

Dental Fluorosis prevalence among children in Yerragondapalem Mandal, Prakasam district

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ABSTRACT: The study carried by Yerragondapalem mandal, Prakasam District. Dental fluorosis is a known adverse effect of fluoride overuse. Enamel or dental fluorosis is a condition caused by 'excessive' intake of fluoride over an extended period of time. The most common symptom of dental fluorosis is a chalk-like discoloration of teeth with white spots or lines on tooth enamel. In more severe cases the affected areas have a yellow or brown discoloration. In extreme forms, fluorosis may result in a pitted tooth surface. Fluorosis has been reported way back in 1901. The treatment options for fluorosis are varied depending upon individual cases. The purpose of this article is to report various treatment options available for dental fluorosis; It also wells on the need for the dentists to be aware of their local indigenous pathologies to treat it in a better manner.

Keywords: Dental fluorosis, endemic fluorosis areas, fluorosis, treatment options for fluorosis

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I. INTRODUCTION

Dental fluorosis is a health condition caused by a child receiving too much fluoride during tooth development. The critical period of exposure is between 1 and 4 years old; children over age 8 are not at risk **Mckay FS(1916)**. In its mild form, which is the most common, fluorosis appears as tiny white streaks or specks that are often unnoticeable. In its severest form, which is also called mottling of dental enamel; it is characterized by black and brown stains, as well as cracking and pitting of the teeth **Fejerskov O,(2003)**. It is well documented that fluoride can have both beneficial and detrimental effects on the dentition ever since Mc Kay and G.V. Black in 1916 published the effect of fluoride on dentition **Dean HT(1934)**. The beneficial effects of fluoride on dental Fluorosis are due primarily to the topical effect of fluoride after the teeth have erupted in the oral cavity. In contrast, detrimental effects are due to systemic absorption during tooth development resulting in dental fluorosis **Dean HT,Mckay FS(1937)**. who developed a classification for fluorosis, which is still widely used, based on his interpretation of clinical appearance **Shortt WE(1937)**. Dean and McKay suggested that optimum level of water fluoride should be below 0.8 - 1.0 PPM **Handa BK(1975)**. The severity of dental fluorosis depends on the amount of fluoride exposure, the age of the child, individual response, as well as other factors including nutrition **Mariappan P(2001)**. Although water fluoridation can cause fluorosis, most of this is mild and not usually of aesthetic concern **Meenakshi,(2006)**.

Severe cases can be caused by exposure to water that is naturally fluoridated to levels well above the recommended levels, or by exposure to other fluoride sources such as brick tea or pollution from high fluoride coal **Fejerskov O,(1974)**. The earliest manifestation of dental fluorosis is an increase in enamel porosity along the striae of Retzius **Richards A,(1986)**. Clinically, the porosity in the subsurface of enamel reflects as opacity of the enamel. With an increased exposure to fluoride during tooth formation, the enamel exhibits an increased porosity in the tooth surface along the entire tooth surface. Very severely hypo mineralized enamel will be very fragile and hence as soon as they erupt into oral cavity they undergo surface damage as a result of mastication, attrition and abrasion. The definite evidence that fluoride can induce dental fluorosis by affecting the enamel maturation was given by Richards et al. Thylstrup proposed a way of recording dental fluorosis (TF index) based on the histopathological features **Thylstrup A,(1978)**. Human and animal studies have shown that the enamel hypomineralization in fluorotic teeth are due to aberrant effects of fluoride on the rates at which enamel matrix protein breakdown or rates at which the byproducts of enamel matrix degradation are withdrawn, resulting in retardation of crystal growth in enamel maturation stage **Aoba T,(2002)**.

II. MATERIALS AND METHOD:

Our study was a longitudinal follow-up of a population based study of children aged 5-15 years in Yerragondapalem conducted between

2017-18 The baseline study collected data on socio-economic status, residential history, oral health-related behaviors', and the oral health status of the children.

The Present study was conducted in the year 2017-2018 in the district of Prakasam, Andhra Pradesh state in India. Prakasam district, one among the 13 district of Andhra Pradesh state. It is extended over an area of 17,626 kilometers and has population of 3,392,764 (census,2011).The Prakasam district is bounded in the eastern by the Bay of Bengal, on the south by kadapa and Nellore district , on the west by Kurnool and on the north west by Mahabubnagar district of Telangana. Prakasam district is divided into 56 mandalas, which comprise the villages and hamlets.

From the identified district of prakasam, out of 56 mandalas in Prakasam district Yerragondapalem were selected purposively based on the reports of the rural water supply and sanitation department Prakasam.

From Yerragondapalem mandal we select the 8 villages names as;Vadampalli, Sarvayapalem, Nagarajuthanda, Mittabodu, thanda,Allipalem,K.Gollavidipi,Ayyambotlapalli and Amanigudipadu. 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, modifications were incorporated. the finagled questionnaire which was used in the interview schedule for obtaining the primary data is appended herewith. Name, Age, Sex, Habitat ,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. 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 Prakasam in the study area.

III. RESULT:

Yerragondapalem mandals of Prakasam district, Andhra Pradesh India seems to be threaten area of fluoride in dental fluorosis total 45 fluoride effected villages has been find out with the help of rural water supply and sanitation department Prakasam and water samples had been taken for the analysis of water fluoride content. Water samples from different bore wells of 45 villages which showed a High range of 1.8 to 3.02 ppm by DEAN's method. Among 45 villages 45 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 mild type (14%),and sever type is (31%), Questionable type is (19%), Very mild is (10%),Moderate is(26%).Particularly Vadampalli(3.02ppm) in Yerragondapalem 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.	VADAMPALLI	26	26
2.	SARVAYAPALEM	27	29
3.	NAGARAJUTHANDA	26	19
4.	MITTABADUTHANDA	26	25
5.	ALLIPALEM	17	16
6.	K.GOLLAVIDIPI	14	17
7.	AYYAMBOTLAPALLI	22	23
8	AMANIGUDIPADU	17	18
TOTAL		175	173

Detailed information and classification of the samples according to boys and girls are represented in the table1. The total number of the villages are 8, number of the boys are 175 are (55%) and girls are 173(45%).

Table:2

Name	Questionable		Very mild		mild		Moderate		Severe	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
VADAMPALLI	5	4	1	1	4	3	8	8	8	10
SARVAYAPALEM	6	6	2	3	3	4	8	7	8	9
NAGARAJU THANDA	4	3	2	3	4	2	6	6	10	5
MITTABADU THANDA	6	6	3	1	4	2	4	9	9	7
ALLIPALEM	4	4	1	1	2	3	4	4	6	4
K.GOLLAVIDIPI	3	2	1	2	3	2	3	5	4	6
AYYAMBOTLA PALLI	6	4	1	1	3	3	5	8	7	7
AMANIGUDIPADU	3	3	2	1	1	3	4	6	7	5

The responds of every village of the region are classified according to deans index and gender represented in the table:2. The above table represents about effected children in the region of

Yerragondapalem mandal. Total 8 villages childrens were observed according to deans index.

Table: 3. Classification of effected children in the age

TYPE	7-9 Years		10-12 years		13-15 YEARS		TOTAL	PERCENTAGE
	Boys	Girls	Boys	Girls	Boys	Girls		
QUESTIONABLE	17	12	10	10	10	10	69	19%
VERY MILD	5	3	6	5	2	5	26	10%
MILD	14	12	6	5	4	5	46	14%
MODERATE	22	20	10	15	10	18	95	26%
SEVER	29	13	10	20	20	20	112	31%
TOTAL	80	66	42	55	46	58		

The information represented based on the age view and it is tabulated as above table:3. Based on the age it was divided into two types. Those are 7-9, 10-12 years and 13-15 yrs. Boys and girls data are represented separately. The percentage was

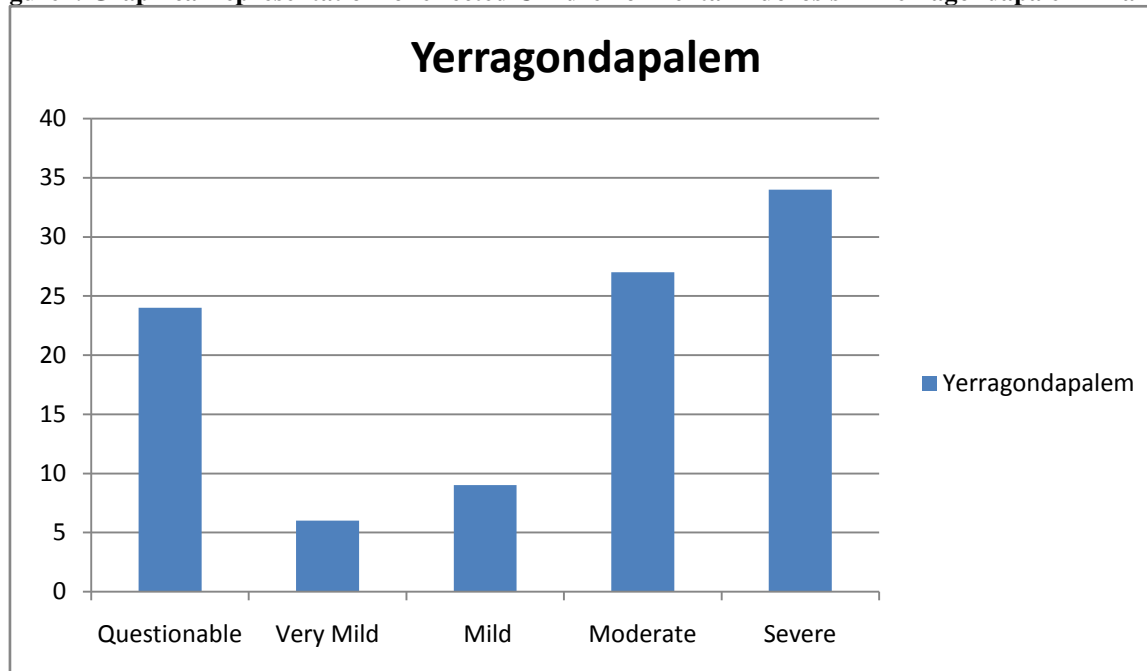
calculated and recorded in the table. The severe type dental fluorosis is higher which has 31% and Questionable type of dental fluorosis is 19%.The very mild 10%, mild 14%,and moderate 26% are as follows.

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 Yerragondapalem Mandal



IV. CONCLUSION

This study shows that fluorosis is present in Prakasam district too. This study covered only eight villages of the district. More studies are required to know the actual extent of the problem in this district. It is important to create awareness about fluorosis and most importantly educate the people about the sources of the fluoride and how dietary habits can minimize the problem. The village heads were advised to look out for alternate water source. Most importantly it is recommended that water that is consumed should be analyzed periodically on its quality before it is distributed to the public for consumption.

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