

Prevalence of Dental Fluorosis Among 12 Year Old School Going Children of Piparia Village, Vadodara: A Cross-Sectional Survey

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ABSTRACT

Background: In most industrialized countries, the prevalence of dental caries in children has decreased over the last two decades. The joint FDI/WHO working group for Oral Health Research and Epidemiology indicated that the factor common to all countries with substantial reductions in caries prevalence was fluoride, either as fluoridated water or in toothpaste. In addition to the considerable benefits, the use of fluoride increases the risk of dental fluorosis, a condition that has been observed in both fluoridated and non-fluoridated populations.

Materials and Methods: All school children were examined. Total 220 school children participated in study. Thylstrup Fejerskov index was used for recording the index.

Results: The prevalence was 35% among school students. Females had a higher score of fluorosis as compared to males.

Conclusion: The presence of fluorosis was higher and can be attributed to the high level of fluoride in the water level.

Keywords: Dental Fluorosis, 12 years School children, TFI, cross sectional survey.

INTRODUCTION

Fluorosis is an important public health problem in 24 countries, including India, which lies in the geographical fluoride belt that extends from Turkey to China and Japan through Iraq, Iran and Afghanistan. Of the 85 million tons of fluoride deposits on the earth's crust, 12 million are found in India. Hence it is natural that fluoride contamination is widespread, intensive and alarming in India. Endemic fluorosis is prevalent in India since 1937¹. Fluoride is a double-edged sword.

Fluoride at optimal level decreases the incidence of dental caries and is also necessary for maintaining the integrity of oral tissues but at the same time when taken in excess during developmental stages can cause adverse effects like dental fluorosis and skeletal fluorosis².

Trendly. H. Dean and his collaborators performed excellent work & showed the association between fluoride in drinking water and the occurrence of disturbances of tooth formation (mottling of enamel or dental fluorosis), they also

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found association between fluoride in drinking water and reduction in caries experience. Since then the use of fluoride in optimum level has been a central issue in all programs seeking to harness its unique property to control and prevent dental caries³. Dental fluorosis can cause unnecessary distress and be an economic burden for a minority of the population in its more severe forms⁴. The prevalence and severity increased with increased fluoride levels in drinking water⁵.

The most common cause for fluorosis among children is source of drinking water with excessive amount of fluoride. Prolonged ingestion of fluoride through drinking water in excess of the daily requirement is associated with dental and skeletal Fluorosis. Similarly, inadequate intake of fluoride in drinking water is associated with dental caries¹. Very limited research related to fluorosis has been carried out in this region, keeping this in mind the present cross-sectional survey was undertaken to assess the prevalence of dental fluorosis of school going children of Piparia village, Vadodara

Aim:

To assess the prevalence of dental fluorosis of 12 years old school going children of piparia village, Vadodara.

Objectives:

1. To assess the prevalence of fluorosis of 12 years old school children by using Thylstrup Fejerskov Index (TFI).
2. To provide baseline data and information about Dental Fluorosis for planning appropriate preventive strategies.

MATERIALS AND METHOD

The present cross-sectional study was conducted to determine the prevalence of Dental Fluorosis of 12 years old school going children of Piparia village, Vadodara.

Study Design: A Cross-sectional survey

Place of study: The proposed study was conducted among 12 years of school children of Piparia.

Source of Data:

All school going children who have completed chronological age of 12 will be included in the study.

Related Approvals:

Prior permission was taken from the Heads of the Schools and the parents of the participants to conduct the survey

Selection Criteria:**Inclusion criteria:**

- All school children who had completed chronological age of 12.
- All children of Piparia school who were willing to participate in the study.

Exclusion criteria:

- Students who were absent at the school on the day of the examination.
- Participants suffering from any condition which is contraindicated for clinical examination.

Method of Collection of Data:

Prior to start of the study, the purpose was explained to the participants. Having obtained the consent and the date when the students assemble at the location, screening was done for those present. Examination was done by the investigators. The total sample size was 220 school students. Among 220 school children 128 males and 92 females had participated in study. A calibrated examiner conducted the study, with a kappa value of 0.78. Thylstrup Fejerskov⁸ index was used for recording the values.

PROTOCOL**Clinical Parameters**

The following parameters are taken into consideration in this study.

Fluorosis was assessed with modified Thylstrup Fejerskov Index by O. Fejerskov in 1988⁸, all the teeth were examined.

Time scale of study:

The study was conducted for a period of three months.

Statistical Method:

The Collected data was entered in Microsoft excel (2010) spreadsheet. Descriptive statistics was computed using excel statistical operations. Percentage, Mean and standard deviation for study variable were compiled and tabulated.

RESULTS

Present study was conducted to assess the prevalence and severity of Dental Fluorosis among 12 year old school children using Thylstrup Fejerskov Index. The prevalence was 35% (P Value: 0.036) among school students. Females had a higher score (40.21%) of fluorosis as compared to males (31.25%).

Table 1: Distribution of study subjects according to gender.

Gender	No. of individuals
Male	128 (58.18%)
Female	92 (41.81%)
Total	220(100%)

Table 2: Comparison of prevalence of fluorosis in Males & Females.

Gender	No. of individuals	Mean $\pm$ SD	No. of individuals with (0) TFI Score	No. of individuals with TFI score > 0
Male	128 (58.18%)	1.17 $\pm$ 1.98	88 (68.75%)	40 (31.25%)
Female	92 (41.81%)	1.56 $\pm$ 2.26	55 (42.96%)	37 (40.21%)
Total	220(100%)	-	143 (65%)	77 (35%)

***P value: 0.036**

DISCUSSION

Children who lived in the same place where they were born and who obtained drinking water from the same source throughout their life were included in the study. In our research Thylstrup Fejerskov Index was used to assess the prevalence of fluorosis. The histological and clinical bases for the criteria used for scoring fluorosis with this index have clarified the way in which fluorosis is distributed over the tooth surface in case of

continuous exposure to constant levels of fluoride during tooth development, as well as the role of enamel loss in fluorosis.

In the present study, 35% of the children, who resided in area, had dental fluorosis. In present study TFI<0 percentage was high as 65 whereas, TFI>0 percentage was 35. It shows less severity among 12 years old school children as its compared to TFI<0 score.

Prevalence of fluorosis was high in study conducted by Sudhir KM et al. which shows 100% prevalence among study subjects. Current study shows 35% prevalence of fluorosis among study subjects, which is very less. The possible explanation for this high prevalence among other studies compare to present study is that there is a positive correlation between annual temperature and total fluoride intake⁵. Similarly Maji et al in also found 100% prevalence which is high compare to our study⁵

A study conducted by Baelgum et al in Nairobi, Kenya, fluorosis was significantly more prevalent & widespread in children aged 13-15 years of age compared to children aged 10-12 years⁹. Current study also shows the prevalence of fluorosis 35% which is less.

There was a significant difference in prevalence & severity of fluorosis was found between boys & girls. It shows higher prevalence in females which was 40.21% compared to males (31.25%). There was no significant difference was found in study conducted by Sudhir KM et al⁵. So, it shows negative result compared to current study. Also, study conducted by Ravi Kiran E et al⁶ showed higher prevalence of fluorosis in boys which is completely opposite to results of current study.

The findings of the present study showed Fluorosis prevalence amongst 12 years (35%) which shows positive agreement with the study conducted earlier by Bajaj D et al², prevalence of fluorosis 12 years (26.99%). Study conducted by Ravi Kran E st al⁶ suggested that Prevalence increases with the .increase in age. So as age increases, there is a possible chance of having high prevalence of fluorosis.

Current findings of the study suggested that dental fluorosis is a major public health problem to the community. Lack of awareness, poor knowledge about preventive measures, safe drinking water could be responsible for severity of fluorosis.

Study conducted by Ravi Kiran et al⁶, majority (69%) of the children being resident in a rural area were using neem stick for brushing their teeth. This is in contrast to a current study where 73% of the study sample used toothpaste. Prevalence and severity of fluorosis observations may be attributed to frequent changes of toothpaste used. Also toothpaste which they are using may not be same as what they have used in past 5-10 years.

CONCLUSION

There was an increase in severity of dental fluorosis as the fluoride concentration increased in the drinking water. The presence of fluorosis was higher among 12 years old school going children in Piparia, Vadodara.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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