CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3473985

Available online at: http://www.iajps.com ***Research Article***

PREVALENCE OF DENTAL FLUOROSIS IN RURAL POPULATION OF DISTRICT MATIARI

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Article Received: August 2019 **Accepted:** September 2019 **Published:** October 2019

Abstract:

Objective: *The aim of this study was to determine the prevalence of Dental Fluorosis among population of district Matiari in province Sindh.*

Methodology*: The study was carried out in medical and dental camp organized at government high school Khyber district Matiari. A total of 323 patients were included in the study. Dental fluorosis status was checked during the oral examination of the visiting patients in camp. Proforma was designed for assessment of Fluorosis status comprises of Dean's fluorosis index.*

Results: *From total 323 participants 198 (61%) were males and 125 (39%) were female. Code 0.5 represented by questionable fluorosis was found most (55%). Followed by percentage of 17% of mild and very mild form of fluorosis represented by code 1 and 2 respectively. Code 3 was found 5% as shown as moderate fluorosis while only 10% patients were found normal.*

Conclusion: *The study reveals that dental fluorosis is public health problem in rural area of Matiari District. After the study, it is suggested that Steps must be taken by the health department of Sindh government to counter the issue.*

Keywords: *Fluorosis, Dean' Index, prevalence, public health.*

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Please cite this article in press Khurram Anwar et al., ***Prevalence of Dental Fluorosis in Rural Population of district matiari.,*** *Indo Am. J. P. Sci, 2019; 06(10).*

INTRODUCTION:

Fluorine is important for normal development, growth and maintenance of human health. The role of Fluoride is very imperative in preventive dentistry due to its cariostatic ability. The main dietary source of fluoride is drinking water. Nearly 12 million of the 85 million tons of fluoride deposits on the earth's crust are found in India [1,2]. The total number of people affected across the globe is not known, but a conservative estimate would number in the tens of millions [3]. To a certain extent (as per WHO: 0.6 ppm) fluoride ingestion is useful for bone and teeth development, but excessive ingestion causes a disease known as fluorosis. While the WHO standards (1984) and BIS: 10500-1991(BIS 1983) permit only 1.5 mg/L as a safe limit of fluoride in drinking water for human consumption, in many parts of the world where drinking water contains excessive amounts of fluoride (3-5 mg/L or ppm), endemic fluorosis has been observed [4]. Fluorosis continues to be an endemic problem. More and more areas are being discovered regularly that are affected by fluorosis in different parts of the world. Children in the age group of 0-12 years are most prone to fluorosis as their body tissues are in formative / growth stage during this period. Expectant mothers are also to be protected, as there is growing concern about effects of fluoride on foetus. Fluorosis, which was considered to be a problem related to teeth, only, has now turned up to be a serious health hazard. It has serious effects on bones and problems like joint pain, muscular pain etc. are its general manifestations. It not only affects the body of a person but also cause him socially and culturally affected. In spite of the progressive spread of disease so for no established data exists to determine the extent of disease, no advance water testing facilities are available and even the health centres staff do not have specific orientation to correlate the disease with specific symptoms. In these areas the response of the people is reactive rather than pro-active. Fluoride is the main agent factor for the onset of fluorosis in man and cattle. Fluorosis is an endemic disease resulting from ingestion of excess fluoride either through drinking water, food or dentifrices, which affect teeth and bones. Moderate amounts (i.e) concentration of 2 ppm (or mg/L) or above, have potential to cause fluorosis of teeth, but long-term ingestion of large amounts (i.e) chronic fluorine intoxication through drinking water containing above 10 ppm of fluorine results in pathological changes of bone leading to skeletal fluorosis [5]. This study was conducted during the medical and dental camp organized at the celebration of world mental health day by Liaquat University of Medical and Health sciences Jamshoro in government high school Khyber district Matiari.

OBJECTIVE:

The aim of this study was to determine the prevalence of Dental Fluorosis among population of district Matiari.

METHODOLOGY:

This Descriptive Cross-sectional study was carried out in medical and dental camp at Government high school Khyber district Matiari. Duration was one day with 323 patients were included. Non-probability (Convenience) was the sampling technique. Age ranges from 18 to 70 years with both Male and female genders were included Dental fluorosis status was checked during the oral examination of the visiting patients in camp. Proforma was designed for assessment of Fluorosis status comprises of Dean's fluorosis index and the criteria mentioned in WHO oral health surveys methods 4th edition 1997**.** Data was analysed by SPSS version 17.

Dean's Index:

Classification	**Criteria – description of enamel**
Normal	Smooth, glossy, pale creamy-white translucent surface
Questionable	A few white flecks or white spots
Very Mild	Small opaque, paper white areas covering less than 25% of the tooth surface
Mild	Opaque white areas covering less than 50% of the tooth surface
Moderate	All tooth surfaces affected; marked wear on biting surfaces; brown stain may be present
Severe	All tooth surfaces affected; discrete or confluent pitting; brown stain present

RESULTS:

A total of 323 subjects were examined for oral evaluation and for assessment of Dental Fluorosis status who visited the free medical and dental camp out of 198 (61%) were males and 125 (39%) were female.

Table 1 showed the prevalence of Fluorosis according to Dean's index. Code 0.5 represented by questionable fluorosis was found most (55%).

Followed by percentage of 17% of mild and very mild form of fluorosis represented by code 1 and 2 respectively. Code 3 was found 5% as shown as moderate fluorosis while only 10% subjects were found normal.

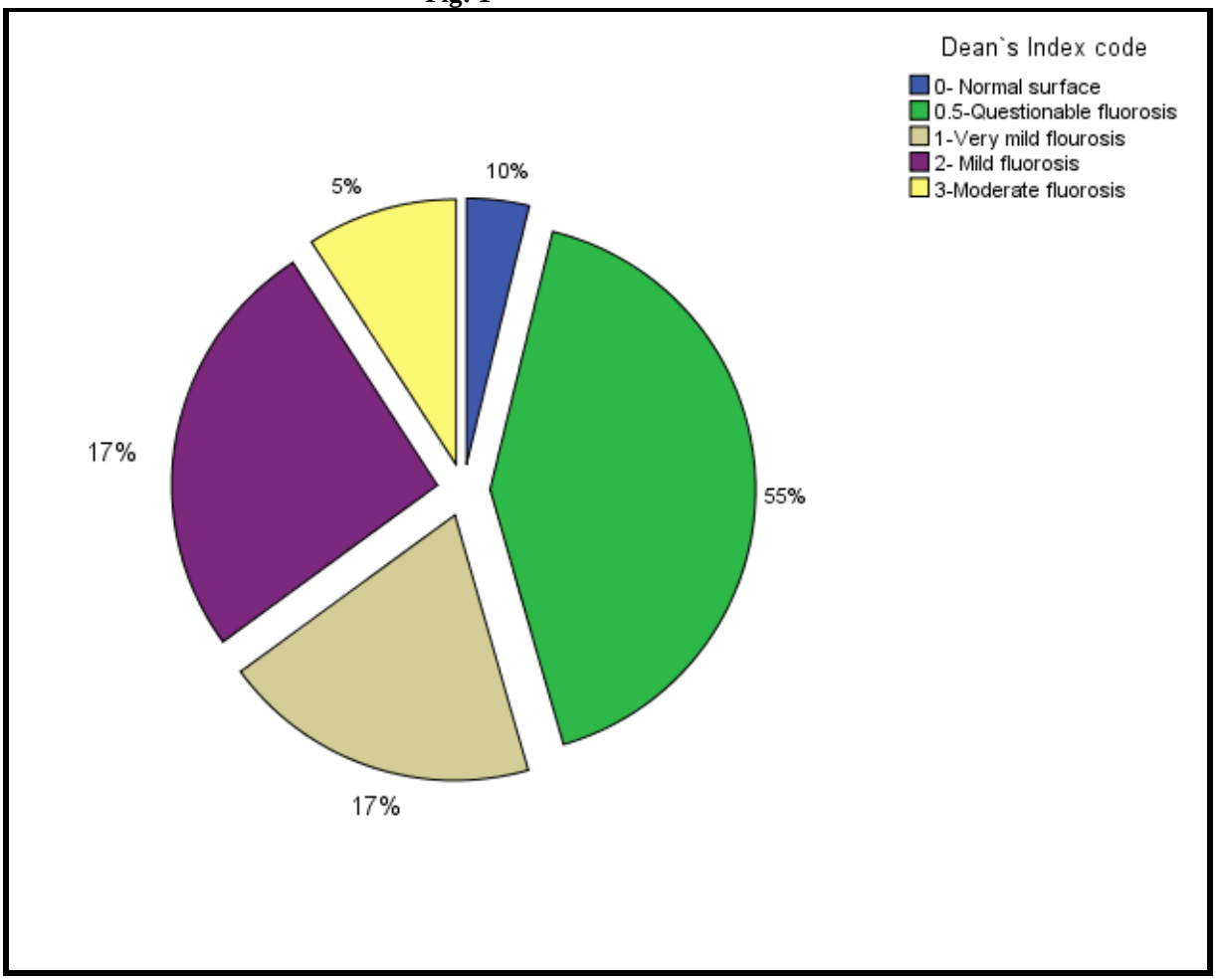
Fig 1 shows the pie chart representation of percentages of prevalence of Fluorosis.

Table: 1

Table. Dean`s index showing prevalence of Dental Fluorosis

Fluorosis code		**No. of subjects (%)**
Code 0	(Normal surface)	31 (10%)
Code 0.5	(Questionable Fluorosis)	171 (55%)
Code 1.	(Very mild Fluorosis)	53 (17%)
Code 2.	(Mild Fluorosis)	53 (17%)
Code 3.	(Moderate Fluorosis)	15 (5%)

Fig: 1



DISCUSSION:

The relationship between the levels of fluoride in drinking water and the incidence of dental fluorosis vary from place to place. This study was conducted in rural area of province of Sindh in district Matiari which has not yet being revealed as fluorotic belt region unlike other regions as Thar region. The main source of water in Matiari region was ground water therefore the prevalence of fluorosis was found in around 90% of patients but the intensity of fluorosis was variable most subjects (55%) had just questionable form of fluorosis. overall 34% subjects had mild and very mild form of fluorosis almost divided equally as 17% each. Only 5% subjects were found having moderate form of fluorosis. These results are not very surprising because of water source. The results of this study showing some similarities and contradictions with a study conducted in India under same conditions named as Arvind et al[6]. As Arvind et al showed 26% prevalence 0f very mild form of fluorosis. 10.5% subjects had mild form of fluorosis. Not even single subject was found having severe form of fluorosis in both studies. The results of study are in line with another study conducted under conditions of rural areas of India named as Subramanian et al[7]. Findings of such study are as mild fluorosis was found 26%, 39% had very mild fluorosis, 12% had moderate form of fluorosis showing similarity with current study. The results of study are showing variation with another Indian study named as mane et al [7]. This study shows very low prevalence of questionable fluorosis as just 3% on contrary to this study. While 67% subjects were having normal tooth surface in this Indian study as only 10% were found normal in our study. Some commonalities were also found between these studies as 16% subjects had very mild fluorosis and 11% had mild fluorosis. The findings of current study give a food for thought about the situation of drinking water in rural areas of Sindh province where the most common source of water is underground un filtered water. It is indeed a strange reality that most of our rural population is still deprived from water supply system. There is no system of testing of water ingredients in ground water. Due to certain factors fluorosis has become an endemic disease in rural areas of Pakistan. Raised levels of fluorides in ground water is the main cause of it, steps must be needed to solve this problem in order to make drinking water appropriate for population in this regard methods of defluorination must be adapted. Blending of water of high fluoride concentration with the of low fluoride content can be a viable option in socioeconomic condition of Pakistan as it does not require any sophisticated equipment, trained individuals and enough resources to manage.

CONCLUSION:

Water borne fluorosis is endemic in study area. The study reveals that dental fluorosis is public health problem in rural area of Matiari District. In the light of this study, it is suggested that steps must be taken by the health department of Sindh government to counter this issue, for the people of District Matiari.

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