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# Prevalence Of Early Childhood Caries In 3 To 5 Year Old Preschool Children In Parbhani City, Maharashtra

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***Abstract:***

***Introduction:*** *Early Childhood Caries (ECC) is a significant dental public health problem that affects infants and preschool children all over the world, especially in economically poor population in developing and industrialised countries where under nutrition is common.*

***Aim:*** *To assess the prevalence of ECC among 3 to 5 year old preschool children in Parbhani city, Maharashtra, India*

***Method:*** *A cross sectional study was carried out on total 637 preschool children of 3-5 year age from different areas of Parbhani city were selected randomly. ECC was recorded using 'dmft' index. And data was analysed using SPSS version in statistical software program and Chi square test was used to evaluate the results of prevalence of ECC.*

***Results:*** *Prevalence of ECC in 3-5 year old children was found to be 40.97% (n=261). ECC was more prevalent in males 68.19% (n=178) as compared to females 31.81% (n=83). It was found more in the age group of 4 year 47.12% (n=123). And more in the maxillary posterior 40.37% (n=214) region followed by mandibular posterior region 31.69% (n=168). In maxillary anterior region it was 25.84% (n=137) with least prevalence of ECC in mandibular anterior region 2.1% (n=11).*

***Conclusion:*** *Since the prevalence of dental caries is high among the population, effective preventive measures should be taken as early as possible.*

***Keywords***: *Caries, Childhood, preschool*

## INTRODUCTION

Dental caries is one of the most common global oral health problems worldwide, mainly in developing countries[1]. Early Childhood Caries (ECC) is the name used to describe the occurrence of caries in primary dentition prior to the eruption of permanent teeth. This terminology was proposed as an 'umbrella term' for caries in primary teeth in 1994. Caries affecting preschool children known as early childhood caries (ECC) which is defined as according to AAPD "the presence of 1 or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger". ECC causes significant

threats to the physical, psychological and social well-being of young children as dental pain and subsequent tooth loss resulting in difficulty in eating, speaking, sleeping and socializing [2]. It is the most common chronic disease in young children which may develop as soon as teeth erupt and begins as white spot lesions in the upper primary incisors along the margin of the gingiva. And if not treated within time, it may lead to pain, compromised mastication, malocclusion, speech problems, poor health, and lower self-confidence[3].

Thus, affecting the quality of life of preschool children and causing financial burden on their families[4,5]. The prevalence of ECC is especially high in many low-income and socially poor populations. This is mainly related with increasing consumption of sugars, inadequate exposure to fluorides and poor oral hygiene [6,7].

Very few or no studies were carried out with the parts of India. So, the aim of present study is to assess the prevalence of ECC among 3 to 5 year old preschool children in Parbhani city, Maharashtra, India

## MATERIAL & METHODS

### Study design

It is a cross sectional study conducted on 637 (178 males and 83 females) preschool children of 3 to 5 year old from different areas of Parbhani city, Maharashtra to evaluate the prevalence of Early Childhood Caries.

List of pre-schools in the study area were obtained from the Department of School Education office from city and the survey was based on multistage random sampling. Then schools were divided according to areas and in each area, one school was selected by simple random sampling method to avoid the bias. About twenty schools were selected from different areas of city. Prior to the initiation of the study, ethical approval was obtained from institutional ethics committee and the study was conducted according to the ethical guidelines. Eligible children were selected randomly from a list obtained from school records.

Preschool children in the age group of 3-5 years old were included in the study while children having developmental or hypoplastic defects of enamel were excluded

### Clinical examination of dental caries

Standard infection control guidelines were applied. All the recordings were carried out in the daylight by a single examiner, and the child was made to sit in ordinary chair facing towards direct sunlight. Oral examination was done using dmft index includes decayed, missing (missing due to caries) and filled teeth components to assess the caries experience for deciduous dentition. The components of the decayed, missing, and filled teeth (DMFT)/dmft index have been defined as follows: D = tooth requiring treatment because of caries, lost or fractured filling; M = tooth missed because of caries, and F = filled or crowned tooth, no need of treatment. The total number of caries free school children were also recorded. A mouth mirror and explorer were used to check the tooth surface. And the tooth having catch and a soft dentin over the teeth surface was considered as decayed tooth.

During the examination of school children, a questionnaire was used to fill out personal data such as name, age, gender, and permanent address and number of surface involved per tooth.

## Data analysis

Chi square test was used to evaluate the results of prevalence of ECC. Data was analysed using SPSS version 20 in statistical software program

## RESULTS

**Figure 1: Prevalence of early childhood caries among study participants (N= 637 as Present= 261& Absent= 376)**

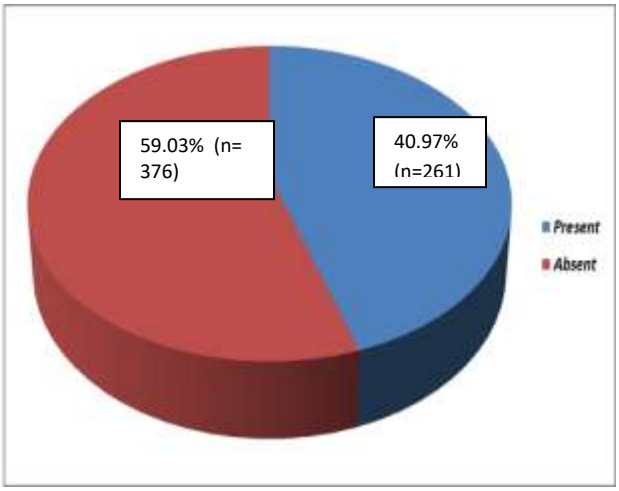



**Figure 2: Demographic characteristics of early childhood caries among Gender (N=261 as 178 males & 83 females)**

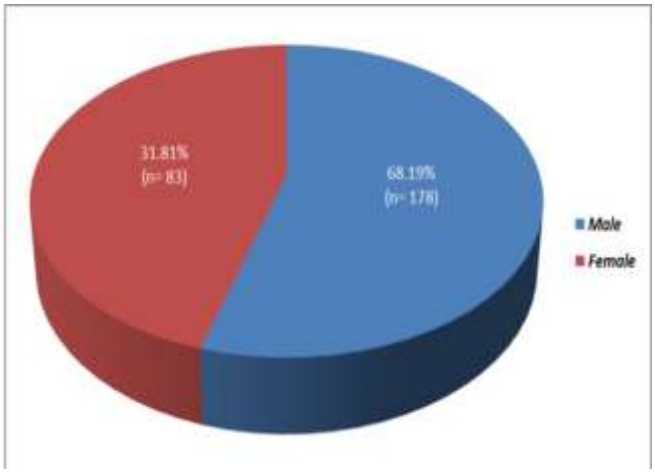



**Figure 3: Demographic characteristics of ECC affected children according to Age (years)**

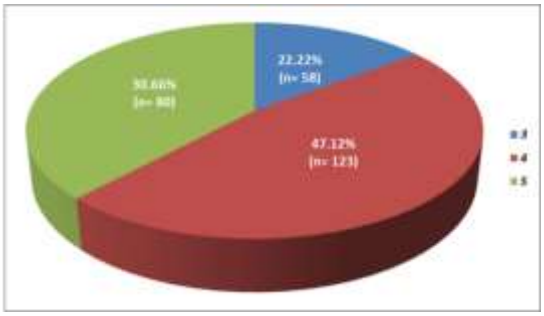
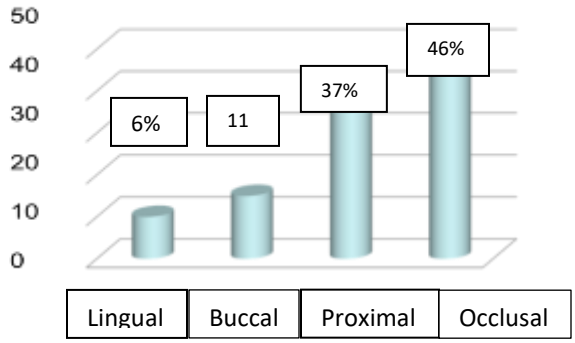



**Figure 4: Distribution of ECC within the arches**

| Arch | No of teeth affected | Percentage |
|---|---|---|
| Maxillary anteriors | 137 | 25.84% |
| Maxillary posteriors | 214 | 40.37% |
| Mandibular anteriors | 11 | 2.1% |
| Mandibular posteriors | 168 | 31.69% |
| Total | 530 | 100% |

**Figure 5: Distribution of ECC according to surfaces involved in percentage**




Among total 637 children, 261 (40.97%) affected children, total number of teeth affected were 530 (figure 1)
Highest frequency of ECC was found more among the boys 68.19% (n=178) than girls 31.81% (n=83) (figure 2)
ECC was common in 4 year old children ie. 47.12% (n=12) followed by 30.66% (n=80) in 5 year of age children and it was found to be least in 3 year old children ie. 22.22% (figure 3)

Maxillary posterior teeth were most frequently affected with 40.37% (n=214) followed by mandibular posteriors with 31.69 (n=168) and maxillary anteriors with 25.84 (n=137) and least commonly affected were mandibular anteriors with 2.1% (n=11) (figure 4)
Regarding surfaces involved per tooth, occlusal surface were most commonly affected with 46%, followed by proximal 37%, buccal 11% and lingual 6%. (figure 5)
So, among the 261 children with caries, total number of teeth affected were 530

## DISCUSSION

Epidemiological studies from all over the world have showed that dental caries is one of the most widely distributed dental disease, may be because of poverty, low socio-economic status, and poor awareness regarding oral health. India is a vast country with rural areas having a large range of population from 31.5% to 89% affected by dental caries [8]. It is the main reason for the extraction in both deciduous and permanent dentition, especially the first molar which erupts at the age of 6 years and goes for extraction at the age of 12 yrs [9,10]. So, there is need to pay adequate care and attention mainly to prevent and enable the pediatric population to reach adulthood with healthier dentition. Hence, for individual there needs a social, economic and personal development, the oral hygiene is significant which is a benchmark for a healthy mouth and prevents maximum dental problems[11].
Though there are many studies conducted all over the India to find out the prevalence of ECC among preschool children, very few studies were carried out in the region of Maharashtra and no study was done in this city.
Thus, present cross sectional study was carried out with the aim to know the prevalence of early childhood caries in 3-5 year old preschool children of Parbhani city. As children in the age group of 3-5 years were selected because below 3 years, it was difficult to get the cluster of the sample at a common place .There are many studies on early childhood caries prevalence in primary dentition. Prevalence of early childhood caries in the present study of 3-5 year old preschool children was 40.97%. A similar trend of caries was reported in Brazil (46%) in 2008 [12], Nigeria (40%) in 1985[13] and Aurangabad (47.8%) in 1992[14].
The high prevalence of caries in other developing countries like Korea, Brazil, Nigeria, Saudi Arabia and Kuwait may be due to absence of community fluoride implementation and preventive programmes in these places. The developed countries like England, Sweden had less caries experience, may be because of widespread use of fluoride in different forms and preventive programmes which are implemented at various levels in these countries.
According to Saudi Arabia study results, gender did not have a significant relationship with caries prevalence but some studies showed that girls are more affected than boys which is in contrast to present study[15,16].
In present study, posterior region was more commonly affected by caries than the anterior region. This is in agreement with the study in Pondicherry[17]. It may be due to the complex morphological nature of posterior teeth. Here, occlusal surfaces were most commonly affected by caries (46%) followed by proximal surfaces (37%) and then bucal surface (11%) and lingual surface (6%).The results of our study are not in agreement with a study carried out in Chandigarh in 2000[18] where

proximal surfaces were more affected (45%) than occlusal surfaces (25%) which was due to higher involvement of proximal surfaces of anterior teeth with nursing bottle caries.
The mean deft in 4-year-old children was significantly higher than 3 and 5 years age group similar to that reported by Singh et al and Schroth et al [19,20].
The present study was carried out with smaller sample size, a further longitudinal study with larger sample size needed for accurate estimation of prevalence in population.

## CONCLUSION

ECC is a chronic disease which affects infants and children worldwide. Present data may be of significance in planning future oral health prevention and treatment programmes for school going children.

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