

Although the subject has received little attention, some data suggest that dental fluorosis is more prevalent among African-Americans than among other races or ethnic groups in the same community. Russell (1962), in the Grand Rapids fluoridation study, noted that fluorosis was twice as prevalent among African-American children than white children. In the Texas surveys in the 1980s, the odds ratio for African-American children having dental fluorosis, compared with Hispanic and non-Hispanic white children, was 2.3 (Butler et al., 1985b). Dental fluorosis also tended to be more severe among African-American children than white children in the Georgia study (Williams and Zwemer, 1990), although the difference was not statistically significant. In Kenya, prevalence and number of severe cases were unexpectedly high when related to fluoride concentrations in drinking water (Manji et al., 1986c), although nutritional factors could have confounded these results. The reasons for these findings are unknown and do not appear to have been explored further.

Page 44 and 45

(Note: 2.3 means a risk ratio of 2.3 to 1)

Health Effects of Ingested Fluoride

Subcommittee on Health Effects of Ingested Fluoride

**Committee on Toxicology
Board on Environmental Studies and Toxicology
Commission on Life Sciences
National Research Council**

**NATIONAL ACADEMY PRESS
Washington, D.C. 1993**

Health Effects of Ingested Fluoride cites the following four studies as data showing that African-American children have a higher risk for dental fluorosis than other races:

- Russell AL. Dental fluorosis in Grand Rapids during the seventeenth year of fluoridation. *J Am Dent Assoc*; 65:608-12, 1962. At all ages 7.1 per cent of white children with continuous residence, and 15.9 per cent of Negro children with the same history, showed one of the positive signs of fluorosis – very mild or mild in degree. The same proportions were found in children aged 12 to 14 years. Community fluorosis indices, as defined by Dean, were .14 and .33 for white and Negro children of all ages with continuous residence.
- Butler WJ et al. Prevalence of Dental Mottling in School-aged Lifetime Residents of 16 Texas Communities. *Am J of Public Health*; 75:1408-12, 1985. The prevalence of moderate and severe mottling in 2,592 school-aged lifetime residents of 16 Texas communities with water fluoridation ranging from 0.2 to 3.3 is the topic of this report. Dean's fluorosis index was used. There were substantial differences in the prevalence of mottling among communities with the same fluoride level. Five towns had high values for Total Dissolved Solids (TDS), providing substantial confirmation that high TDS is associated with lower prevalence of mottling. The use of fluoride toothpaste or drops and the number of fluoride treatments were almost identical among those who did and did not develop moderate mottling. Children who were White or had a Spanish surname had about the same prevalence of mottling while Blacks had a higher prevalence, odds ratio =2.3, 95% confidence interval = 1.4, 3.7. Both race and air conditioning were individual-level predictors of mottling.
- Williams JE et al. Community Water Fluoride Levels, Preschool Dietary Patterns, and the Occurrence Of Fluoride Enamel Opacities. *J of Pub Health Dent*; 50:276-81, 1990. Three hundred seventy-four 12-14 year-old life-long residents were examined to determine modified (only facial surfaces of 16 teeth, therefore fluorosis prevalence could be underestimated) tooth surface index of fluorosis. Two city (Augusta, GA) and two county (Richmond County, GA) middle schools participated. City water was fluoridated at levels of 0.9 to 1.2 ppm and County water was fluoridated at levels which fluctuated between 0.2 to 0.9 ppm. A high frequency of inappropriate fluoride-vitamin supplement use (80.5 percent) may reflect parental apprehension over the obviously inadequate supervision by the water plant operators of both the city and county water fluoridation efforts. 81% of the city children had fluorosis ranging from very mild to moderate-severe, 14.1% being in the moderate-severe range. Of the 102 black city participants and the 55 white city participants, 16.7% of the blacks had moderate-severe fluorosis as compared to 9.1% for white participants (Table 2).
- Manji et al. Enamel Changes in Two Low-Fluoride Areas of Kenya. *Caries Research*; 20:371-80, 1986. 317 children born and raised in two rural areas of Machakos District in Kenya were examined for enamel changes. Drinking water was monitored for naturally occurring (calcium fluoride) fluoride ion over a period of one year. 78.0% of children exhibited dental fluorosis with water fluoride concentration of 0.10 – 0.46 mg/l, 91.2% exhibited dental fluorosis with fluoride levels of 0.53 – 0.66 mg/l, and 93.8% exhibited fluorosis with water fluoride at 0.54 – 0.93 mg/l. The prevalence and severity of enamel changes was surprisingly high for such low levels of fluoride. Tea is known to be consumed from approximately 12 – 24 months of age about every 2nd day in this study area. The fluoride in tea is a known contributing factor for dental fluorosis.

Fluoride exposure and dental fluorosis in Newburgh and Kingston, New York: policy implications

Jayanth V. Kumar and Philip A. Swango: Bureau of Dental Health, New York State Department of Health, Albany, NY, USA.

Community Dent Oral Epidemiol 1999; 27: 171-80. Munksgaard, 1999.

Abstract

Objectives: This analysis was conducted to determine the changes in the effect of exposure to fluoridation and other sources of fluoride on dental fluorosis in children attending Newburgh and Kingston school districts in New York State.

Methods: Data for this analysis were obtained from two surveys conducted in the 1986 and 1995 school years. Analyses were limited to 3500, 7-14-year-old lifelong residents of a fluoridated or a non fluoridated community. Dean's classification and DMFS index were used for recording dental fluorosis and caries, respectively. A questionnaire was used to collect fluoride exposure data. Regression procedures were used to estimate the effect of fluoridation, fluoride supplements, and brushing before the age of 2 years on dental fluorosis.

Results: Children examined in 1996 were at higher risk for both questionable and very mild to severe dental fluorosis if they received fluoride from water or daily tablet use, or started brushing before the age of 2 years. The increase in risk from 1986 to 1995 was greater for African-American children.

Conclusion: This analysis showed that the risk of developing dental fluorosis did not decline over time in these communities. Continuous exposure to water fluoridation had an observable effect on dental fluorosis. However, implementation of fluoridation in Newburgh Town did not result in an increase in dental fluorosis prevalence.