

# Effect of Oral Awareness Intervention on Dental Caries Prevalence among 3-6 Years Old School Children in Mumbai City

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## Abstract

**Introduction:** Dental caries is the predominant cause of tooth loss in children and young adults. It is still a major oral health problem in most industrialized areas affecting 60-90% of school children and vast majority of adults. Although the disease most commonly affects the crown of the tooth, caries of the tooth root is also prevalent. The localized prevalence data is essential not only to understand the disease but also plays a vital role in prevention and treatment planning.

**Aim:** To investigate the effectiveness of oral awareness to reduce the prevalence of caries.

**Materials and Methods:** The present study was a cross-sectional analytical study conducted among school going children in two government schools, one at Dadar and the other at Bandra in Mumbai City, Maharashtra in the month of July - August 2015. These two schools were selected so as to establish similar socio-economic status of the study population. In one of the schools, i.e., at Bandra, there was an already ongoing oral health awareness program conducted on a yearly basis wherein all school going children are given oral health talk and made aware of practicing oral hygiene techniques. Comparison of (number of teeth) between the schools was done by Chi-square test.

**Results:** The number of children found to be brushing in Dadar was 24 and in Bandra were 259. It was found that the most common type of decay occurring was occlusal caries and the least common is root piece variety. The most commonly affected is primary left lower second molar and the least commonly affected tooth is primary right lower canine.

**Conclusion:** From the present study, it can be concluded that oral awareness and its implementation in daily life leads to significant decrease in caries prevalence.

**Key words:** Awareness, Dental Caries, Rampant caries, School children

## INTRODUCTION

Shafer (1993) had defined dental caries as<sup>1</sup> an irreversible microbial disease of the calcified tissues of the teeth, characterized by demineralization of the inorganic portion and destruction of the organic substance of the tooth which often leads to cavitation.<sup>1</sup> Dental caries is the predominant cause of tooth loss in children and young

adults. It is still a major oral health problem in most industrialized areas affecting 60-90% of school children and vast majority of adults. Although the disease most commonly affects the crown of the tooth, caries of the tooth root is also prevalent. It interferes with the normal nutrition intake, speech, self-esteem, and daily routine activities of the children.<sup>3</sup> The principal causative agents are a group of streptococcal species. However in the past decade, rapid changes have been taking place and significant improvements in oral health statuses due to factors, such as changing patterns of sugar consumption, improved oral hygiene, effective use of fluorides,<sup>2</sup> changing lifestyles and standard of living, establishment of school based preventive programs, and effective use of oral health services, are seen. At 3-6 years of age, all the primary teeth would have erupted. It is also one of the index ages

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for oral health assessment suggested by the WHO.<sup>2</sup> The localized prevalence data is essential not only to understand the disease but also plays a vital role in prevention and treatment planning.

### Aim

To investigate the effectiveness of oral awareness to reduce the prevalence of caries.

## MATERIALS AND METHODS

The present study was a cross-sectional analytical study conducted among school going children in two government schools, one at Dadar and the other at Bandra in Mumbai city, Maharashtra in the month of July-August 2015.

These two schools were selected so as to establish similar socio-economic status of the study population. In one of the schools that are at Bandra, there was an already ongoing oral health awareness program conducted on a yearly basis wherein all school going children are given oral health talk and made aware of practicing oral hygiene techniques that are brushing by a team of dental experts. Before the start of the study, all necessary permissions were taken from Y. M. T. Dental College Ethical Board. Examination of all study subjects was done in a dental camp where in study subjects were randomly selected, and American Dental Association Type 3 examination was done. Each child was examined using diagnostic tools and the number of tooth surfaces and the type of decay was noted. The age was taken from the school records the sex of the child was also recorded. The study was conducted by experienced dental students in their last year of dentistry. The clinical examination was conducted under natural light. Permission to carry out such kind of examination was taken from the principal of the respective schools. Study subject was such selected that an equal representation of the sample was achieved pertaining to independent variable like age. Sample size determination was done before the start of the study using a single proportion formula where assuming that the disease level (dental caries) to be at 50%. Thus, a sample size of 384 per school was taken as the minimum sample size. However, 400 students from each school aged 3-6 years were included in the present study. A standard recording performa was used in the present study which was designed by consulting experts in the field. The performa also had a question asking about brushing after meals. The decayed teeth were recorded taking into account (the number of teeth decayed and the number of surfaces along with the type of decay).

### Statistical Analysis

The recording sheets were serially numbered, data obtained were compiled onto MS Office excel sheet version 2010.

Results are expressed as % and frequency between the schools using statistical package for social sciences (SPSSV.22.0, 1BM).

## RESULTS

A total of 800 questionnaires were distributed among two government schools located in Bandra and Dadar, respectively. They were collected and assessed. The age group for the survey was taken between 3 and 6 years. In Dadar, 231 males and 169 females were examined, whereas in Bandra 226 males and 174 females were examined. In this study, it was found that 4% of the children brushed twice in Dadar and 72.2% of children brushed in Bandra. The number of children found to be brushing in Dadar was 24 and in Bandra were 259. From the next question, it was found that the most common type of decay occurring was occlusal caries 49.6% in Dadar and 27.6% in Bandra and the least common is root surface caries that is 0.3% in Dadar and 0% in Bandra. Proximal caries were 28.3% and 16.3% in Dadar and Bandra, respectively. Smooth surface caries were 13.7% and 14.3% in Dadar and Bandra, respectively, and grossly decayed were 7% and 6.6% (Figure 1). The most commonly affected is primary left lower second molar and the least commonly affected tooth is primary right lower canine. There are 14 numbers of rampant caries cases present out of 800 and 16 number of nursing bottle caries cases out of 800.

## DISCUSSION

The rise in the prevalence of dental caries among the people of developing countries is a cause for concern. In the current study, it is found that 42.5% of children in Bandra and 69.75% of children in Dadar have one or the other form of caries. According to a study conducted in

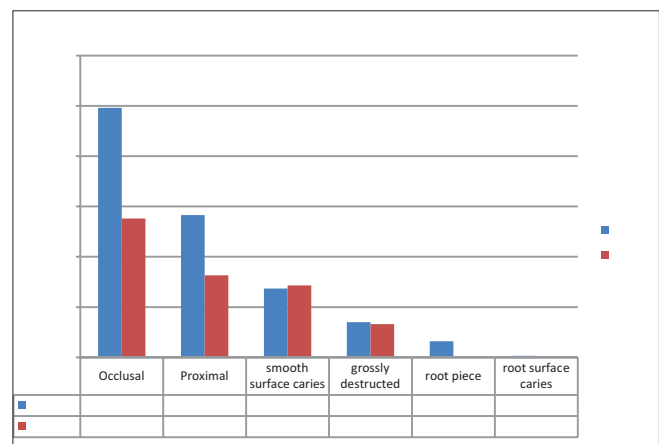
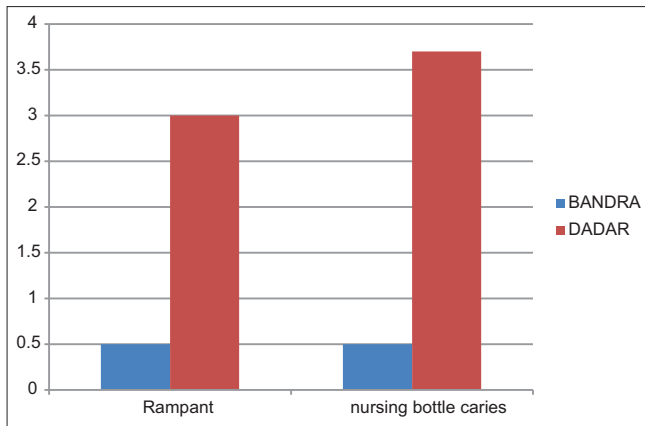


Figure 1: Comparison of caries prevalence in Dadar School and Bandra School



**Figure 2: Comparison of rampant and nursing bottle caries in Dadar and Bandra schools**

Northern Palestine<sup>2</sup>, 76% of the children of 4-5 years of age have caries. When compared to other countries like Pakistan, it is revealed that caries prevalence in pre-school children is about 50-60% which is similar to the findings of the current study. In United Arab Emirates,<sup>2</sup> a high prevalence of caries among pre-school children has been registered to be about 70-80%. In the United Kingdom,<sup>4</sup> the numbers are 40-60%. While in Brisbane,<sup>6</sup> it is around 66% (4-6 years) and in Sweden<sup>5</sup> 69% of 3-year-old pre-school children have caries. Tooth affected with dental caries is like a one-way street, once in there is no going back. The only option is to get the necessary treatments done which in turn diminish the natural strength and vitality of the tooth. Another way is to prevent the entry of caries itself which can be done mainly through oral awareness.

People need to be made aware of the types of decay, how they occur, how they can be prevented from infecting the tooth by adopting basic measures such as brushing twice regularly, stoppage of in-between meal snacks, flossing, and using mouthwashes. The present study was conducted among school going children between the ages of 3-6 to measure the effectiveness of oral awareness to reduce the prevalence of caries. The age Groups 3-6 were selected to study the caries status of the primary dentition. In this study, it was found that 4% of the children brushed twice in Dadar and 72.2% of children brushed in Bandra. As to whether, there is any difference in the prevalence of caries among boys and girls cannot be judged accurately due to the limited sample size of 400 each from both the schools.

The most common type of decay is the occlusal type as seen on the data chart present in both schools. 49.6% of the decay in Dadar and 27.6% in Bandra were found to be of the occlusal type. The least occurrence of the type of decay was found to be of the root caries variety. The most common tooth to be affected is the mandibular left deciduous second molar with 23.8% decay seen in Bandra and 29% seen in Dadar. It is also seen that deciduous molars and centrals are the most commonly affected teeth. The cause for this could be a number of reasons ranging from oral hygiene practices to patterns of sugar consumption. Hence, care must be taken and preventive measures such as applying preventive resin restoration, sealants, and must be undertaken. The study also included cases involving rampant and nursing bottle caries. It was found that Bandra recorded fewer cases of rampant/nursing bottle caries as compared to Dadar (Figure 2). Such Difference in the findings between the two schools could be attributed to higher awareness among children of Bandra of oral hygiene. By comparing both the areas, it can be seen that Bandra shows relatively fewer caries incidence as compared to Dadar.

## CONCLUSION

From the present study, it can be concluded that oral awareness and its implementation in daily life leads to significant decrease in caries prevalence.

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