ABSTRACT
A STUDY ON THE PREVALENCE AND CAUSATIVE RISK FACTORS OF DENTAL FLUOROSIS AMONG THE POPULATION OF KERALA

BACKGROUND

Excessive consumption of fluoride leads to toxic manifestations in man, collectively referred to as fluorosis. Globally, the prevalence of fluorosis is on the rise. Latest estimates suggest that around 200 million people, from among 25 nations the world over, are under the dreadful fate of fluorosis. In India, 20 out of 35 states and Union Territories are under fluoride attack. Though fluorosis is suggested to be endemic in the districts of Alappuzha and Palakkad on the basis of reported increase in water fluoride levels, no detailed study on the prevalence of fluorosis was undertaken in Kerala. A pilot study conducted in Ambalapuzha taluk of Alappuzha district revealed that the prevalence of dental fluorosis was 35.6% and the main causative factor was high fluoride content in drinking water. A detailed scientific study with regard to the prevalence and causative factors of dental fluorosis in Kerala with special reference to the above districts would be advantageous to control fluorosis in endemic areas.

OBJECTIVES

(1) To study the prevalence of dental fluorosis among children in the age group of 10-15 years in the selected four districts of Kerala

(2) To assess the risk factors associated with the problem of dental fluorosis in Kerala
METHODS

4916 children in the age group of 10-15 years were randomly selected for the study. A structured questionnaire was used to assess the personal details, food habits and exposure to sources of water. A dental specialist performed oral examination of all children to detect the presence of dental fluorosis and graded the degree of dental fluorosis using Dean's index. Level of fluoride content in drinking water in the study area was obtained from the Water Authority and the Ground Water Department, Govt. of Kerala. Bivariate association was tested using Chi Square test. Multiple logistic regressions were used to evaluate the association of select risk factors with presence of dental fluorosis.

RESULTS

The overall prevalence of dental fluorosis in the study area was 22.3% (95% CI: 21.1%-23.5%). The prevalence in the districts of Alappuzha, Palakkad, Kollam and Thrissur were 37.4%, 39.2%, 4.4% and 2.2% respectively. There was a dose dependent relationship between the prevalence of dental fluorosis and quantity of water consumed in Alappuzha (p=0.066), and in Palakkad (p=0.005). Significant increase in the prevalence of dental fluorosis was noticed with increase in fluoride level. There was significant association between the prevalence and the habit of drinking black tea. (p=0.026). There was significant association between use of toothpaste and prevalence of dental fluorosis in the
district of Alappuzha. No significant association was observed between dental fluorosis and consumption of fruits, milk and fish.

CONCLUSION

Dental fluorosis is endemic in the districts of Alappuzha and Palakkad in Kerala. High fluoride level in drinking water is a risk factor for the development of dental fluorosis. This health problem is aggravated by increased hardness of drinking water in these districts. The other risk factor for the development of dental fluorosis identified was the use of black tea in the endemic areas. Use of toothpaste was also identified as a risk factor for dental fluorosis in the district of Alappuzha. The reason for low prevalence of dental fluorosis in Thrissur is due to low water fluoride combined with the fact of low hardness of water.

SUGGESTIONS

Water has to be de-fluoridated to desirable level of fluoride in public water supply system before distribution. Total intake of fluoride can be reduced by the consumption of rainwater for drinking and cooking during rainy season, which lasts normally for about six months in Kerala. Consumption of black tea has to be discouraged in endemic areas by proper education. Sales and distribution of fluoridated toothpaste and other dental products should be controlled in fluorosis endemic areas.