

## Dental Caries Prevalence among 12 - 15 Years Old Residential and Non-Residential School Children: A Comparative Study

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### Abstract

A school going child spends most of the time in a day at school which is considered as an ideal place for physiological and psychological growth of a child. A descriptive cross-sectional study was conducted to compare the dental caries prevalence among 12 - 15 year old rural residential and non-residential schoolchildren. The dental caries prevalence was assessed using World Health Organization Oral Health Assessment Form and compared using chi-square statistical test. The comparison showed that there was a statistically significant difference in the dental caries prevalence with higher prevalence among residential schoolchildren. Dental caries prevalence was higher among male study participants and among 12 year old children. The presently conducted study concludes that the dental caries status was poor among residential schoolchildren. Focus should shift for preventive and treatment measures among rural residential schoolchildren.

**Keywords:** Dental Caries; Quality of Life; Residential Schools; School; Schoolchildren

### Introduction

Around 60 - 90% of the children globally are affected due to dental caries. This lifestyle disease affects both oral-health-related-quality-of-life as well as health-related-quality-of-life. Dental caries is multi-factorial of which excess consumption of fermentable carbohydrates and poor oral hygiene practices play a pivotal role [1,2]. Dental caries formation is a complex mechanism rather than simple dissolution of the hard enamel matrix [3,4].

Poor general and oral health leads to poor nutrition which acts as a barrier to attending schools and thus affecting the learning process of a child. Schools provide an environment for a child for intelligence development, skill acquirement and achievements of goals in life. Childhood health related habits and behaviour are moulded at schools. Residential or boarding schools are institutions where students live and learn outside their family homes whereas non-residential schools institutions where schoolchildren go home after their fixed working time (morning till evening). Some parents believe that boarding schools or residential schools provide a platform for development of discipline and sense of responsibility of children while others think sending children away from home at early stages of life affects the child psychologically which in turn affects the overall development. A boarding school or residential school has both positive as well as negative effects [5,6]. Parent's oral health behaviours do influence their children's oral health status [7].

There are many studies reported in the literature that have measured the oral health status of school going children or non-residential schoolchildren [8-11]. There are hardly any studies reported in scientific literature that have compared the dental caries status of boarding or residential schoolchildren to that of non-residential schoolchildren. Thus, with the aim to assess and compare caries prevalence among 12 - 15 years old residential school children and non-residential school children the present study was conducted.

**Materials and Methods**

The protocol for the study was presented before Institutional Ethics Committee and approval for the same was obtained. The entire study protocol was according to the Helsinki Declaration. Informed assent was obtained from all study participants and consent from the parents. Permission to conduct the study was obtained from the Block Educational Officer as well as the concerned school authorities.

The study population comprised of 157 schoolchildren aged 12 - 15 years from two randomly selected from the list of schools in the district of Kanyakumari, Tamil Nadu, India which one was residential and the other non-residential. A total of 76 schoolchildren belonged to the residential and 81 schoolchildren from non-residential school. The clinical examination of all study participants was done by a single examiner with the help of a trained recorder as per ADA (American Dental Association) specifications. Dentition status assessment was based on World Health Organization (WHO) Oral Health Assessment Form for Children. The collected data was computed as subjected to descriptive statistics and chi-square test using SPSS 21.0 (Statistical package for social sciences; IBM Statistics, 2012) for which the statistical significance level was set at 5%.

**Results**

The mean age of the study population was 13.97 ± 1.84. Of the 157 schoolchildren, 67 were males and 90 females. The overall caries prevalence was 24.84%. The gender-wise distribution of dental caries was 31.5% among males and 23.5% among females. Caries prevalence was highest among 12 year olds (8.64%), followed by 13 year olds (5.9%), 14 year olds (5.5%) and the least among 15 year olds (4.8%). Dental caries prevalence was highest among study participants with mixed dentition (18.67%) as compared to ones with permanent dentition (7.13%). The comparison of dental caries status among residential and non-residential schoolchildren (Table 1) showed that residential schoolchildren were more prone to dental caries as compared to non-residential schoolchildren (p = 0.03).

	Residential	Non-Residential	Total
Caries	26	13	39
Caries Free	50	68	118
Total	76	81	157

**Table 1:** Comparison of Dental Caries Status among Residential and Non-Residential Schoolchildren.

*p = 0.03 (Statistically Significant)  
p-value based on Chi-square test.*

**Discussion**

Among all the infectious disease known to mankind dental caries is the most prevalent one. The prevalence of dental caries has increased dramatically over the period of time especially among developing countries as compared to a developed country as the availability of refined carbohydrates increased. Dental caries process depends on the interaction between protective and deleterious factors. For a healthy oral cavity there has to be a balance between the protective and deleterious factors, and also equilibrium between cariogenic and noncariogenic microbial population [12,13].

Dhar V, *et al.* conducted a study to find the prevalence of dental caries and the treatment needs among 1587 school-going children of Udaipur district, Rajasthan, India. The authors reported an overall caries prevalence of 46.75% and caries prevalence among 11 - 14 years were 18.62% [14]. In the present study, the overall was 24.84% and it was more among residential schoolchildren as compared to non-residential or daily school-going -schoolchildren. Varenne B., *et al.* conducted a study to assess the level of dental knowledge and attitudes among 12 year old children and 35 - 44 year olds in Burkina Faso. Both children and adults had low levels of oral health knowledge, attitudes and self-care. Among the 12 year olds the important factor for high caries experience was urban location [15]. In the present study, the high caries prevalence among 12 year olds (8.64%) was attributed to the fact both the selected schools was located in rural areas, as result is unavailability of oral healthcare services.

In the present study, dental caries was reported among 23.5% of the female study participants as compared to 31.5% among males study participants, this contradicts to the findings by Rai B., *et al.* [16], this might be due to the fact that there might be a difference in the oral hygiene practices of both the genders. Doddamani AS., *et al.* conducted a study to assess the oral hygiene status among 12 to 15 years school going children belonging to different socio-economic status of Belgaum City, India. Children belonging to upper socio-economic status had significantly better oral hygiene as compared to low socio-economic status study population [17]. In the present study, as all the study participants belonged to low socio-economic status a higher caries prevalence was reported. Moses J., *et al.* conducted a study to assess the prevalence of dental caries among 5 - 15 year old school going children. The study reported a greatest percentage of decayed teeth for mixed dentition; a similar finding too was recorded in the presently conducted study [18].

Worldwide dental caries remains to be a public health problem. Though there have been advances in understanding of the aetiology, pathogenesis and prevention of dental caries, but it still remains a scientific and clinical mystery which needs much focus. Owing to the complex and multi-factorial etio-pathogenesis of dental caries much research needs to be conducted to address the prevention and treatment more cost-effective [19,20]. To our knowledge there have been no studies that have compared the dental caries prevalence among residential and non-residential schoolchildren. Within the limitations of the presently conducted study, it has been found that a higher dental caries prevalence among residential schoolchildren. The presently conducted study has opened a new chapter for conducting further research.

### Conclusion

Prevalence of dental caries among residential schoolchildren was high as compared to non-residential schoolchildren. The presently conducted study can be concluded by saying that the oral health of residential schoolchildren needs to be improved particularly among schools in rural areas. There exists a need for oral health and preventive procedures among residential or boarding school children especially among the rural areas.

### Conflict of Interest

None.

### Source of Funding

None.

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