PREVALANCE OF DENTAL FLUORISIS IN SCHOOL GOING CHILDREN IN NARASARAOPET MANDAL, GUNTUR DISTRICT

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Abstract

Dental fluorosis is a chronic fluoride –induced condition in which an excess of fluoride is incorporated in the developing tooth enamel and disrupt the enamel formation of the tooth. Prevalence of dental fluorosis due to high levels of fluoride in drinking water is an endemic global problem. More exposure to the fluoride, greater is the rate of dental fluorosis. Also, children with mild dental fluorosis had lower IQ than those without dental fluorosis demands further investigation. The present study was conducted in Narasaraopet mandal, Guntur district. During this year in 2017-18. The present study was conducted among people of age 5-15 yrs. Total of 600 people were examine by the questionnaire. In this method used in DEANS index method

Keywords: Dental fluorosis, Enamel, DEAN's index, Narasaraopet mandal.

Introduction

Dental fluorosis, also known as mottled enamel, is a developmental disturbance of dental enamel, caused by successive exposure to high concentrations of fluoride during tooth development. It is a form of enamel hypoplasia leading to enamel with lower mineral content and increased porosity **Abanto Alvarez, Jenny, et al,2009 [1**]. Thus, for example, nearly 12 million out of the 85 million tons of fluoride deposits on the Earth's crust are found in India resulting in as many as twenty states being affected by endemic fluorosis **Kumar et,al.,(2013) [2].** The same situation may be observed in most of the developing countries in Africa. In addition, this is a major public health problem rural population depends on groundwater for their domestic needs **Kumar, Garg V(2013) [2]**. Fluorosis is a result of extended exposure to fluoride resulting in deficient formation and maturation due to metabolic alterations in the ameloblasts during the period of teeth formation. It is characterized by the presence of bilateral, diffuse, thin, and horizontal white striations and stained plaque areas. In the most severe cases, the enamel may become discolored and/or pitted. Histologically, the tissue presents hypo mineralized subsurface areas confined to few micrometers from the external mineralized surface, which increases its porosity **Peariasamy, K., et al 2008 [3].** Various methods of therapy have been advocated for the treatment of fluorosis-stained teeth which range from invasive ceramic veneer bonding restorations to abrasive chemical treatments. However, the problem with invasive treatments is that most patients are young adults and the use of procedures in the form of prosthetic approach with veneers or crowns result in an excessive sacrifice of tooth material, thus accelerating the destruction of the tooth at an early age. Furthermore, the restorative approach is time consuming and expensive **Ardu, Stefano(2007) [4].** Although fluoride is widely promoted for the prevention of dental Fluorosis, its overconsumption in infancy may lead to dental fluorosis and other adverse effects **Fomon, Burgstahler, et al 2006 [5,6].** Several health effects are associated with fluoride ingestion, ranging from nausea to neurotoxic effects to death **Mullins, (1998) and Vogt, R. L., et al. 1982 [7,8].** According to the US Centers for Disease Control and Prevention recommend a careful monitoring and control of F intake levels in order to avoid overexposure [9]. The combination of dental bleaching techniques and micro-abrasion appears an excellent conservative solution to reestablish health in fluorosis-affected teeth and provide highly satisfactory results along with low cost **Croll, Theodore P (1998**)[10]. But it will

important to take into account the preventive precautions., this study was conducted to investigate on one hand the prevalence dental fluorosis among students and the contend of the drinking water on fluoride.

Material and methods

The Present study was conducted in the year 2017-18 in the district of Guntur ,Andhra Pradesh state in India. Guntur district, one among the 13 district of Andhra Pradesh state. It is extended over an area of 11,804 kilometers and has population of 4,887,813 (census, 2011).This district has a coast line of 100 kilometers. The Krishna river forms the north eastern and eastern boundary of the district, separating Guntur district from Krishna district. The Guntur district is bounded in the eastern by the Bay of Bengal,on the south by prakasam district , on the west by mahaboob nagar and on the north west by Nalagonda district. Guntur district is divided into 57 mandalas, which comprise the villages and hamlets.

The present survey was carried out in 14 villages of Narasaraopet mandal, Guntur district, Andhra Pradesh. Narasaraopet consist of 14Villages and14 Panchayats . Kesanupalli is the smallest Village and Jonnalagadda (Rural) is the biggest Village . This Place is in the border of the Guntur District and Krishna District. Krishna District Vijayawada is East towards this place.

Dean's fluorosis index was first published in 1934 by H. Trendley Dean The index underwent two changes, appearing in its final form in Rojier RJ 1942. Dental fluorosis is endemic and continues to occur at an alarmingly higher rate. Water obtained from in depth sources is the cause for the elevated levels of fluoride in some of the regions of this district

Classification of the dental fluorosis severity degrees according to **DEAN's** fluorosis

Index:

Questionable. The enamel represents the usual translucent semivitriform (glass-like) type of structure. The surface is smooth, glossy and usually of pale creamy white color

Very Mild. Small, opaque, paper white areas scattered irregularly over the tooth but not involving as much as approximately 25% of the tooth surface. Frequently included in this classification are teeth showing no more than about 1 – 2mm of white opacity at the tip of the summit of the cusps, of the bicuspids or second molars.

Mild. The white opaque areas in the enamel of the teeth are more extensive but do involve as much as 50% of the tooth.

Moderate. All enamel surfaces of the teeth are affected and surfaces subject to attrition show wear. Brown stain is frequently a disfiguring feature.

Severe. All enamel surfaces are affected and hyperplasia is so marked that the general form of the tooth may be affected. The major diagnostic sign of this classification is discrete or confluent pitting. Brown stains are widespread and teeth often present a corroded-like appearance.

Dean's fluorosis index was first published in 1934 by H. Trendley Dean. The index underwent two changes, appearing in its final form in 1942. An individual's fluorosis score is based on the most severe form of fluorosis found on two or more teeth.

QUESTIONARY

Keeping in view of the scope and objectives of the study, interview schedule was prepared. A structurally well prepared and pre tested questionnaire was developed after perusal of the available literature. Thus, the final interview schedule consists of all the relevant items such as profile characteristics, etc., for measuring the variables included in the study. After pre-testing the questionnaire at the proposed study area, necessary modifications were incorporated. the finalized questionnaire which was used in the interview schedule for obtaining the primary data is appended herewith. Name, Age, sex, Habitate, Education, No. of family members, Occupation, Sources of drinking

water, amount of water consumed, type of toothpaste, Residence, how many times brushing per day, have you ever considered teeth whitening, how often do you make dental visit, consumption of tea and sea fish per day, etc

Severity of the dental fluorosis was assessed by deans index with the help of dentist and total samples are tested and classified according to the severity of dental fluorosis[5].the classification was divided questionable, very mild, mild, moderate and sever. The study involves collection of both primary and secondary data. The primary data was collected from the selected victims of dental fluorosis with the help of duly pre-tested questionnaire. The secondary data was regard to reports of the rural water supply and sanitation department Guntur in the study area.

Result and discussion

Narasaraopet Mandal in Guntur district, Andhra Pradesh India seems to be threaten area of fluoride in dental fluorosis total 30 fluoride effected villages has been find out with the help of rural water supply and sanitation department Guntur and water samples had been taken for the analysis of water fluoride content. Water samples from different bore wells of 14 villages which showed a maximum range of 0.8 to 1.0 ppm by DEAN's method. Among 14 villages 14 are showing high levels of fluoride Almost all the selected villages are higher than the permissible level of 1 ppm according to WHO (World Health Organization, 1984).

The Moderate type is higher (30.06%) and Very mild type is lower (10.21%), Questionable type is (20%), Mild is (15.01%), Sever is(25.12%). Particularly Aravapalli (5.50), Isapalem (5.52). in Narasaraopet mandal, has excess levels of fluoride in Drinking water.

We find mean standard deviation of the total children of the sample and the mean value is and the standard deviation is the data was presented in percentage to understand the nature of the level of knowledge about the diseases of dental fluorosis.

Table:1 Systematic Representation of the sample

S.NO	NAME OF THE VILLAGE	BOYS	GIRLS
1	Jonnalagadda	45	40
2	Chinnathurakapalem	30	25
3	Peddathurakaplem	35	45
4	Yellamanda	43	27
5	Palapadu	25	30
6	Aravapalli	15	25
7	Issapalem	28	32
8	Kesanupalli	12	13
9	Mulakaluru	36	24
10	SRKT Colony	10	12
11	Allurivaripalem	22	21
12	Kakani	20	20
13	Petluvaripalem	30	32
14	Chinthapalem	23	33

TOTAL		374	379

Detailed information and classification of the samples according to boys and girls are represented in the table: 1.The total number of the villages is 14, number of the boys are 374 are (45%) and girls are 379(51%). Table:

Table: 2. Classification of effected children in the region

NAME	QUESTIONABLE		VERY MILD		MILD		MODERATE		SEVER	
	Boys	girls	BOY	GIRLS	BOY	GIRLS	BOY	GIRLS	BOY	GIRLS
Jonnalagadda	5	10	10	5	10	15	15	5	10	5
Chinnathurakapalem	5	3	8	5	6	7	14	8	7	2
Peddathurakapalem	5	10	9	15	8	5	11	7	2	8
Yellamanda	10	10	8	10	7	8	7	2	10	0
Palapadu	5	6	3	4	6	7	8	9	3	4
Aravapalli	2	3	0	2	3	2	8	15	2	3
Issapalem	4	3	3	5	5	5	3	13	15	4
Kesanupalli	2	3	3	1	2	4	3	4	2	1
Mulakaluru	8	3	4	0	8	6	6	13	3	1
SRKT Colony	0	2	2	2	0	4	8	2	0	0
Allurivaripalem	3	3	0	1	6	7	11	10	2	0
Kakani	0	5	4	4	9	13	2	2	0	0
Petluvaripalem	5	10	6	14	8	6	18	2	3	0
Chinthapalem	4	8	3	10	8	9	15	3	2	1

The responds of every village of the region are classified according to dean's index and gender represented in the table: 2.In this classification the questionable type of the represents is The above table represents to effected children in the region. Total 14 villages Children were observed according to Dean's index.

Table: 3 Classification of Effected Children Based on the Age

TYPE	7-9 Years		10-12 years		13-15 YEARS		TOTAL	PERCENTAGE
	Boys	Girls	Boys	Girls	Boys	Girls		
QUESTIONABLE	25	30	40	10	25	30	130	20%
VERY MILD	20	14	19	20	20	10	93	10..21%
MILD	20	24	20	34	19	16	133	15.01%
MODERATE	25	35	35	40	30	25	185	30.01%
SEVER	30	38	25	30	15	22	160	25.12%
TOTAL	120	141	139	134	109	103		

The information represented based on the age view and it is tabulated as above table: 3. based on the age it was divided into Three types. Those are 7-9 years 10-12 years and 13-15 yrs. Boys and Girls data are represented separately. The above table represents to effected children in the region. Questionable (20%), Very Mild (10.21%), Mild (15.01%), Moderate (30.01%), Sever (25.12%).

Accurate of enamel fluorosis

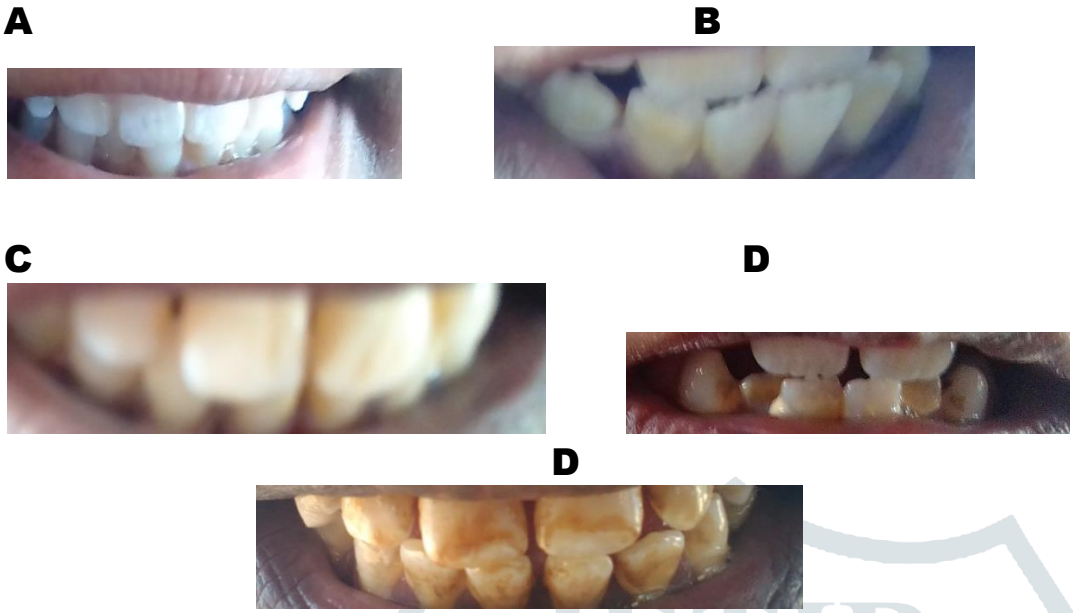
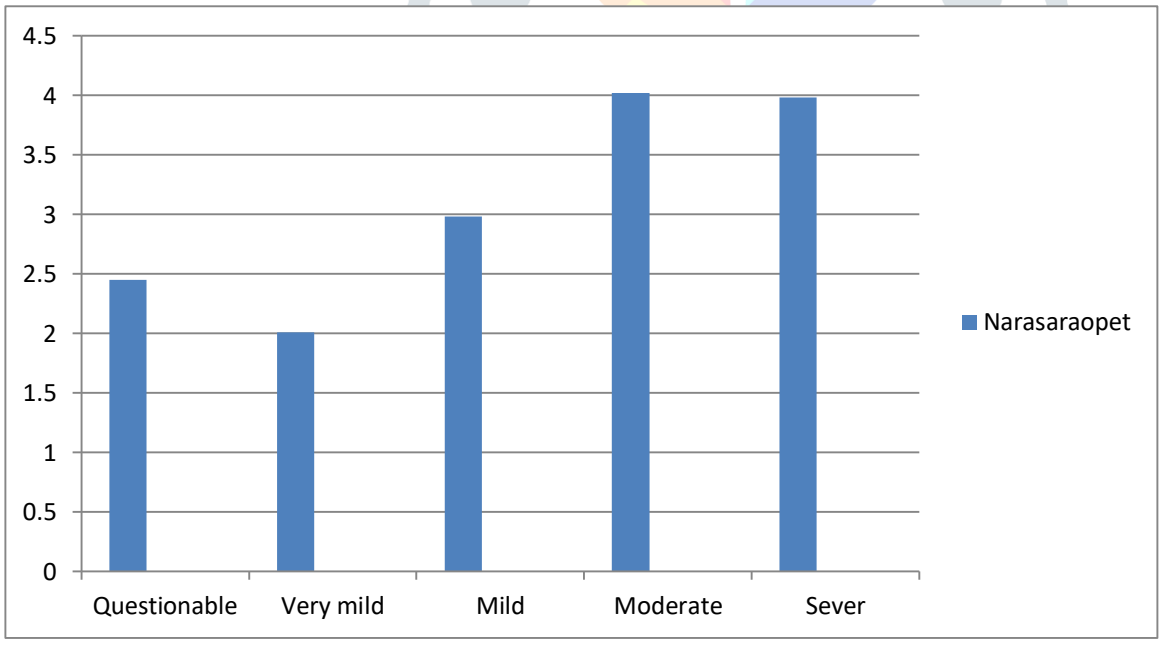


Fig.1: dental fluorosis (Deans grading) (A) Questionable (Grade1), (B)Very mild(grade2), (C) Mild(Grade3), (D) Moderate (Grade 4), (E) Sever(Grade 5).

Figure1: Graphical representation of effected Children of Dental Fluorosis in Narasaraopet Mandal



Conclusion

Dental fluorosis still exist as a major dental public health in India: measures need to be taken to control this by introducing defluorodisation plants in various parts of the country. The great need for introducing various small scale methods of defluorodisation in the present study area to prevent dental fluorosis. In the present study, it can be concluded that children of Peddathurakapalem, Yellamanda and Palapadu village's of consuming water more than 1.5 ppm of fluoride ranges from 1.53-5ppm are suffering from dental fluorosis.

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