prevalence of dental caries (dmf) of the primary teeth in children was **5.5%,** in which posterior teeth showed a higher prevalence
- The mandibular first molars were the most susceptible than any other primary molars.

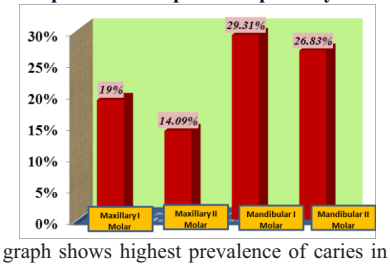
Tables in the present study

Table 1: Caries prevalence in primary teeth

Primary Tooth	Percentage of prevalence
Maxillary I molar	19%
Maxillary II molar	14.09%
Mandibular I molar	29.31%
Mandibular II molar	26.83%
Anterior teeth	10.77%

The above table shows the highest prevalence of caries in posterior primary teeth

Graph 1: Caries prevalence in posterior primary teeth



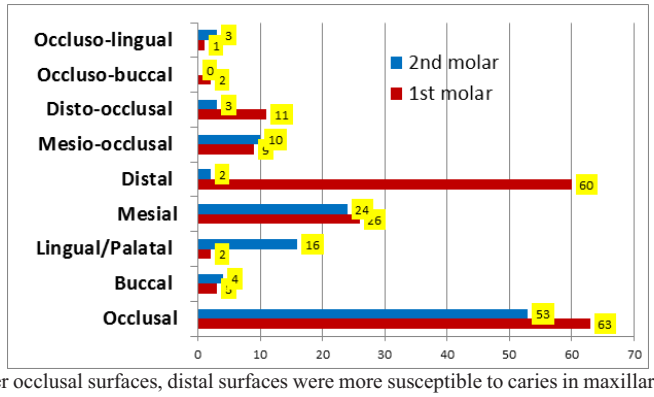
The above graph shows highest prevalence of caries in mandibular molars

Table 2: Susceptibility of surfaces in Maxillary teeth

Maxillary	occlusal	buccal	lingual	mesial	distal	Mesio-occlusal	Disto-occlusal	Occluso buccal	Occluso lingual
1st molar	63(7.1%)	3 (0.3%)	2(0.22%)	26(2.9%)	60(6.7%)	9	11(1.24%)	2 (0.22%)	1 (0.1%)
2nd molar	53(5.9%)	4(0.4%)	16(1.8%)	24(2.7%)	2(0.22%)	10(1.12%)	3 (0.3%)	-	3 (0.3%)

The above table showed that after occlusal surfaces, distal surfaces were more susceptible to caries in maxillary 1st molars where as in 2nd molars mesial surfaces were more susceptible to caries.

Graph 2: Susceptibility of surfaces in Maxillary teeth



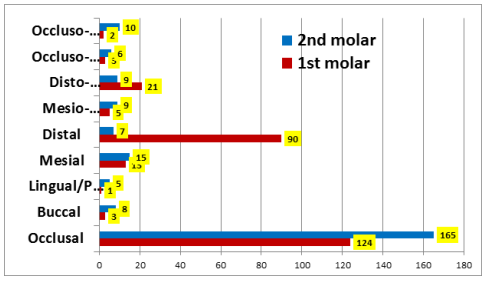
The above graph showed that after occlusal surfaces, distal surfaces were more susceptible to caries in maxillary 1st molars and in 2nd molars after occlusal surfaces mesial surface showed more susceptibility.

Table 3: Susceptibility of surfaces in Mandibular teeth

Mandibular	Occlusal	Buccal	Lingual	Mesial	Distal	Mesio-occlusal	Disto-occlusal	Occluso buccal	Occluso lingual
1st molar	124(13.9%)	3(0.3%)	1(0.1%)	13(2.9%)	90(10.1%)	5(0.5%)	21(2.3%)	3(0.3%)	2 (0.22%)
2nd molar	165(18.6%)	8(0.9%)	5(0.5%)	15(1.69%)	7(0.78%)	9(1.09%)	9(1.09%)	6(0.67%)	10 (1.12%)

The above table showed that after occlusal surfaces, in mandibular 1st molars, distal surfaces are more susceptible to caries where as in 2nd molars mesial surfaces are more susceptible to caries

Graph 3: Susceptibility of surfaces in Mandibular teeth



The above graph shows after occlusal surfaces, in mandibular 1st molars distal surfaces are more susceptible to caries and in 2nd molars after occlusal surfaces mesial surface showed more susceptibility.

DISCUSSION

The overall caries prevalence was more in the posterior teeth when compared to anterior teeth which is in accordance with SS Rahman.[9]

In our study caries attack was 3 to 5 times more in the posterior teeth than anterior. Almost same findings were observed by Chawla HS et al and Rehman SS etal.[9,10] This is due to complex morphological nature like the depth and anatomy of occlusal fissures of posterior teeth.[11]

Inter arch comparison revealed that caries prevalence was higher in mandibular arch and in both the sexes. Jawadekar S.J et al and Sarker S et reported same findings.[12,13] Whereas higher caries prevalence in upper arch was reported by P.V. Sathe.[14]

Groupings by resistance may explain the rapid stepped rates of decline of caries in the past 30 years which was stated by Batchelor and Sheiham in 2004.[15] The blood pressure levels at one age predict the levels at a later age known as 'tracking. Massler et al. [1954] proposed that same tracking phenomenon also occurs with dental caries. The groups with the higher severity level at 6 years of age would follow a higher 'channel' or track representing the higher dental caries in later stages.[16,17]

If only the lower first molars were involved at 8 years of age, the attack was said to be mild. If, at the same age, all 4 first molars were affected, the attack was moderate. The idea of individuals being in susceptibility 'channels' was also highlighted by Carlos and Gittelsohn in 1965.[18]

This study showed that in both arches, first primary molars are more susceptible than the second primary molars which may be due to early eruption of first molars in to the oral cavity. In one more study conducted in primary dentition, most affected teeth were mandibular second molars (23.51%), followed by maxillary second molars (16.46%), mandibular first molars (15.91%), maxillary first molars (13.74%), and maxillary anteriors (11.93%). Mandibular anteriors were least affected (3.98%).[19] The findings of Macek MD, Goran K et and Pinkham were similar.[20,21]

When it comes to susceptibility of surfaces, the occlusal surfaces of molars found to be more susceptible. Batchelor and Sheiham confirmed that the most susceptible tooth surfaces to decay are occlusal surfaces of first molars and buccal pits of lower first molars.[15] After occlusal surfaces, the proximal surfaces of first molars that to distal surfaces were more involved than the proximal of second molars which is in accordance with Ferror R (2009). In this present study distal surfaces of first molars were more susceptible to caries in both maxilla and mandible, whereas in second primary molars, the mesial surfaces were more susceptible. First primary molars had significantly more caries lesions than second primary molars. This can be explained by the fact that at the age of 5 years the first permanent molars are not erupted yet, so the second primary molar has only one proximal surface (mesial) which is in contact with another tooth. On the contrary, the first primary molar has contact points with both the canine and the second primary molar, creating an additional predilection site to develop proximal caries.[22,23]

CONCLUSION

Highest prevalence of caries was noted on the posterior primary teeth and the susceptibility of occlusal surfaces for caries is more than any other surfaces followed by proximal surfaces. Hence knowledge of the pattern of dental caries in children is important in designing the preventive clinical procedures, community-based programmes and formulation of appropriate treatment strategies for these children.

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