

Concentration of urine gluorida and incidence of dental fluorosis among pupils at Sekolah Menengah, Pahang, Darul Makmur

Abstract

This is a study of the incidence of dental fluorosis and the urine fluoride concentration among school children. About 84 Malay students with the age range of 16 to 17 years from a National Secondary School in the district of Kuala Lipis, Pahang was selected as respondents. The selection was based on the exposure to fluoride in drinking water supply systems. Fifty two respondents were selected from the fluoridated water supply area while 32 others were selected from the non-fluoridated area (comparative group). The objectives of this study were to determine the relationship between urine fluoride concentrations with the incidence of dental fluorosis and to compare the difference in these two variables between the 2 groups of respondents. The urine fluoride concentration was determined using a fluoride-ion specific electrode. Dental fluorosis was examined through a physical examination using the Tooth Surface Index of Fluorosis (TSIF). There was no significant difference in the mean urine fluoride concentration (mg/L) ($t=0.186$, $p=0.853$), mean urine fluoride concentration (mg/g creatinine) ($t=0.069$, $p=0.945$) and dental fluorosis (TSIF mean score) ($t=0.288$, $p=0.774$) between the two groups. There was a significant direct correlation between the urine fluoride concentrations (mg/L) ($r=0.425$, $p<0.001$) and the urine fluoride concentrations (mg/g creatinine) ($r=0.252$, $p=0.021$) with dental fluorosis (TSIF mean score). Multiple regression statistics, indicated that dental fluorosis was significantly related to urine fluoride concentrations ($b=0.061$, $p=0.028$) and the number of glass of their favourite drink consumed daily ($b=0.071$, $p=0.003$). In conclusion, the urine fluoride concentrations, which represent the degree of exposure to fluoride, were found to be related to dental fluorosis, which is the biological indicator for excessive exposure to fluoride. There is no difference on the degree and the effects of exposure to fluoride between the two groups of respondents although they consumed water from two different water supply systems. Thus, the exposure to fluoride is not only through the drinking water supply, but also by other sources such as the intake of carbonated drinks and fruit juice