

# Interventional study on oral health among school children of Gandhinagar district of Gujarat

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## ABSTRACT


**Background:** The lack of national oral health policy and organized school oral health programs in the country call for affordable, accessible, and sustainable strategies. **Objectives:** The objectives were to compare the oral hygiene, plaque, and gingival status among school children receiving oral health education by doctors with help of audiovisual aids and brochure. Knowledge, attitude, and practice (KAP) about oral health were also assessed. **Materials and Methods:** Interventional study was done in 340 students of class 4–6 (9–11 years), who were present at time of study over period of 6 months. Conveniently, two schools were selected from Gandhinagar district. Predesigned questionnaire was used to evaluate the demographic background, oral health KAP of young school children about their oral health, and dental treatment. Oral health education was given, and oral check was done. Post-intervention was done after 6 months on 301 children due to absent of 39 students. Data were analyzed using MS Excel 2007 and Epi Info and  $\chi^2$  test were applied. **Results:** A total of 87 (28.9%) children would brush their teeth twice per day, and 172 (57.1%) would brush only once per day. Practice regarding oral hygiene was improved after intervention. Association between oral hygiene and socioeconomic status (S.E.) status was found statistically significant ( $P < 0.05$ ). A total of 240 (79.7%) students had good oral hygiene after intervention as compared to before intervention (68.4%) and it was statically significant ( $P < 0.05$ ). **Conclusion:** Significant improvement seen in oral hygiene and practice regarding oral hygiene after intervention. Study signified that lower S.E. class has poor oral hygiene compared to higher S.E. class.

**KEY WORDS:** Children; Intervention; Oral Health; Oral Hygiene; Socioeconomic Status

## INTRODUCTION

Oral health is an important part of the general health and well-being of an individual, and it is now recognized as equally important in relation to general health. Among the most common oral diseases, dental caries, and periodontal diseases are the two key oral pathologies that remain widely prevalent and affect all populations throughout the

life span.<sup>[1]</sup> Oral diseases such as dental caries and gingival diseases affect almost 80% of the school going children worldwide.<sup>[2]</sup> The pain and tooth loss related to oral diseases adversely affect the appearance, nutritional intake, quality of life, growth, and development of school going children. Total cost of treating dental caries alone can overwhelm a country's health-care expenditure for children and developing countries like India cannot afford treatment of established dental diseases.<sup>[3]</sup> The cost of neglect of these diseases is also high due to the personal, financial, and social impacts.<sup>[4]</sup> The best possible approach for many developing nations is to focus on the prevention of these diseases. The oral diseases are preventable in their early stages, but unfortunately, the knowledge that these diseases can be prevented by simple self-controlled oral hygiene procedures are not known to many of the children, their parents, teachers as well as the

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policymakers.<sup>[5,6]</sup> The lack of national oral health policy and organized school dental health programs in the country encouraged us to undertake the present interventional study to compare the oral hygiene, plaque, and gingival status among school children receiving oral health education by a doctor.

### Objectives

The objectives of the study are as follows:

- Investigate the dental health attitudes, knowledge, and practice of school children in Gandhinagar district.
- Compare the status of oral health in students of different socioeconomic class.
- To assess improvement of oral health after intervention in school going children.

### MATERIALS AND METHODS

Interventional study was done in 340 students of class 4–6 (9–11 years), who were present at time of study from two schools in Gandhinagar district over a period of 6 months from August 2015 to January 2016. Conveniently, two schools were selected in Gandhinagar district. Predesigned questionnaire was used to evaluate the demographic background, oral health knowledge, attitudes, and practice of young school children regarding their oral health and dental treatment. Oral health education was given, and oral checkup was done. The permission to carry out clinical oral examination of children was taken from their parents through the school authorities, and a verbal consent was taken from each participant at the time of the examination. The clinical oral examination was done on a plastic chair using a mouth mirror and number 5 explorers under natural daylight in the school premises. Oral health education was given using audiovisual aids. The brochure on oral hygiene practices, the importance of dental health in relation to general health, etc., was prepared in local language by a qualified public health dentist and this was used for educating the children. Post-intervention assessment was done after 6 months. Examination for oral hygiene, plaque, and gingival status was done. Good oral hygiene and absent of plaque and gingival diseases considered good oral health hygiene. According modified Prasad socioeconomic (S.E.) classification, Classes I, II, and III were considered as upper S.E. class and Class IV and Class V were considered as lower S.E. class. Data were analyzed using MS Excel 2007 and Epi info.

### Exclusion Criteria

The study started with 340 students of the two schools. The post-intervention examination could not be done among 39 students as they were either consistently absent, dropped out or had changed the school. Hence, the final sample size was 301 school children in our study.

### RESULTS

A total of 301 children were examined of which 210 (69.76%) and 91 (30.24%) were male and female, respectively. A total of 102 (33.89%) and 101 (33.56%) children belonged to 10 years and 11 years of age, respectively, followed by 98 (32.55%) belonged to 9 years of age. A total of 146 (48.51%) children studied into government school and 155 (51.49%) children studied in municipality school [Table 1].

The oral hygiene habits of our study sample indicated that 87 (28.9%) of the children would brush their teeth twice per day, whereas 172 (57.1%) would brush only once per day. About 188 (62.5%) of the subjects brushed their teeth for more than 2 min, while 71 (23.6%) brushed for at least 2 min around 19.80% of the children reported that they were advised and watched by parents while brushing.

A total of 115 (38.2%) subjects were not aware of bleeding gums and only 101 (33.6%) knew the correct answer that it meant inflamed gums. To prevent gingivitis 85 (28.3%) children knew that tooth brushing and flossing would help them, whereas nearly equal proportions of children 31.30% knew that vitamin C would help them to prevent gingivitis. The major factors that cause dental problems according to the child's opinion were sweets (65.8%) and cold drinks (59.9%). A total of 140 (46.5%) and 110 (36.5%) children knew brushing their teeth and usage of fluoride can prevent dental decay, respectively. Almost 152 (71.80%) subjects related dental diseases to their general body health.

In my study, a total of 91 (30.2%) subjects would visit a dentist doctor when they experienced pain, and 178 (59.1%) subjects never visited dentist. Only 32 (10.7%) subjects would visit dentist once in every 6–12 months. Most common reason for not visiting their dentist regularly was that they did not experience pain.

After intervention, 111 (36.9%) children would brush their teeth twice per day, and 184 (61.1%) would brush only once per day. A total of 215 (71.4%) children brushed their teeth for more than 2 min. After oral health promotion, 158 (52.5%) children knew that tooth brushing and flossing would help them to prevent gingivitis.

Table 2 depicts about oral health conditions of children according to S.E. class of subject. A total of 110 (75.3%) children belongs to higher S.E. class had good oral health as compare to 96 (61.9%) children belongs to lower S.E. class. A total of 59 (38.1%) children belong to lower S.E. class had poor oral health as compare to 36 (24.7%) children belongs to higher S.E. class. Significant relation was seen between oral health of children and S.E. conditions ( $P < 0.05$ ) [Table 2].

Table 3 revealed that improvement in oral health status of children after oral health promotion given to them. A total

**Table 1:** Demographic profile of school going children (N=301)

Characteristics	Frequency (%)
Sex	
Male	210 (69.76)
Female	91 (30.24)
Age	
9 <sup>th</sup> years	98 (32.55)
10 <sup>th</sup> years	102 (33.89)
11 <sup>th</sup> years	101 (33.56)
Type of school	
Government students	146 (48.51)
Municipality students	155 (51.49)
Socioeconomic class	
Higher	146 (48.5)
Lower	155 (51.5)

**Table 2:** Relation of oral health status of student and their S.E. class (N=301)

S.E. class	Oral health	
	Good (%)	Poor (%)
Higher S.E. class	110 (75.3)	36 (24.7)
Lower S.E. class	96 (61.9)	59 (38.1)

$\chi^2=6.25$ , degree of freedom=1,  $P=0.012$ . SE: Socioeconomic

**Table 3:** Role of oral health promotion in oral health status of children (N=301)

Oral health promotion	Oral health	
	Good (%)	Poor (%)
Before	206 (68.4)	95 (31.6)
After	240 (79.7)	61 (20.3)

$\chi^2=10.002$ , degree of freedom=1,  $P=0.001$

of 206 (68.4%) children had good oral health status before oral health promotion. After oral health promotion, number of children having good oral health status had increase to 240 (79.7%), and it was statistically significant ( $P < 0.05$ ).

## DISCUSSION

Oral health education is rarely offered by the dental professional, which is common practice in India. The oral health education is given to school children as part of the dental checkup and treatment camps that are organized occasionally. In the present study, we can find out role of intervention by oral health education on oral health status of school going children as well as find out the oral health attitudes, knowledge, and practice of children. Around 1/3 children (28.9%) brushed their teeth twice a day and more than half of children (57.1%) brushed their teeth once a day. Majority (62.5%) of children brushed their teeth more than 2 min. Majority (75.3%) children belong to higher S.E.

class had good oral health as compare to children belongs to lower S.E. class (61.9%). Association between oral health and S.E. conditions of children found statically significant. After intervention, 79.7% children had good oral health as compare to before giving oral health education (68.4%). Oral health status of children was improved after intervention by giving oral health education.

Similar result was found in study done by Priya *et al.* (2012) in Chennai, Tamil Nadu, state as 58.30% of the children would brush their teeth twice per day, whereas 36.10% would brush only once per day.<sup>[7]</sup> No other study was conducted to relate oral health with S.E. conditions of children. Similar result was found in interventional study done in four schools in Nalgonda district by Byalakere *et al.*, between September 2009 and February 2010.<sup>[8]</sup> In their study, the pre-intervention and post-intervention comparison within each group revealed a substantial reduction in mean oral hygiene index-simplified, plaque index, and gingival index at post-intervention.

Strength of our study is conducting interventional study among school-going children who are belong to majority of population at risk of oral health diseases and this study targeted them at school level indicating that prevention of oral health disease can be conducted collectively at school level. The limitation of using a convenient sampling method used in this study is acknowledged, and although regarded to be non-representative of the total population, it gives a reflection to the real picture of the general population of Gandhinagar district. Bias may have been occurred from the false positive responses of participants to the questionnaire, as some students may have copied responses from others or had prior exposure to oral health knowledge.

## RECOMMENDATIONS

Results of our study show that provision of school-based oral health education among students by doctors or teachers are feasible and cost-effective. In India, government do not have national oral health policy, organized dental health programs, and lack of budget to utilize the services of trained dental manpower can definitely consider training the teachers on short-term basis. Oral health awareness programs should be provided by dental college and oral health. The school health policy should be used to promote oral health by provision of oral health instructions and education on harmful dietary practices. For preventive practices, regular dental checkups should be promoted in schools.

## CONCLUSION

From our study, it is concluded that hygiene awareness, education, and motivation are main basic steps for improving the oral hygiene practices among the school children. Knowledge, attitude, and practice related to oral health improved after

intervention by giving oral health education. We found that oral health status of higher economic status was better than lower S.E. status. Oral health conditions of children were improved by providing oral health education with the help of audiovisual aids and brochure. It can be stated that a study with bigger population should be carried out to confirm of our study.

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