

Water fluoridation for the prevention of dental caries in Scotland; a systematic review



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INTRODUCTION

- Water fluoridation involves adjusting the level of the fluoride ion, to an amount that is favourable for dental health, in community water systems ¹.
- It was used in Scotland previously as a public health measure to prevent dental caries.
- Currently there are no active schemes in the country.

AIMS & OBJECTIVES

- Aim: To see whether water fluoridation was an effective public health measure in reducing dental caries in Scotland.
- Objectives: To investigate the effect of the implementation and the cessation of water fluoridation, in Scotland, on the dental health of the population.

METHODS

- Databases including PubMed, Scopus, ASSIA, Web of Science, CINAHL Plus, MEDLINE, and the grey literature was also searched.
- The literature search was concluded on 28th May 2022.
- Inclusion criteria included any studies, published in English, evaluating the influence of water fluoridation on dental caries of the Scottish population using the dmft/s, DMFT/S or the deft/s indices.
- The data was combined based on the effect of the cessation and implementation of the intervention and type of dentition.

RESULTS

- Nine studies were included in the review with a total of 2,731 child participants.
- All the studies were of cross-sectional design.
- Four studies evaluated the implementation of fluoridation.

RESULTS

- Four studies evaluated the cessation of fluoridation.
- One study assessed the implementation and stoppage of fluoridation.

Table 1. Summary of the Study Findings

During Fluoridation	Three Years after Fluoridation Cessation	Five Years after Fluoridation Cessation
Fluoridated groups had lower caries prevalence in primary and permanent teeth than non-fluoridated groups.	The caries levels continued to decrease in both dentitions in the fluoridated groups and the levels were lower than the non-fluoridated groups	Increases in caries levels in formerly fluoridated groups and the levels were comparable to the non-fluoridated groups

Table 2. Comparison of Caries Levels on Cessation of Fluoridation

Formerly Fluoridated Groups	Non-Fluoridated Groups
Increases in caries prevalence in primary and permanent teeth	Decreases in caries prevalence in primary and permanent teeth

- The cost of dental treatment also decreased in the fluoridated groups, during fluoridation and three years after its cessation.

DISCUSSION & CONCLUSION

- The findings from the implementation studies were similar to the Cochrane review results achieved by Iheozor-Ejiofor et al. ², which showed a decrease in caries levels due to fluoridation.
- Additionally, the results from the cessation studies were comparable to the 15 studies included in the systematic review done by McLaren and Singhal ³.
- Water fluoridation was an effective public health measure that reduced caries prevalence among the Scottish population.
- Future studies need to evaluate the effect of water fluoridation on dental health inequalities in Scotland.

REFERENCES

1. Vasantavada PV, Hearnshaw S, Do L, Vernazza CR, Zohoori F. Editorial - Community Water fluoridation. *Community Dent Health*. 2021;38(3):158-60. doi: 10.1922/CDH_Sept21editorial03
2. Iheozor-Ejiofor Z, Worthington HV, Walsh T, O'Malley L, Clarkson JE, Macey R, et al. Water fluoridation for the prevention of dental caries. *Cochrane Database Syst Rev*. 2015;2015(6):Cd010856. doi: 10.1002/14651858.CD010856.pub2
3. McLaren L, Singhal S. Does cessation of community water fluoridation lead to an increase in tooth decay? A systematic review of published studies. *J Epidemiol Community Health*. 2016;70(9):934-40. doi: 10.1136/jech-2015-206502