

# Prevalence of dental caries among primary schoolchildren in Chennai - A cross-sectional study

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## ABSTRACT

Dental caries and periodontal disease are the most common oral diseases, one is a disease of tooth structure and other is a disease of the structures supporting the teeth. Dental caries afflict humans of all ages with the highest priority risk group being schoolchildren. Periodontal problems are generally considered to affect mainly the adult and elderly sections of the population. On the other hand, gingivitis, which is a part of the population develops into irreversible loss of tooth attachment, usually starts in the mixed dentition. To assess the prevalence of dental caries among primary schoolchildren of Chennai using dft/ decayed missing filled (DMFT) index. The present study was conducted as a part of the screening, initiative of the Department of Public Health Dentistry, Saveetha University, to assess the prevalence and dental caries experience among primary school going children of Chennai using dft/DMFT index. Examiners were calibrated through a series of clinical training before the study. Demographic information such as name, age, gender, and class was collected followed by clinical examination for dental caries was recorded on a pro forma. Dental examination was done with the child seated in an ordinary chair. A disposable mouth mirror and explorer were used for the examination. The explorer was used very cautiously to prevent damage to the sound intact enamel surface, and the explorer was used specifically to confirm the caries diagnosis. Based on the findings of the present study, it can be concluded that dental caries among 6–12 years are higher than 3–5 years. Dental caries were found both in primary dentition and permanent dentition. The study reveals that dental caries still remains as a major oral health problem among school children.

**Keywords:** Dental caries, dft, DMFT, primary school

## Introduction

Health is a basic human right and oral health is a significant component of general health. Although oral diseases are mostly not life-threatening, they are important public health problems. The reasons for their importance are their high prevalence, public demand, and their impact on individuals and society in terms of pain and discomfort and effect on the quality of life.<sup>[1]</sup>

Dental caries are a multifactorial disease and are the outcome of a multiple complex process involving factors such as diet, microorganisms, trace elements, saliva, genetic predisposition, and tooth morphology. Apart from these, many related factors such as individual, social, environmental, and cultural factors are also

responsible.<sup>[2-6]</sup> Dental caries afflict humans of all ages with the highest priority risk group being schoolchildren.

School years cover a period that runs from childhood to adolescence. These are influential stages in people’s lives where lifelong substantial oral health-related behaviors, as well as beliefs and attitudes, are being developed. Children are particularly receptive during this period, and the earlier habits are established, the long-lasting, and the impact.<sup>[7]</sup> Children who suffer from poor oral health are 12 times more likely to have more restricted activity days including missing schools than those who do not.<sup>[8]</sup>

More than 50 million hours annually are lost from school due to oral diseases.<sup>[9]</sup> Studies have reported missed school hours, toothache, and several impairments of daily life activities associated with a high decayed component in both primary and permanent dentition.<sup>[10]</sup> Similar findings have been reported in Brazilian preschool children and in a school survey of American native children.<sup>[11]</sup>

The “Prevalence” of dental caries in an individual is obtained by calculating DMFT, which is the most common index used and for deciduous dentition dft index is used. An epidemiological study was planned as very few studies have been conducted in Chennai city.

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Hence, this present study was conducted as a part of the screening, to assess the prevalence among primary school going children of Chennai using dft/DMFT index.

## Aims and objectives

### Aim

- To assess the prevalence of dental caries among primary schoolchildren of Chennai using dft/DMFT index.

### Objectives

- To determine the prevalence of dental caries among primary schoolchildren of Chennai.
- To compare the dental caries prevalence among primary schoolchildren of Chennai using dft/DMFT index.

## Materials and Methods

A list of primary schools from all zones of Chennai was obtained and a total of 721 schoolchildren within age group from 3 to 12 years were examined for dentition status from the four selected schools of Chennai. Before the start of the study, ethical clearance was obtained from the Institutional Ethics Committee, Saveetha University. Prior permissions were obtained from the head of the schools.

Examiners were calibrated through a series of clinical training in the Department of Public Health Dentistry, Saveetha Dental College, and Chennai, before the study. Demographic information such as name, age, gender, and class was collected followed by clinical examination for dental caries was recorded on a pro forma. Dental examination was done with the child seated in an ordinary chair. A disposable mouth mirror and explorer were used for the examination. The explorer was used very cautiously to prevent damage to the sound intact enamel surface, and the explorer was used specifically to confirm the caries diagnosis. Oral health education was given to the schoolchildren after screening and brushing techniques were taught.

## Statistical analysis

- Data were entered into Microsoft Excel spreadsheet and analyzed using SPSS software (version 20).
- Descriptive statistics were used.
- For test,  $P < 0.05$  is to be considered statistically significant.
- Independent  $t$ -test used to determine the mean differences at 5% significance level ( $P < 0.05$ ).

## Results

Figure 1 depicts the distribution of study subjects. The study sample consisted of 721 subjects of which 392 (54%) were males and 329 (46%) were females. They belong to the age group of 3–12 years.

Table 1 summarizes the mean value of dft and DMFT components according to gender. Overall, the study subjects had a mean dft score of

( $1.07 \pm 3.69$ ), respectively. The highest mean dft score of ( $1 \pm 1.81$ ) was found among females than males ( $0.0 \pm 1.88$ ). The study subjects had a mean DMFT score of ( $0.16 \pm 0.81$ ), respectively. The highest mean DMFT score of ( $0.11 \pm 0.48$ ) was found among females than males ( $0.05 \pm 0.33$ ), respectively.

Table 2 summarizes the comparison of mean dft and DMFT score based on gender. The mean dft among male and female was not significant statistically using an independent  $t$ -test, but the mean DMFT among male and female was significant statistically.

Table 3 summarizes the comparison of mean dft and DMFT score among various age groups. The mean dft score was found to be significant statistically ( $P < 0.001$ ) using independent  $t$ -test and also, the mean DMFT score was found to be significant statistically ( $P < 0.000$ ).

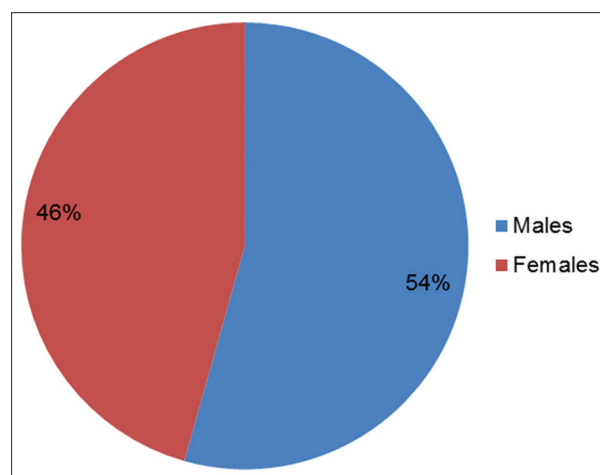


Figure 1: Distribution of study subjects

Table 1: Mean value of dft and DMFT component according to gender

Gender	n	Mean dft $\pm$ SD	Mean DMFT $\pm$ SD
Male	392	0.07 $\pm$ 1.88	0.05 $\pm$ 0.33
Female	329	1.00 $\pm$ 1.81	0.11 $\pm$ 0.48
Total	721	1.07 $\pm$ 3.69	0.16 $\pm$ 0.81

DMFT: Decayed missing filled

Table 2: Comparison of mean dft and DMFT based on gender

Caries index	Male	Female	Overall	P
dft	0.07 $\pm$ 1.88	1.00 $\pm$ 1.81	1.07 $\pm$ 3.69	0.68
DMFT	0.05 $\pm$ 0.33	0.11 $\pm$ 0.48	0.16 $\pm$ 0.81	0.000

Independent  $t$ -test, statistically not significant, DMFT: Decayed missing filled

Table 3: Comparison of mean dft and DMFT score among various age groups

Score	Age group	Mean $\pm$ SD	P
dft score	3–5	0.88 $\pm$ 1.78	<0.001*
	6–12	1.37 $\pm$ 1.94	
DMFT score	3–5	0.01 $\pm$ 0.22	<0.000*
	6–12	0.27 $\pm$ 0.67	

DMFT: Decayed missing filled

## Discussion

Dental caries are the most common chronic disease of childhood that interferes with normal nutrition intake, speech, self-esteem, and daily routine activities because the caries pain adversely affects the normal food intake. This results in underweight children with abnormal cognitive development.<sup>[12]</sup> Despite incredible scientific advances and the fact that caries are preventable, the disease continues to be a major public health problem.

The use of DMFT and dft indices has been an accepted practice for assessing the prevalence and severity of caries in a population.<sup>[13]</sup> Hence, an attempt has been made in the present cross-sectional study which was conducted as a part of the outreach screening to assess the prevalence of dental caries among primary school going children of Chennai using dft/DMFT index.

The study sample consisted of 721 subjects of which 392 (54%) were males and 329 (46%) were females. The caries prevalence of subjects was 33.7% with high caries prevalence among females as compared to males.

The mean dft/DMFT was  $1.07 \pm 3.69$  and  $0.16 \pm 0.81$  among the primary schoolchildren, respectively. The values of this study were lower as compared to values reported in a study by Sharma *et al.*<sup>[14]</sup> Females had significantly higher mean DMFT value than males which is in line with the findings of other studies.<sup>[15,16]</sup> This finding may be due to the fact that teeth erupt earlier in females than males which means females teeth would have been exposed to the oral environment for a longer period than the males of the same age.

The mean dft/DMFT of 6–12 years is higher than mean dft of 3–5 years. The reason for this difference is maybe that caries being a continuous and cumulative process had obviously increased over a span of years; moreover, the number of teeth is more as the age increases.

## Conclusion

Based on the findings of the present study, it can be concluded that dental caries among 6–12 years are higher than 3–5 years. Dental caries were found both in primary dentition and permanent dentition. The study reveals that dental caries still remains as a major oral health problem among schoolchildren.

A preventive program including pit and fissure sealant application and topical fluoride application which would be an ideal measure in the prevention of dental caries in the permanent dentition of schoolchildren would aid in protecting the permanent dentition which has to remain lifelong.

Oral health education programs should be organized at all schools to reinforce the importance and maintenance of a healthy oral cavity. At this stage, it is crucial to increase awareness among children of the oral health consequences of high sugar consumption. It is always possible to prevent dental caries in primary dentition with good dental health education of the parents.<sup>[17]</sup>

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