Community water fluoridation: A Public Health Initiative for Dental Health Equity

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Summary

Dental caries is the most prevalent chronic disease in the world today, affecting a significant proportion of the world's population.[1,2,3,4] Low-income communities and racial minorities bear a disproportionate burden of dental disease.[7] Fluoride is a noninvasive management strategy to help reduce the prevalence of dental caries. Fluoride was first added to community water fluoridation (CWF), in the mid-1940s.[10] The U.S. Public Health Service (PHS) Recommendation for Fluoride Concentration in Drinking Water for the Prevention of Dental Caries is science-based guidance considering all sources of fluoride intake and recommending 0.7 mg/L as the concentration that maximizes fluoride's oral health benefits while minimizing potential harms (dental fluorosis) as evidence indicates that a 26% (permanent teeth) to a 35% (primary teeth) reduction in dental caries can be achieved with this public health measure.[1,2,3,4,12] Despite the benefits of community water fluoridation, as of 2020, the CDC estimates that 54.5% of the California population that is connected to community water systems (CWS) receives fluoridated water.[1,2,3,4] This policy brief supports the continued expansion of community water fluoridation throughout California, as it is a cost-effective intervention that can benefit all members of the State of California.

Problem

Despite the benefit of community water fluoridation, the CDC recommendations are not enforceable, as states and local governments and even voters are left with the decision. In 1995, California Gov. Pete Wilson signed a state law that required any public water supplier with 10,000 or more customer service connections to fluoridate, if funding was available. However, over 45% of the California population is not receiving the benefits that community water fluoridation could provide. Without community water fluoridation, many individuals who lack access to regular dental care and preventive treatments are left without any protection. Furthermore, the lifetime cost of community water fluoridation for one individual is less than the cost of one dental filling. The economic impact of untreated dental disease includes increased healthcare costs, lost school days, and reduced workplace productivity.[8] In 2011, Calgary, Canada, voted to remove fluoride from its water supply. They noticed that the prevalence of caries was significantly higher in Calgary, Canada, without fluoridated water than in Edmonton, where the water is still fluoridated. Due to the rise in caries in 2021 they decided to reintroduce fluoride to the water due to a high increase in the prevalence of caries.[14]

Proposed Policy

Community water fluoridation provides a cost-effective measure to help combat the prevalence of dental caries. The recommended policy is to enforce the recommendation

made by the U.S Public Health Services at the state level to maintain and expand community water fluoridation programs at the optimal level of 0.7 parts per million (ppm).

Opposition

The opposition to water fluoridation includes arguments about respecting personal autonomy, as many support individual choice in fluoride consumption. In addition, others are concerned over the safety risks associated with dental fluorosis and alleged systemic effects.[13] Furthermore, the risk of fluoride interactions with other chemicals in the water system has been raised. In addition, some groups advocate for "natural" water without added substances, though fluoride occurs naturally in many water sources.[7] Another point of opposition occurs when considering the cost; smaller communities often cite installation and maintenance costs as barriers, though long-term cost-benefit analyses consistently favor fluoridation.[1]

Conclusion

By implementing this policy, all members of the California population will have easy access to dental caries prevention measures that ultimately offer a return on investments ($20-40 saved in dental treatment costs for every $1 invested).[10] As the state faces decisions about maintaining or implementing fluoridation programs, the evidence strongly supports continuing this proven public health measure. The benefits of water fluoridation extend beyond oral health to include improved quality of life, reduced healthcare costs, and greater health equity.

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