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Sujita Shrestha
Ph.D Scholar (MUR-1203338),
Mewar University, Rajasthan,
India

Prakash Ghimire
Research Supervisor, Mewar
University, Rajasthan, India

Dental caries pattern in deciduous dentition among school children

Sujita Shrestha, Prakash Ghimire

Abstract

Caries in deciduous dentition (teeth) is chronic dental disease of childhood and major public health problem. Caries susceptibility depends on tooth surface morphology and post-eruptive enamel maturation. It is important to identify caries in deciduous teeth as it indicates high risk of caries in permanent teeth. The study aims to investigate caries experience in 5-6 years old school children of Kathmandu district. A cross sectional study was done on 231 school children by using World Health Organization oral health survey diagnostic criteria. In the study 60.2% were boys and 39.8% were girls. The prevalence of dental caries was 51.1% in maxillary teeth with mean score 1.84 and 54.3 % in mandibular teeth with mean score 1.65. Caries experience in the deciduous dentition was high in mandibular teeth and most affected teeth were deciduous mandibular (lower) 2nd molars. Preventive measures are needed as dental caries is a preventable disease.

Keywords: deciduous dentition, dental caries, mandibular, maxillary

Introduction

Dental caries is the most prevalent chronic disease of childhood and a major public health problem which interferes with normal food intake, speech, self-esteem and confidence of the patient along with the overall health status of the children. Caries in deciduous teeth indicate high risk of caries in permanent teeth; therefore it is of great importance for children to identify with caries (Ferro, Besostri, & A., 2009). Caries pattern of the patients can provide information regarding the etiology of the disease. The susceptibility to caries vary among the individual tooth surfaces with pit & fissure surfaces being most susceptible and smooth surface being least susceptible (Chestnutt, Schafer, Jacobson, & Stephen, 1996). All surfaces of the teeth are not equally susceptible to caries. It was found that susceptibility to caries is low during first post-eruptive year and increases rapidly to a maximum rate for two to three years. Difference in tooth surface morphology and post-eruptive enamel maturation has been considered as reasons for varying susceptibilities for caries occurrence. The pattern of dental caries varies not only with age, sex, race, feeding habits, oral hygiene practices, geographical location, and socioeconomic status but also within the oral cavity (Carlos & Gillelsohn, 1965). Therefore, it is important to know caries susceptibility of the teeth in maxillary and mandibular arch. Dental caries is the most common dental disease with high prevalence; 57.5% in 5-6 years old (Yee R, 2004). Knowledge about the pattern of dental caries in various teeth helps in planning of preventive and curative dental services. This study aims to investigate caries experience in 5-6 years old school children of Kathmandu valley.

Method

A cross sectional study was done on 231 school children of age 5-6 years old of Kathmandu district. Required permissions were obtained from Principal of each school. Prior consent was also taken from the parents of each child. Convenience sampling method was used for ease in data collection purpose. Oral examination was carried out by a single trained examiner. The World Health Organization (WHO) basic methods for oral health surveys were used for dental caries scoring. Comparison of caries prevalence among the different teeth of maxillary and mandibular arch was done. The data was statistically analyzed using

Correspondence:
Sujita Shrestha
Ph.D Scholar (MUR-1203338),
Mewar University, Rajasthan,
India

SPSS version 20. Mann-Whitney U test was used to see the statistical significance and $p \leq 0.05$ was considered statistically significant.

Result

A total of 231 school children were examined. Among them 139 were male and 92 were female. Out of them 67 were 5 years old and 164 were 6 years old children (Table1).

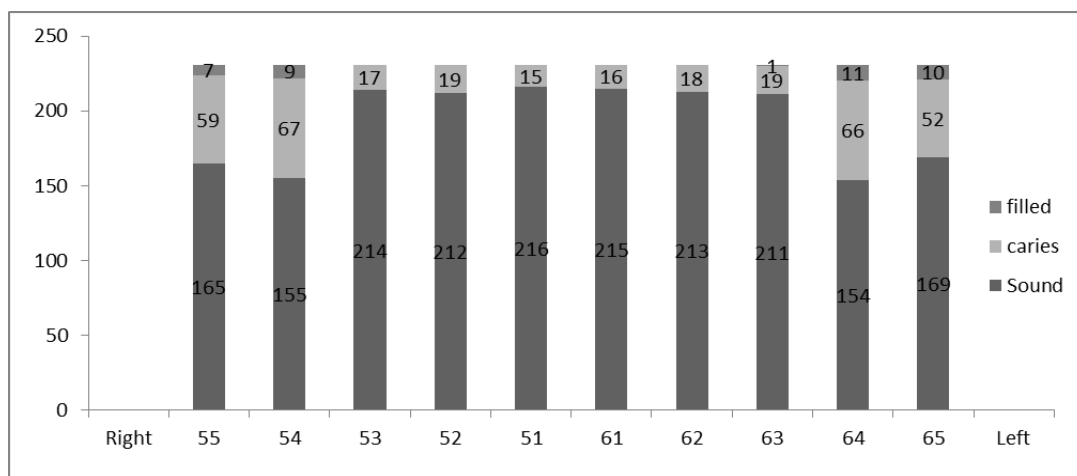
Table 1: Distribution of children based on Age and Gender

Age in years	Gender of the student		Total
	Male	Female	
5 years	45 (67.2%)	22 (32.8%)	67 (29%)
6 years	94 (57.3%)	70 (42.7%)	164 (71%)
Total	139 (60.2%)	92 (39.8%)	231 (100%)

The prevalence of dental caries was 51.1% in maxillary teeth with mean score 1.84 (± 2.46) and 54.3 % in mandibular teeth with mean score 1.65 (± 2.08). The prevalence of dental caries in deciduous upper right 2nd

molar was 25.5% and 29% in 1st molar. Similarly in left side the prevalence of dental caries was 28.6% and 22.5% in 1st and 2nd deciduous molar respectively (Fig 1).

Fig. 1: Distribution of sound, caries filled teeth of Maxillary arch

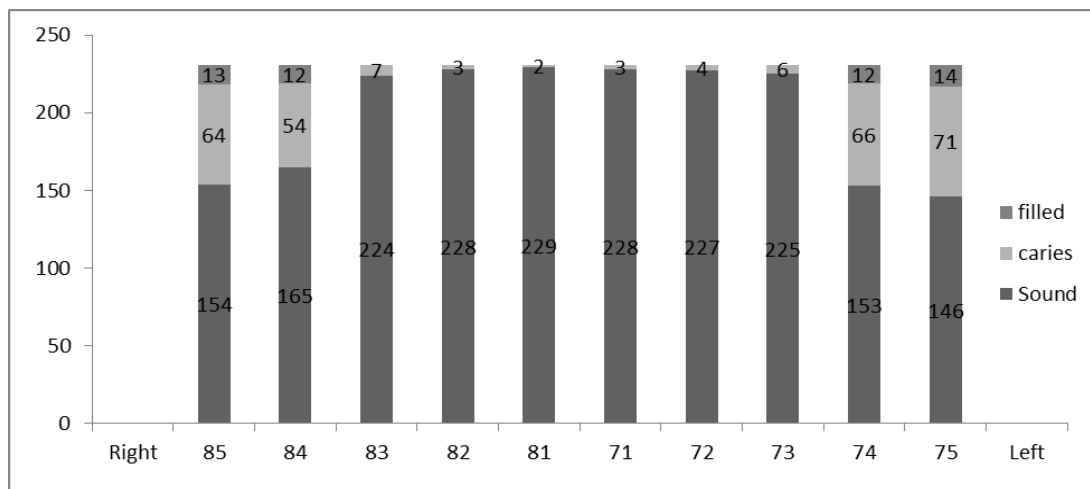


*55- deciduous right 2nd molar, 54- deciduous right 1st molar, 53- deciduous right canine, 52- deciduous right lateral incisor, 51- deciduous right central incisor, 61- deciduous left central incisor, 62- deciduous left lateral incisor, 63- deciduous left canine, 64- deciduous left 1st molar, 65- deciduous left 2nd molar

The prevalence of dental caries in deciduous lower left 2nd molar was 30.7% and 28.6% in 1st molar. Similarly, in right

side the prevalence of dental caries was 23.4% and 27.7% in 1st and 2nd deciduous molar respectively (Fig 2).

Figure 2: Distribution of sound, caries filled teeth of Mandibular arch



*85- deciduous right 2nd molar, 84- deciduous right 1st molar, 83- deciduous right canine, 82- deciduous right lateral incisor, 81- deciduous right central incisor, 71- deciduous left central incisor, 72- deciduous left lateral incisor, 73- deciduous left canine, 74- deciduous left 1st molar, 75- deciduous left 2nd molar

The prevalence of dental caries was 61.2 % in 5years and 62.2% in 6 years old children and difference is statistically not significant $p=0.556$ (Table2)

Table 2: Distribution of dental caries in relation to age

Age in years	Dental caries		p value
	caries present	caries absent	
5	41(61.2%)	26(38.8%)	0.556*
6	102(62.2%)	62(37.8%)	
Total	143(61.9%)	88(38.1%)	

*Mann-Whitney U test

Discussion

In this study, a total of 231 school children were examined. Present study showed the prevalence of dental caries among 5-6 years old school children was 64.1%. The prevalence of deciduous upper right first molar was 29% and 30.7% in lower left second molar. Saravanan (2005) study reported that the prevalence of dental caries was 44.4% which is less compare to present study. The prevalence rate was high in 2nd molar. Another study done by Bhardwaj showed the prevalence rate of caries was 79.3% and more in females. Prevalence rate was high in 1st molar and in mandibular arch which is similar to present study. (Bhardwaj, 2014). Similar study done by Ferro (2009) reported the most commonly affected teeth were primary molars 78% especially in the mandible.

Prospective, longitudinal, population-based study was done by Carlos; the prevalence of dental caries was 48.2% which is less compare to present study. Second exam was carried out two years later and found that the overall incidence of dental caries was 46.6% (Carlos & Gillelsohn, 1965). According to Hongru (2018), the prevalence of dental caries was 47.2%. The prevalence of dental caries was 50.9% in upper central incisor, 40.9% in lower 2nd molar, 39.2% in lower 1st molar, 26.6% in upper 1st molar and 22.8% in upper 1st molar (Hongru, Renren, & Qinglong, 2018). Whereas, in present study prevalence of caries is 24% in upper 2nd molar, 28.8% in upper 1st molar, 29.2% in lower 2nd molar and 26% in lower 1st molar. The prevalence rate is less compare to Hongru study.

Conclusions

Caries experience in the deciduous dentition is high in mandibular arch. The prevalence of dental caries is high in primary molars and uncommon in anterior teeth. Knowledge of the pattern of dental caries in the various teeth helps in planning of dental services and helps to establish various preventive strategies.

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