

24th International Conference on
Dental Education
March 18-19, 2019 | Paris, France

Effects of fluoridation on caries incidence and tooth structure

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A cariostatic agent and a part of the halogen family, fluoride has been included among the 14 physiologically essential elements required for normal growth and development. In 1942, an important milestone discovery was made by Dean; that at 1 ppm F in drinking water there was 60% reduction in caries. Following this the world's first artificial fluoridation plant was started at Grand Rapids, USA in 1945. In 1969, it was confirmed by WHO that 1 ppm of fluoride in community water is a practical and effective health measure. Fluoridation involves systemic administration of fluorides; so a low concentration of fluoride is delivered to the teeth over a long period of time. Acute toxicity is not an issue with fluoridation. Estimation of fluoride concentration in drinking water should precede fluoridation. The principal forms in which fluorides are added to public water supplies will vary from place to place, so final choice must be based on detail study of the advantages and disadvantages of the different available compounds. The study was conducted on a group of 30 children from a low socioeconomic background aged three to 12 years living in an area with less than 0.5 ppm fluoride concentration in drinking water. Fluoride supplementation was provided in the form of fluoride tablets to the experimental group. The findings suggest that the overall caries incidence was lower in the experimental group as compared to the control group along with the increased caries resistance of the tooth structure. But fluoride is a double edged sword as it can help and hinder at the same time; as inadequate ingestion of fluoride is associated with dental caries and an excessive intake of fluoride is associated with dental and skeletal fluorosis.

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