ORIGINAL RESEARCH

Knowledge, Attitude, and Practice of Parents about Dental Fluorosis in their Children

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ABSTRACT

Introduction: Fluoride has played a pivotal role in oral health promotion over the past 50 years. The benefits of the low levels of exposure are outweighed by adverse effects at high level.

Aim: This study aims to assess the knowledge, attitude, and practices of the parents of schoolchildren about fluorosis.

Materials and Methods: A total of 300 subjects aged 18–30 years were selected by multistage cluster sampling technique. A self-administered questionnaire containing 15 close-ended questions based on knowledge, attitude, and practices regarding fluoride and fluorosis was used for the purpose of collecting data.

Results: The results showed that majority of the people were not aware of fluoride in the toothpaste. About 68% of the subjects were of opinion that the discoloration on the tooth surface embarrasses while smiling or speaking. About 68% of people were not aware of the presence of fluoride in the foods they consumed.

Conclusion: Overall, the results suggest that knowledge is deficient with respect to optimum concentration of fluoride, its role in prevention of caries, and the presence of fluoride in food and toothpaste. Attitude and practices are also unfavorable as far as oral health is considered. There is an urgent need to sensitize the parents regarding precise role of fluoride in oral health.

Keywords: Dental caries, Drinking water, Fluoride exposure, fluorosis, Knowledge, parents, Schoolchildren.

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INTRODUCTION

Endemic fluorosis has been described in many parts of the world. Optimum fluoride intake plays an essential role in the prevention of dental caries while fluoride consumption above the guideline level interferes with the normal formation of tooth enamel and bones[1,2] may increase the risk of dental and skeletal fluorosis.[3,4] The major sources of fluoride intake include water, beverages, and foods prepared with fluoride contaminated water.[5-9] In view of the increased emphasis on safety of drinking water, public health and water managers in developing countries give less emphasis to fluorosis in the presence of other highly prevalent life-threatening health problems.[10] The World Health Organization[3] recommends a guideline value of 1.5 mg fluoride (F)/L in naturally fluorinated drinking water. However, where intakes are likely to exceed 6 mg F/day, it is appropriate to consider a local guideline of fluoride concentration lower than 1.5 mg/L.[3] Analysis of hydrochemical and economic and demographic factors in the spatial distribution of high-fluoride domestic water sources indicates that fluorosis problem has become more serious in recent decades. The problem can further be aggravated by limited budgets, which restricted the feasibility of defluoridation technologies, running cost of those established ones and inability of provision of alternative water sources. In addition, since the economic cost of endemic fluorosis to human beings is largely indirect and the disease is not acute, it is unlikely that fluorosis would be recognized as an area of immediate need by the government and stakeholders in developing countries.[11] Fluoride poisoning can be prevented or minimized using alternate water sources, removing excess fluoride (defluoridation) from drinking water and by supplementation. Knowledge of the causes, diagnosis and treatment of stains caused by fluorosis are important to parents, although there is no information whatsoever about the acquisition of knowledge about dental fluorosis in the current literature.

MATERIALS AND METHODS

The present study is a cross-sectional survey undertaken at the Department of Preventive Dentistry, Riyadh Elm University, Riyadh, Kingdom of Saudi Arabia. Ethical clearance was obtained from the Ethical Committee of Riyadh Elm University. Informed consent was obtained from the study participants. Sample size calculation was done with 5% permissible error and 90% confidence interval. The present study included 300 subjects. The

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age group of 20–30 years was preferred, as it is a productive age group and better assessed psychological impact associated with fluorosis in young parents for their schoolchildren. A self-administered questionnaire containing 15 close-ended questions based on knowledge, attitude, and practices related to fluoride and fluorosis was used for the purpose of collecting data. The questionnaire which was originally prepared in English was translated to the local language to facilitate easy understanding by the people. Based on validity and feasibility, few modifications were made in the questionnaire. The questionnaire was administered to the study subjects by the investigator and it was filled in their presence. The questions were dictated to the illiterates by investigator and responses were obtained.

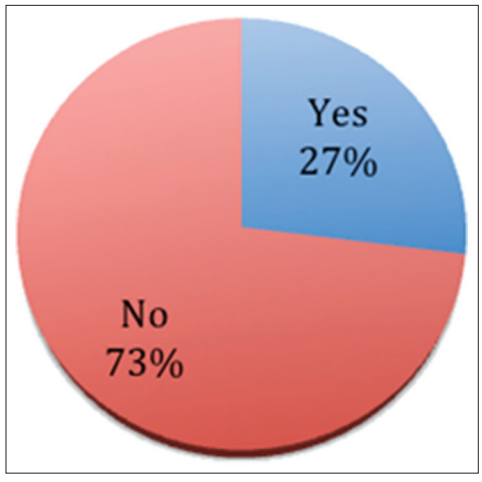

Figure 1: Knowledge of the presence of fluoride in the toothpaste

RESULTS

Socioeconomic status revealed that majority of them belonged to lower middle class. Results showed that majority of the people were not aware of fluoride in the toothpaste [Figure 1]. Majority (79%) had the knowledge of the presence of fluoride in drinking water. Most of them (73%) were not aware of the fact that fluoride in permissible concentration strengthens the tooth against decay. About 68% of the subjects were of opinion that the discoloration on the tooth surface embarrasses while smiling or speaking [Figure 2]. About 68% of people were not aware of the presence of fluoride in the foods they consumed.

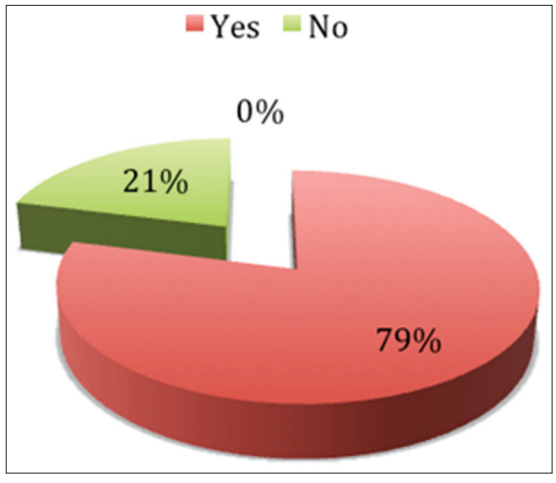

Figure 2: Discoloration on the tooth surface caused embarrassment while smiling or speaking

DISCUSSION

The use of fluoride to promote oral health involves a balance between the doses that provide protection against caries and diminish the risk of developing fluorosis. Exposure to fluoride in childhood is important for caries prevention, but there is the risk of dental fluorosis. Zeedyk *et al*.[10,12] observed that, in general, tooth brushing performed by parents was unsatisfactory, although the parents believed they were efficiently cleaning their children's teeth. These facts suggest that in a large number of cases, the dentists' expectations with regard to tooth brushing are not met, even with the use of fluorides, and it is seriously compromised as a method for reducing caries in children, in spite of the practice of tooth brushing being implemented at an increasingly early stage. Nowadays, children are exposed to innumerable sources of fluoride, and each of these has an unknown balance of risks and benefits. It is crucial to identify and maintain an efficient balance between the benefit of protection against caries and fluorosis, for the dental professional and population to have confidence in the use of fluoride. According to Bowen,[11] the transitory or initial stage of maturation of the development is when the tissue is most susceptible to the changes induced by fluoride. As regards the permanent anterior teeth, especially those that are esthetically involved (maxillary central incisors), the critical period for ingesting higher doses of fluoride occurs in individuals in the age group between 22 and 26 months of life. The dietary fluoride content in a community with fluoridated water generally ranges in value from 0.04 to 0.07 mg/kg per day. It is recommended that for reconstituting babies' powdered formula, the water should contain low quantities of fluoride (<0.5 ppm fluoride). According to Brennan D *et al*.,[12] the critical periods in which teeth are more exposed to the risk of developing dental fluorosis are between 15 and 24 months of age for boys and 21–30 months of age for girls. There are evidences showing that according to age, brushing with fluoridated dentifrice and the quantity of dentifrice placed on the brush are important risk factors for the incidence of fluorosis. It is recommendable that brushing with fluoridated dentifrice should not be started

before the age of 2 years, and after this age, around 0.25 g of dentifrice should be placed on the brush, corresponding to approximately a grain of birdseed.

CONCLUSION

It can be concluded that majority of the parents had knowledge regarding the presence of fluoride in the water, and limited people have the knowledge regarding the role of fluoride in maintaining oral health and the role of fluoride in strengthening the tooth against decay. The findings clearly highlight the need to educate the people about the optimum concentration of fluoride in drinking water, the various sources of fluoride, and the harmful effects of excess fluoride consumption.

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