

Dental Fluorosis in Anuradhapura District, Sri Lanka

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SUMMARY: Dental Fluorosis has been recognized as an endemic problem affecting different areas of Sri Lanka with naturally occurring fluoride in drinking water. This study involves a sample of 400 school children in the district of Anuradhapura.

It is found that the prevalence of very mild or greater dental fluorosis is 89.8 % and CFI in Anuradhapura is 1.69. 33.4% of the affected needed treatment. Over two-thirds of the sample is using fluoridated toothpaste. Low awareness was also observed in the sample.

More than 50% of the used water sources contain fluoride over 0.7 mg/L.

It is concluded that dental fluorosis constitutes a major public health problem in Anuradhapura. It is discussed how appropriate measures should be taken in order to solve this long-term problem.

Key words: Anuradhapura, Sri Lanka, community fluorosis index, CFI, fluorosis prevalence, school children.

INTRODUCTION

Reports of other studies have been cited that prevalence of dental fluorosis is 55 % to 77 % in 7 to 20 year old school children in North Central Province^{1,2} and high levels of fluoride in drinking water in Anuradhapura³. Communities in Anuradhapura where the Community Fluorosis index, CFI, has been determined are Hidogama 1.89, Galkulama 2.29 and Thalawa 1.85⁴.

In the recent past widespread occurrence of dental fluorosis has been reported from different parts of Anuradhapura. Along with expansion of settlements and resultant destruction of the forests most water tanks were dried. In combating the scarcity of water more and more wells and tube wells were dug and people used to consume underground water rather than rainwater. The other reason is unintentional ingestion of fluoride from variety of sources like fluoridated dentifrices, consumption of food grown and processed in areas of high fluoride concentration and surface water contamination with agro-chemicals containing fluoride.

A study was carried out to assess the present status and future needs of the population. This will also provide reliable baseline data for development of regional oral health programmes in combating endemic problem of dental fluorosis. Prevalence of Dental

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fluorosis, CFI, treatment needed for fluorosis, awareness of the disease, tooth cleaning material used and fluoride content in drinking water were determined, for Anuradhapura district.

MATERIALS AND METHODS

Twenty clusters from the Anuradhapura district of Sri Lanka were selected for this study. A total of 400 individuals comprising 20 from each cluster was included in the sample. School children, those who have completed their 15th birthday but not reached 16th birthday and those who have lived life time in the area, were subjected to an interviewer administered questionnaire and clinical oral examination.

Their teeth were examined under natural light and scored by Dean's index according to the criteria stipulated by WHO ^{5,6}. The treatment need was also recorded.

Prior to the clinical examination, information related to socio-demographic profile, tooth cleaning material, source of water used for drinking, disease awareness (presence/absence of white/ brown patches, causation, prevention), instituting a relevant preventive practice and how an individual's appearance of teeth affects his/her daily life (psychological impact) were obtained using an interviewer administered questionnaire.

Data processing and analysis were done using the statistical software programme SPSS 11.

From the study group a random sample of 300 students were selected to analyse water sources. These sources were later analysed for their Fluoride content by colorimetric method using SPADNS reagent.

RESULTS

The prevalence of dental fluorosis, very mild or greater, was 89.8 % with Dean's index.

Community fluorosis index is 1.69 for Anuradhapura which indicates a major public health problem.

44 % of the water sources analysed contained fluoride less than 0.7 mg/L.

69 % of the sample uses fluoridated toothpaste, despite high fluoride content in drinking water.

Awareness of white/brown patches on teeth was mostly expressed by children with moderate to severe forms of Fluorosis.

44.6 % of the respondents related the problem to water whereas only 9 % of the study group knew fluoride as the causative factor.

Knowledge on methods of prevention was significantly lower.

Only 3 % of the respondents in the group were instituting an effective preventive method.

Psychological impact is more in children with moderate to severe forms of Dental fluorosis.

33.2 % of the affected needed some form of treatment.

DISCUSSION

Present findings confirm that dental fluorosis constitutes a major public health problem to the community and so to the health authorities in Anuradhapura. Low cause awareness, poor knowledge about appropriate preventive measures and poor access to safe drinking water could be some factors implicated for this.

Fluoride content of water sources ranged from 0.03 mg/L to 6.5 mg/L. Even within a small area it showed considerable variation in fluoride concentrations. This opens the possibility of locating water sources with acceptable fluoride concentrations even within high fluoride areas. However additional research in this is warranted to find whether such water sources maintain a low fluoride concentration through out.

69 % of the sample is using fluoridated toothpaste despite high Fluoride content in drinking water. The reason may be due to ubiquitous presence of fluoridated dentifrice in the area and poor availability of non- fluoridated dentifrice.

The earliest study on fluorosis done by Seneviratne et al 1974 ¹, revealed prevalence of Dental fluorosis was 55 % to 77 % in 7 to 20 year old school children in North Central Province of Sri Lanka. As little information is available on prevalence of dental fluorosis in Anuradhapura there was no data for direct comparison. Study done by Abayarathna ⁴ in three high fluoride areas in Anuradhapura the CFI range from 1.85 to 2.29, when fluoride concentration in drinking water range from <1mg/L to 10.9 mg/L

In a study ⁷ done in Mexico city children ages 7 to 12 years attending a pediatric dental clinic to measure Dental Fluorosis impact on well-being, 66 % and 81 % of the children reported experiencing at least occasionally distress or being worried respectively because of appearance of teeth.

Thus it is concluded that education of the community about fluorosis and its prevention, introduction of household defluoridation, facilitating collection of

rainwater, protection of low fluoride surface water from contamination with agrochemicals and establishment of curative and preventive fluorosis facilities are needed in Anuradhapura .

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