

## Prevalence of Dental Caries of the First Permanent Molars among 6-14 Years Old Sudanese Children

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### Abstract

*Background:* Dental caries is the most prevalent and common chronic infectious disease of childhood. It cause tooth pain, discomfort, eating impairment, loss of tooth and delay language development. Furthermore, dental caries has been increasing among school children due to unlimited consumption of sugary substances, poor oral care practices and inadequate health service utilization. This study aimed to determine the prevalence of dental caries of the first permanent molars among Sudanese children at Pediatric clinic Faculty of Dentistry University of Khartoum. *Methodology:* Descriptive retrospective study of fully documented dental records from school children attending a pediatric dental clinic was conducted. Total of 300 dental records of 139 (46.3%) boys and 161 (53.7%) girls aged 6 to 14 years old were studied. *Results:* The prevalence of the dental caries in first permanent molar (FPM) was 183 (61%) from total 300 children, 73 (39.9%) boys and 110 (60.1%) girls. Mandible was more prone to caries than maxilla. *Conclusion:* The most prevalence tooth surface was the occlusal surface. Girls was more susceptible to dental caries than boys. Children 7 years old recorded the highest susceptible age to dental caries. *Recommendation:* Along with nutritional factors, a comprehensive approach to preventing dental caries in children must include improved general dietary habits, good oral hygiene, appropriate use of fluorides, and access to preventive and restorative dental care.

**Keywords:** Dental Caries; First permanent molar (FPM).

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### Introduction

Although efforts are made for prevention, the dental caries continue to be a frequent disorder. Therefore, it was necessary to apply methods for its prevention and to intervene even from the early stage. The frequency of caries vary considerably depending on the tooth, its morphology, eruption stage and the position on the dental arcade; which can advantage and disadvantage the control of bacterial plaque. A special care was given to the caries damage by the first permanent molar, as it is importance tooth and has good role of the dental-maxillary anatomy [1].

It is generally admitted that the first permanent

molar is particularly susceptible to caries in school children, representing the location of most carious lesions [2].

Around the age of 6 years old, the child's teeth start to change from temporary teeth to permanent teeth. A 6 year old child's molar is the first permanent tooth that appears on the dental arcade, erupting distally from the second temporary molar. This molar, also called the first permanent molar (FPM), is named by Kunzel (1988). The first permanent molars have an important role in establishing the occlusion. Also, they have a role in delimiting the space where the other permanent teeth will erupt, and their premature loss can disrupt the eruption and the migration of the other definitive teeth. Most of the times, FPMs are mistaken by the parents with the temporary molars, due to the position they have on the arcade and because they erupt without replacing any temporary tooth. This may be a reason why their hygiene is mostly neglected, and caries appear in the early stages of their appearance on the dental arcade [1].

"The most important teeth are the first permanent molars". Angle's argumentation for his postulation; The biggest teeth and their anchorage is strongest,

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local position in the occlusal arch supports the main masticatory duty and operation. They influence the vertical distance of upper and lower jaws, the occlusal height and aesthetic proportions, they have "mighty" control on the teeth erupting later behind and in front of them, as they are forced to position to the already erupted and in occlusion functioning 1st molars and, as the permanent teeth of the lower jaw are erupting prior to the upper it is to resume, that the lower jaw is the form that defines and creates the form of the upper jaw.

These findings lead Angle to postulate, "that the first upper permanent molar, more than any other tooth or anatomical point gives a precise scientific basis for defining occlusal disharmony and occlusal anomalies [3]."

The objectives of this study was to evaluate the prevalence of dental caries in the first permanent molars (FPM) and the most susceptible jaw and surface for dental caries, among 6-14 years old Sudanese children who attended to pediatric dental clinic faculty of Dentistry, University of Khartoum from in the period from January 2016 to May 2017.

### Materials and Methods

This was descriptive retrospective study of fully documented dental records from school children attending a pediatric dental clinic in the period from January 2016 to May 2017. 300 dental records 139 (46.3%) boys and 161 (53.7%) girls aged from 6 to 14 years old were selected and subjected to a dental record study.

Ethical approval was obtained from the University of Khartoum, Faculty of Dentistry, Ethical committee Review Board. Names of the patients remained confidential, respecting their privacy and confidentiality rights.

The research variables are age, gender, date and first permanent tooth surfaces.

Data were entered in computer master sheet using SPSS Version 16.

Descriptive statistic was conducted for all variables.

### Results

The prevalence of the presence of dental caries in PFM was 183(61%) from total 300 children, 73(39.9%) boys and 110(60.1%) girls (Figure 1).

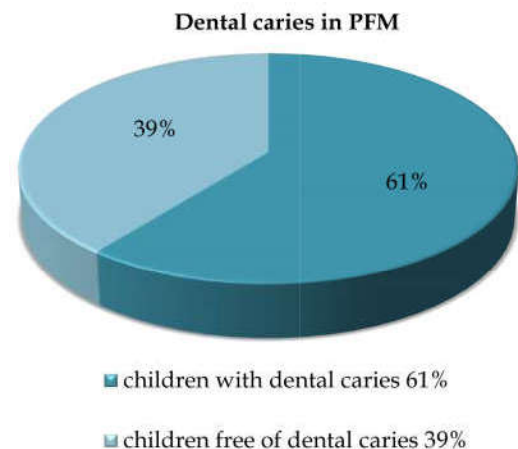


Fig. 1: Prevalence of dental caries

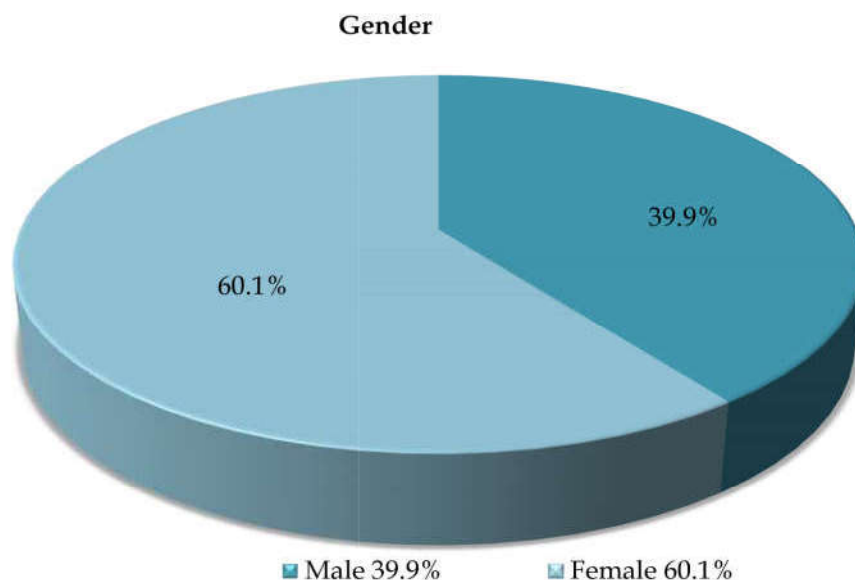


Fig. 2: Distribution of dental caries according to gender

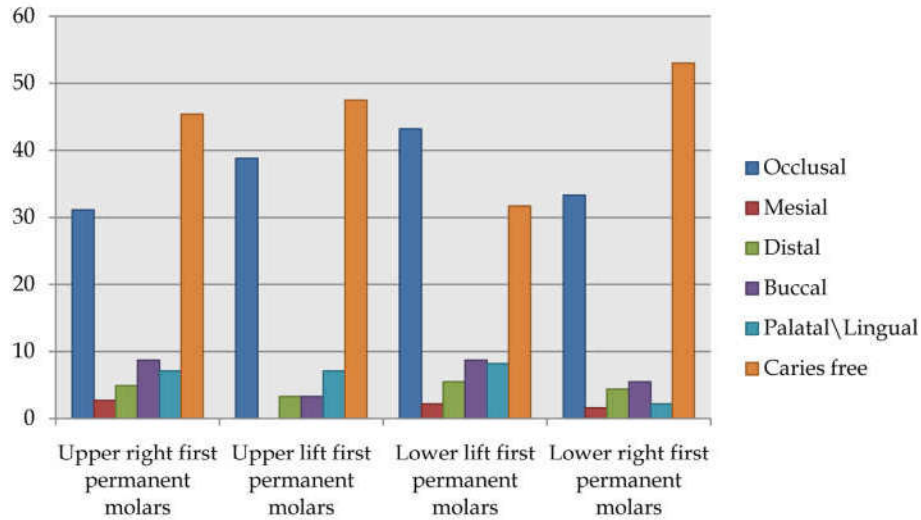


Fig. 3: Distribution of caries according to the tooth surfaces

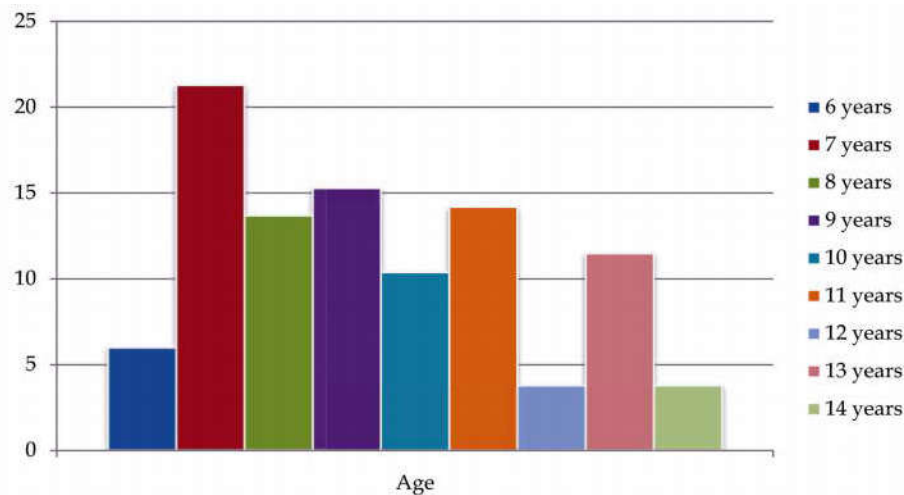


Fig. 4: Distribution of caries according to the age

The most prevalence tooth surface is the occlusal surface followed by buccal surface, the distal, mesial and palatal surfaces record the lower caries prevalence for each maxillary and mandibular first molar Figure 3. The peak incidence of age with dental caries in PFM was 7 years old 21.3% followed by 9 years old 15.3% Figure 4.

### Discussion

Descriptive retrospective dental record review of fully documented dental records belonging to school children attending a pediatric dental clinic was conducted. Retrospective studies may be helpful in offering caries models that can be tested later using prospective studies.

Dental records were used in this study because of consistence in record keeping which facilitated easy

retrieval of information. It is an inexpensive method of data collection. It was found that the most frequently attacked site was occlusal surface 43.2%, Manji et al [4] had similar findings in 12-year-old urban children in East Africa, and Greenwell AL, et al [5]. Occlusal surface was predominantly involved with caries followed by the proximal, buccal, and lingual surface, which in line with the result obtained by Annet Kutesa [6] among 10-15 years old African children in Uganda.

The increased incidence of caries on the occlusal and proximal surfaces can be correlated to the morphology of these sites which is more retentive of food particles, relatively protected from mechanical cleaning by the tongue, cheeks, and tooth brushing, and is not fully exposed to the flushing action of saliva.

This study demonstrated that caries activity continues throughout life and is not confined to any period of life, although the incidence decreases with an increase in age. A similar conclusion had been reported by Manji [4].

In the current study the ratio of girls to boy was 3:2 suggesting girls are more prone to caries than boys. Which in accordance with the finding by Annet Kutesa [6], also Malvania et al. found that 20.26% girls and 15.02% boy were having dental caries in permanent first molar among 12 years school going children [7].

The contradictory results were found by Devaki among 6-14 years school going children in Tenali Guntur showed that, first permanent molar caries was more frequent in boys (50.72%) than in girls (44.23%) [8].

In the present study, mandibular first permanent molars exhibit higher percentage of decayed (76.5%) than the maxillary counterpart (69.9%). These findings are concurrent with the study done by Serban et al, reported 72% of mandibular caries and 54.2% of maxillary molar caries in 12-13 years group [9]. Togoo et al, found mandibular first permanent molar exhibiting statistically significant higher DMFT than the maxillary counterpart in 7-10 years school going boys in Saudi Arabia [10]. Which may be explained by the fact that the mandibular arch may be attributed to greater food and plaque accumulation potential.

### Conclusion

- The most prevalence tooth surface was the occlusal surface followed by buccal surface. The distal, mesial and palatal surfaces record the lower caries prevalence for each mandibular and maxillary first molars.
- Girls was more susceptible to dental caries than boys.
- Age 7 years old record a high susceptibility to dental caries
- Mandibular first permanent molars exhibit higher percentage decayed component (76.5%) than the maxillary counterpart (69.9%).

### Recommendations

- Oral fluoride supplementation and application of fluoride varnish in children "at risk" for dental caries, application of fluoride varnish every 6 months in preschool-aged children who are at "moderate" risk for dental caries and every 3 to 6 months in children who are at "high" risk.
- It recommends daily dietary fluoride supplements for children from birth to age 16 years who are at "high" risk for developing dental caries and whose primary source of drinking water is deficient in fluoride.

- Counsel parents was essential for appropriate use of fluoridated toothpastes, especially in children age 2 years and younger, Nutrition education and counseling for the purposes of reducing caries in children.

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