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MOTTLED ENAMEL IN A MILITARY EDUCATIONAL CENTER IN TEHRAN, IRAN

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ABSTRACT

A survey of mottled enamel in a military educational center in Karaj area of metropolitan Tehran was conducted from August to September 1978, on a population of 1789 student, aged 18-23 gathered from 32 areas of Iran. Dean clinical standards used for diagnosing dental fluorsis and Orion lonalyzer Fluoride Electrode was used to determine the fluoride content of communal waters of endemic areas.

The conclusion asserted is that the index of dental fluorsis in the population under the study is 0.04.

The survey showed 15 mottled enamel area in Iran, with fluoride concentration of domestic and drinking water from 0.7 to 3.8 ppm.

INTRODUCTION

Mottled enamel was reported in Iran in 1977 (1). As a public

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health problem, dental fluorsis in Iran may be assuming large proportions, because in a military educational center, located in Karaj city in metropolitan Tehran, with a 1789 population, aged between 18-23 years old, there were many people whose teeth showed a very curiously opaque, freckled or dashed with brownish black spots. It appeared that many other people in their home town may be afflicted in the same way. So public health authorities should concentrate public attention on the importance of dentistry for the health of children and win general support for preventive measures.

MATERIALS AND METHODS

This survey was conducted according to the clinical observation, water analysis, collecting information from available documents, interviewing, and filling questionnaires.

The study was based on 1789 people, age 18-23, gathered lottery from different communities of Iran in an educational barrack, having a history of residence of at least 6-10 years or more in their home community. All people were observed clinically and cases of mottled enamel were diagnosed and recorded according to Dean's Classification (2, 3, 4) (Table 1).

The entire population of these communities (endemic areas) used only one of these water supplies comprising a communal well waters, river, subterranean canals or springs for domestic and drinking purposes. Orion lonalyzer Fluoride Electrode was used to determine the fluoride content in water. (5,6). The fluoride concentration of water supplies of endemic area shown in (Table 2).

RESULTS AND DISCUSSION

Out of a total 49 case of mottled enamel surveyed, the percentage of mottling in the permanent teeth including incisors, premilars and molars were 46.94% (23 case), 14.30% (7 case) and 6.12% (3 case) respectively, while sixteen case (32.65 percent) had speckled or dashed brown stain appearance on the middle part of labial surface of both incisors and premolars teeth.

A careful inspection of the data in table 2 shows that wherever fluoride in drinking water were up to 1 ppm the mottled enamel index were questionable, up to 1.7 ppm, very mild, up to 2.6 ppm mild, up to 3. ppm moderate and more than 3 ppm the mottled enamel index were severe. 29 samples of waters from their home community were analyzed for fluoride. Many of the drinking waters contained excessive quantities of fluoride (in ppm): wells 0.8 to 2, rivers 1.6 to 3.7 subterranean canals 1.7 to 2.5 and the springs water 1.5 to 2.6 ppm.

The highest fluoride concentration recorded was 3.8 ppm belonging to Dehebande Haji of Ramhormoz (a branch of Jarrahi River).

Out of a total 17 areas surveyed the fluoride content of drinking water, 11 case or 22.45 percent are located in southeastern part of Iran.

Four of these 49 cases who had typical dental fluorsis and native in the Ramhormoz area were reported to "come and go" and nearly whole of remain cases had used water of that area continuously since holding elementry or primary school certificate.

In the endemic area located in Khuzestan province, a small village called Dehebande Haji in Ramhormoz had the severest mottled enamel and as much as 3.8 ppm fluoride present in the drinking water.

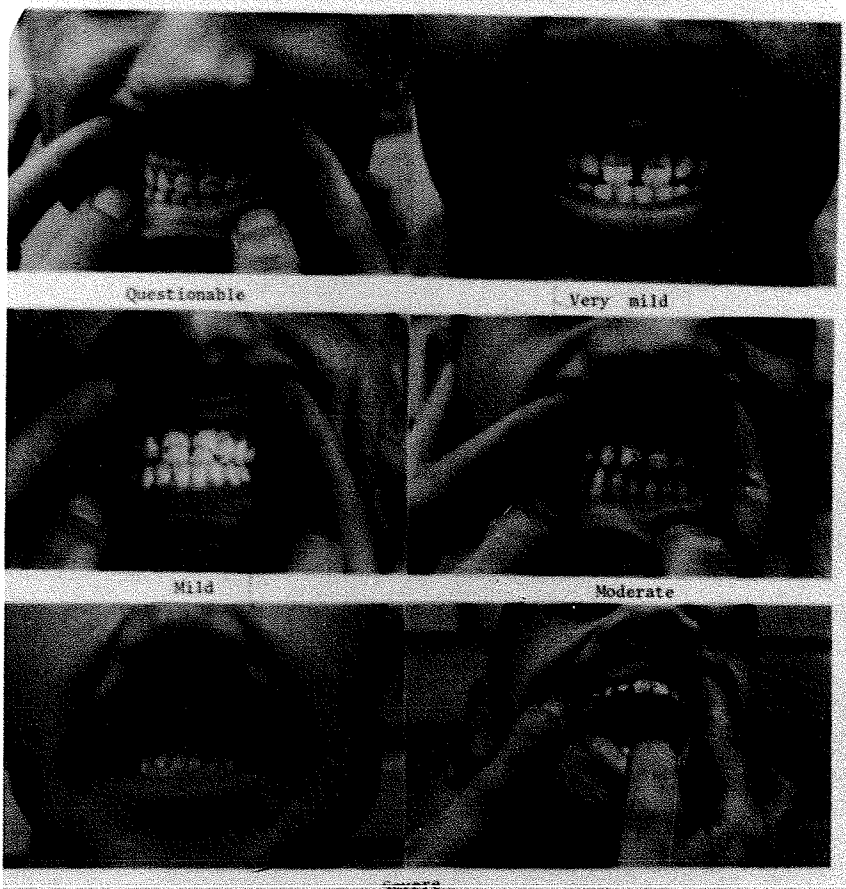
With exception of six areas, the public water supply was obtained from deep wells, spring, river and subterranean canal, and these sources had been in continuous use from many years ago.

According to the information extracted from questionnaires, parents of student under the study that individually exposed to such drinking water for at least 30 years, did not have characteristics of skeletal fluorosis. No spinal disability or general disturbances of any kind other than pronounced dental lesions were observed in any people under the study. But to know about skeletal disturbances among older people in villages of endemic areas a wider survey must be made.

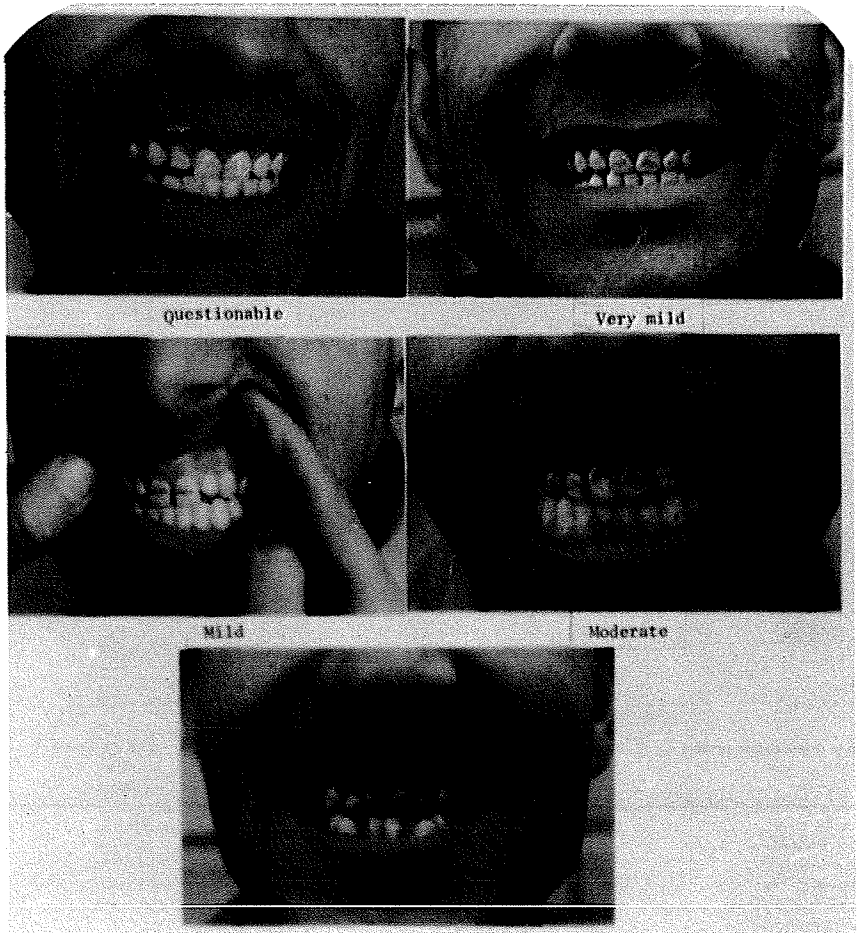
Although there are no information regarding the actual quantities of fluoride being ingested by the affected natives of the endemic areas, but there is a close relation between the fluoride content of drinking water and mottled teeth.

Owing to the extremely high temperature in summer specially in south part of Iran and the strenuous type of work done by the people, the water intake of population is considerable.

Considering an average of 5-6 liters daily, it will provide as much as 4-12 mg of fluoride to the individual from the water alone and when it is realized that a good quantity of water is used in cooking and processing of food specially the one called Abguosht, it is obvious that the total fluoride intake is enormous.



Index of dental fluorosis in a military educational center of Tehran Iran Dean's Classification.



Index of dental fluorosis in a military educational center of Tehran Iran Dean's Classification.

Table 1. Index of dental fluorosis in a military educational center of Tehran, Iran

Classification	Weight (w)	Frequency (f)	Frequency x Weight (fw)
Normal	0	1740	0
Questionable	0.5	12	6
Very mild	1	18	18
Mild	2	11	22
Moderate	3	5	15
Severe	4	3	12
		(f) = N = 1789	(fw) = 73

$$\text{Index of dental fluorosis} = \frac{\Sigma (fw)}{N} = \frac{73}{1789} = 0.04$$

Table 2 **Comparison of fluoride concentration and presence of mottled enamel in 16 Iranian communities**

Name of Area (location sample)	Source of water	Fluorine as Fluoride (p.p.m.)	Mottled enamel diagnosis (index)
Qum	Piped well water	0.7	Questionable
Aghje Kahal-e-Serajo, Maraghe	Well water	0.8	Questionable
Lak-dasht-e-Sari	Well water	0.8	Questionable
Zahedan	Well water	0.9	Questionable
Koh-dasht-e-Nahavand	Well water	1	Questionable
Amoghin-e-Ardabil	Spring	1.5	Very mild
Ommidih Agajari	A branch of Maron River	1.6	Very mild
Shurijeh Sarvestan	Well water	1.6	Very mild
Gonaveh - Bushehr	Well water	1.7	Very mild
Jaafar Abade Rafsenjan	Eish Abad Subterranean canal	1.7	Very mild
Aghda Yazd	Well water	2.0	Mild
Jalal Abade Fahraj Bam	Hosein Abad Subterranean canal	2.3	Mild
Chupanan-e-Nain Yazd	Subterranean canal	2.5	Mild
Bakhshe Janaki Izeh	Spring	2.6	Mild
Kaldalikhan, Ramhormoz	a branch of Jarrahi River	2.9	Moderate
Kordestane Olia, Behbahan	a branch of Maron River	3.0	Moderate
Gargari Olia, Bandar Mahshar	a branch of Jarrahi River	3.0	Moderate
Deh-e-Haji Ramhormoz	a branch of Jarrahi River	3.4	Severe
Zirzard Sarta, Ramhormoz	a branch of Jarrahi River	3.7	Severe
Dehebande Haji, Ramhormoz	a branch of Jarrahi River	3.8	Severe

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