ORIGINAL RESEARCH PAPER

Volume-8 | Issue-5 | May-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A SURVEY OF DENTAL FLUOROSIS IN A RURAL AREA OF GOHANA, HARYANA

Community Medicine

Dr Manoj Kr Dhingra — Assistant Professor, Department of Community Medicine, N C Medical College and Hospital, Israna, Panipat, Haryana

Dr Jyoti* — Lady Medical Officer, Urban Health Training Centre, Department of Community Medicine, N C Medical College and Hospital, Israna, Panipat, Haryana *Corresponding Author

Dr Renu Dhingra — Department of Anatomy, AIIMS, New Delhi

Brig Dr Ajoy Mahen — Professor and HOD, Department of Community Medicine, N C Medical College and Hospital, Israna, Panipat, Haryana

Dr B S Deswal — Professor and HOD, Department of Community Medicine, SGT Medical College, Gurgaon, Haryana, India

ABSTRACT

There have been reports of endemic fluorosis in Haryana but most of the areas reported have not been studied or screened. In a study conducted to assess fluoride levels in Gurgaon (now Gurugram) the fluoride concentration in water samples in Pataudi varied from 0.95 to 2.42 mg/L. In Mahendergarh district, in Narnaul block, 126 children were examined and 42 were found suffering from dental fluorosis which is (33.33%). In Sihma, 90 children were examined and 43 were found suffering from dental fluorosis which is (47.7%). This study was done as per the WHO oral survey method and was carried out during March-April 2019 in Gohana Block of Haryana. This study showed in a sample of 50 children about 5% of children surveyed in the age group of (3 to 15 years) showed evidence of Dental Fluorosis. Out of a sample of 50 children, 40 of these children had no or questionable fluorosis, 4 had mild fluorosis, one had moderate fluorosis and none had severe fluorosis. Since this is a preliminary study, further studies are warranted in this area, where water samples should be taken and analysed for fluoride content. This has already being planned and would be collected from this area. An established technique to remove fluoride from water is available is the Nalgonda technique. This would be applied in this area to defluoride water in subsequent phases of this study.

KEYWORDS

Dental Flurosis, WHO oral survey method for dental Fluorsis, Nalgonda technique.

INTRODUCTION:

Fluorosis has become a global public health burden in 24 countries, including India, [1] The prevalence of Dental fluorosis in Haryana has reached alarming proportions with reports of dental fluorosis being reported in many blocks and districts. In a study conducted to assess fluoride levels in Gurgaon (now Gurugram) the fluoride concentration in water samples in Pataudi varied from 0.95 to 2.42 mg/L. [2] In the same study, fluoride levels at Hailey Mandi was found to be varying between 1.90 to 5.20 mg/L and at Harsaru (1.65 to 1.90 mg/L). 94% of these samples had fluoride levels above was 1.0 mg/L which is the highest safe level indicated by Indian Bureau of Indian Standards. In Narnaul block, 126 children were examined and 42 were found suffering from dental fluorosis which is (33.33%). In Sihma, 90 children were examined and 43 were found suffering from dental fluorosis which is (47.7%). Further, in Mahendergarh, 120 children were examined and 46 were found suffering from dental fluorosis which is (38.33%).[3]

The prevalence of fluorosis in India is quite rampant in India and 24 states are afflicted with fluorosis and its toxicity; the problem in India gets more accentuated as 85% of rural population in India depends on groundwater for their cooking and domestic use [4] Groundwater is usually extracted by hand pumps or tube wells [4] Unfortunately, in most countries globally, the toxicity of fluorosis remains unrecognized even today and a coordinated global action plan implemented at grass-root level is urgently which would immensely mitigate much of the morbidity and mortality associated with fluoride toxicity.

RATIONALE

Keeping in view the rampant endemic fluorosis reported in Haryana , an exploratory survey was organised in a rural area of Gohana. A random sampling technique was used and oral examination was done as per the WHO oral survey method. (vide infra)

AIMS AND OBJECTIVES

1. To explore the prevalence of Dental fluorosis in rural community in Gohana , Haryana
2. To collect and analyze water samples in residence of those children found to be suffering from dental or skeletal fluorosis
3. To prevent the hazards of endemic fluorosis by implementation of currently available de-fluoridation method, namely the Nalgoanda technique.

METHODOLOGY

Keeping in view the rampant endemic Fluorosis in Haryana, a cross sectional survey was organised in a rural area of Gohana, which is near to the medical college A random sampling technique was used and oral examination was done in children in a rural area of Gohana, Haryana, as per the WHO oral survey Guide for Dental Fluorosis.

WHO Guide for oral examination for dental fluorosis

SOURCE:

WHO Oral Health Surveys: Basic Methods; 5th Edition. Annexure 6; page 101-103. World Health Organization 2013

Plate 40

Plate 41

Plate 33: Questionable Fluorosis
Plate 34: Mild Fluorosis
Plate 36: Mild Fluorosis
Plate 37: Mild Fluorosis
Plate 38: Moderate Fluorosis
Plate 39: Moderate Fluorosis
Plate 40: Severe Fluorosis
Plate 41: Severe Fluorosis

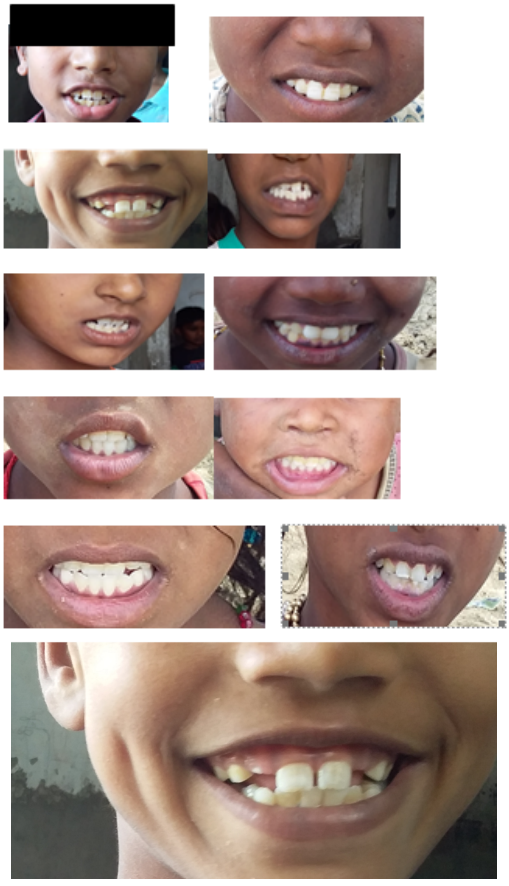
Also, a total of 20 water sample were collected from those areas where

these children were showing evidence of Dental Fluorosis. These water samples from each site were collected and analyzed for fluoride content using the SPADNS method at AIIMS. This study was conducted during March-April 2019

OBSERVATIONS

Dental fluorosis in Gohana

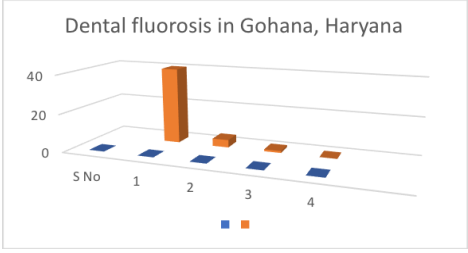
A random oral survey was done as per the WHO oral survey method was done as in 50 children done in a rural area of Gohana during March-April 2019. The result of this survey with oral examination of some children is shown below.



A young boy in Gohana showing evidence of mild dental fluorosis Out of a sample of 50 children only 5 children showed any evidemce of dental fluorosis. This is shwon in Table 1 below:-

Table 1: Dental fluorosis in Gohana, Haryana

S No	Type of fluorosis	Number
1	Questionable Fluorosis	40
2	Mild Fluorosis	4
3	Moderate Fluorosis	1
4	Severe Fluorosis	0



The result of this oral survey showed that about 5% children showed evidence of dental mottling.

RESULTS AND DISCUSSION

In this study conducted in a rural area of Gohana, Haryana, about 5% of children screened showed evidence of dental mottling. This necessitates further analysis of this area for dental fluorosis. Since this is a preliminary study, further studies are warranted in this area, where water samples should be taken and analysed for fluoride content. This has already being done and the samples have been sent to AIIMS and results awaited. This would form the second phase of this study where house to house surveillance would be done where fluoride levels are more than 1 ppm.

Dental fluorosis has been reported to be quite endemic in Haryana. Oral Examination as per the WHO survey method is the best choice to examine a patient besides water analysis and urine examination. [6] A WHO oral survey guide was used as a template to examine the children which is shown below. [6] Dental mottling is usually evident as the disappearance of the lustre of the teeth and the tooth becomes mottled and chalky white in appearance. Essentially this process is irreversible and may also lead to pitting or chipping of the tooth [4]

CONCLUSIONS AND RECOMMENDATIONS

The solution to this problem is obviously availability of clean potable water without the presence of any metals. However, in such remote areas water availability is through hand pumps or water obtained from wells. An established technique to remove fluoride from water is available, which is the Nalgonda technique. In this method the contaminated water is treated with lime and calcium hydroxide. Calcium hydroxide precipitates the fluoride ions and forms an insoluble product; fluorspar (CaF2). This can be removed and the fluoride free water can be filtered and preferably boiled and stored in clean utensils.

REFERENCES

1. Arlappa N., Qureshi A., Srinivas R.: Fluorosis in India: an overview. Int J Res Dev Health 2013; 1 (2): 97-102.Community Dent Oral Epidemiol. 1998 Oct; 26(5):316-23.
2. Kumar Garg V, Singh B. Fluoride signatures in groundwater and dental fluorosis in permanent teeth of school children in rural areas of Haryana State, India. Int J Occup Environ Med. 2013 Apr;4(2):107-8.
3. Sucheta Yadav, Sudhir Kumar Bansal, Sunil Kumar, Sanjay Yadav. Prevalence of Fluorosis among School Going Children in District Mahendergarh, Haryana, India.International journal of basic and applied research September 2018. 8 (9) : 1349-1364.
4. Garg VK, Suthar S, Singh S, et al. Drinking water quality in villages of southwestern Haryana, India: Assessing human health risks associated with hydrochemistry. Environmental Geology 2009; 58:1329-40.
5. Nagendra Rao, C. R. (2003). Fluoride and environment—a review. In Proceedings of the third international conference on environment and health, Chennai, India, 15-17.
6. WHO Oral Health Surveys: Basic Methods; 5th Edition. Annexure 6 ; page 101-103. World Health Organization 2013