

Research report

Fluoridation policy and practice: A European Story separating myths from reality.

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Fluoridation policy and practice: A European Story separating myths from reality.

Abstract

Background Controversy surrounding the addition of fluoride to water has prevailed in public discourse for the past ~ 20 years but recently an anti-fluoride stance has been gaining more traction in the Republic of Ireland undoubtedly assisted by social media with an ever increasing number of local authorities voting to ban the practice of adding fluoride to the water supply. No previous research has examined fluoridation policy and practices across the EU. The **aim** of this review was to examine water fluoridation policy and practices across the EU to explore how they had come about and what they are based on.

Methods The Office's with responsibility for fluoridation policy in all 28 EU members were contacted, seeking information on fluoridation policy and practice. Responses were then grouped into common categories by country.

Results Ireland and the UK are the only EU member states currently adding fluoride to water at a whole population level. Some regions in Spain are also fluoridated. None of the other 25 member states had a specific policy on fluoridation and none add fluoride to water currently, although some had in the past. Some policy makers said fluoride was not added because of naturally high levels arising from volcanic regions, presence in other foodstuffs or alternative sources such as tablets and toothpaste were advised. No policy maker contacted could cite evidence of harm except at exceptionally high doses. The rationale for not adding/discontinuing fluoridation of water was cited by some as resistance from anti-fluoride lobby groups, concerns about mass medication, concerns about it being unethical and unecological.

Discussion it appears that countries across Europe discontinued the practice of water fluoridation for a variety of reasons but none of them were due to evidence of harmful or adverse effects.

Conclusion There is no evidence that any country ceased adding fluoride because of evidence of harm. Politicians/elected representatives should act on evidence before advocating for the removal of fluoride from community water schemes which could have potentially serious personal and economic consequences particularly for disadvantaged children.

Background

The United States Centres for Disease Control cites water fluoridation as one of the top ten public health interventions of the 20th century (1). Currently around 25 countries around the world practice community water fluoridation and public health agencies consider it a key strategy for dental caries prevention. The World Health Organisation permissible level for water fluoridation is up to 1.5 parts per million as harmful effects are not thought to occur at or below this level (2). Fluoride is currently added to the water supply in the Republic of Ireland at a level of 0.6-0.8 parts per million (3). A recent report from the Health Research Board in Ireland (HRB) (4) examined the available evidence of community water fluoridation in relation to health effects (excluding dental health) including musculoskeletal effects, IQ, neurological effects, cancer, cardiovascular and other potential effects including kidney, hypothyroidism, immunity, birth defects, and all-cause mortality. The report found no strong evidence that community water fluoridation is definitively associated with negative health effects. However the evidence base is scarce and based mainly on studies not of appropriate design to infer causality. Further research would be required to provide definitive proof, especially in relation to bone health (osteosarcoma and bone density) and thyroid disease (hypothyroidism). In the case of naturally occurring high levels of fluoride (not relevant to Ireland) there are strong suggestions of association with negative health effects including skeletal fluorosis and lowering of IQ. The most recent evidence on dental health assessed in the Cochrane Review (2015) (5) found that fluoridation is effective at reducing levels of tooth decay among children, resulting in 35% fewer decayed, missing or filled baby teeth, and 26% fewer decayed, missing or filled permanent teeth. However the authors noted that the results are based on old studies which may not be applicable today. The study did not find any of the benefits of fluoridated water in adults and at levels of 0.7 ppm a prevalence of 12% fluorosis was reported. Of note the authors had concerns about the quality of the methods used in 93% of the studies.

There is a wide spectrum of views on fluoridation in the Irish media with anti and pro stances articulated. One local councillor put forward a motion *“for fluoride or any derivative to be removed from the Irish water supply, and to make it a crime for anyone to put it into the water supply”* while another said *“that he voted against the motion, describing the debate as an affront to science. He said that where there is no debate when it comes to fluoride is the fact it disproportionately benefits children from lower socio-economic groups”* <https://www.irishtimes.com/news/science/arguments-against-water-fluoridation-are-just-folklore-1.1967639> While controversy has prevailed in public discourse about water fluoridation for many years recently the anti-fluoride stance has been gaining more traction in the Republic of Ireland undoubtedly assisted by social media with an ever increasing number of local authorities voting to ban the addition of fluoride to the water supply (Galway, Cork, Dublin, Leitrim, Cavan, Kerry, Wexford to name but some of them). A rationale commonly cited for this move is that the rest of Europe have stopped the practice of adding fluoride to community water supplies due to adverse health effects. No previous study has examined the current policy and practices in respect to water fluoridation across the European Union (EU) and the reasons behind them.

Aim

The aim of this study was to examine water fluoridation policy and practices across the EU and explore the rationale for same to see if adverse health effects were indeed the reason for ceasing the practice

Methods

We identified the relevant departments for fluoride policy in all 28 EU member states. We contacted 27 offices by email (not including Ireland as we already know the policy and rationale here). A follow up email was sent to those who failed to respond. Non-responders were then contacted by hard copy letter on official letter DCU headed paper. We asked the follow questions

1. What is your current fluoridation policy?
2. When was this current policy implemented?
3. Why was this decision taken?
4. Could you direct me towards a policy document in English explaining why such practices have been implemented or not?

A spread sheet was set up in excel. All responses were copied and pasted in or typed into the excel spread sheet. The raw data was verified by second researcher. Responses were then grouped into common categories by country. Thirty nine different reasons were cited (some gave a number of reasons), we grouped these into 16 different categories.

Ethical considerations

Advice was sought from the Chair of the Dublin City University Research Ethics Committee who advised us that as the information being sought was already in the public domain that we did not need specific informed consent from the individual informants helping us to locate the information in English. The project was carried out according to the highest ethical standards of educational evaluation

Supporting data

All supporting data can be obtained by emailing the principal author directly at maryrose.sweeney@dcu.ie.

Results

Response rates

Twenty-four countries replied. Four countries did not respond: Bulgaria, Croatia, France and Malta. For Bulgaria and France, we sourced information from the internet but there was no information publically available for the other two countries who did not respond - Croatia and Malta. Fourteen countries never added fluoride to water, the reasons cited are summarised in table 1. Eleven countries stopped adding fluoride and the reasons cited are summarised in table 2. Thirty-nine different reasons were cited (some gave a number of reasons) for discontinuing

the practice of adding fluoride to water or for having never commenced the practice of adding it, we grouped these into 16 categories - see figure 1. No country in Europe discontinued the practice of fluoridation due to evidence of harm. Three countries currently add fluoride to water- Republic of Ireland, parts of the United Kingdom – England and Wales (not Scotland or Northern Ireland) and some parts of Spain.

Discussion

Ireland and the UK are the only EU member states currently adding fluoride to water at a whole population level. Some regions in Spain are also fluoridated. None of the other 25 member states had a specific policy on fluoridation and none add fluoride to water currently, although some had in the past. In this paper we examined the claims made increasingly in public discourse in Ireland by anti-fluoride groups and individuals that EU member states has ceased the practice of adding fluoride to water do the adverse health effects. We found that these claims are factually incorrect.

Some policy makers said fluoride was not added because of naturally high levels already in their counties arising from volcanic regions which actually required them to treat and remove high levels of natural fluoride from their water supply to be within the WHO permissible limits for consumption, its presence in other foodstuffs or alternative sources such as tablets and toothpaste made available via public health systems such as schools. Other countries had not implemented fluoridation of water for economic or technical reasons, due to the level of resources that would be required. Some countries reported that they did not feel that the efficacy of fluoride in water was sufficiently proven at this time as the data on dental caries prevention was not up to date, and that the fact that fluoride was not proven to be effective beyond childhood was insufficient justification for the practice due to the expense and resources required and the fact that there are other means to achieve the levels via tablets and tooth paste. A small number of counties expressed concern about the potential negative impact of fluoridation on the environment, ecological systems and on aquatic life. Others considered that it was an individual's own responsibility to ensure they got enough fluoride. Resistance from anti-fluoride lobby groups, concerns about mass medication, infringement of human rights or autonomy and concerns about it being unethical were reported as the reasons behind at least ten countries decisions to cease the practice of adding fluoride to public water schemes. While a small number of respondents mentioned "concerns or debates about safety or impact on health" none cited evidence of these.

It is difficult to say why the anti-fluoride stance in Ireland appears to be gaining traction amongst individuals, groups and publically elected representatives who should be basing their policies on the best available evidence. The means of spreading this poorly informed stance has been enhanced greatly in recent years with the use of social media and the internet more generally. Future research should explore why individuals and groups in Ireland and elsewhere have developed the anti-fluoride theories and stances that they have. Education and scientific communication to counteract these ill- informed messages will be needed to prevent a fear of fluoride.

Conclusion

It is untrue to say that the rest of Europe stopped adding fluoride to water due to evidence of harmful or adverse effects. Politicians/elected representatives should not continue to use this line of communicating when discussing fluoride in water and instead base their discussions and information on evidence before advocating for this type of action which could potentially have social and economic consequences particularly for the disadvantaged in society – specifically children from disadvantaged families. And while the voice of individuals or lobby groups should always be listened to the validity of their claims need to be assessed by those with the skills to verify their credibility. There is no evidence that any country in the EU ceased adding fluoride because of evidence of harm.

Future work

We are in the process of interviewing individuals who have articulated a public anti-fluoride stance in Ireland to explore their reasons behind this stance and to interrogate their claims. This work will be reported on separately.

Table 1 shows the fourteen European countries who have never added fluoride to community water schemes and provides a summary of the rationale for this.

Country	Reasons for never adding fluoride
Austria	Wanted choice, dosage not guaranteed, alternative sources available, topical more effective
Belgium	Not permitted
Bulgaria	Have fluoridated milk
Cyprus	No reason given
Denmark	Ill health and environmental effects could not be clarified
Estonia	Naturally occurring fluorides, monitoring required, toothpaste has fluoride
France	Ethical and medical considerations
Greece	Bottled water contains fluoride and must be labelled in above 1mg/L
Italy	Naturally occurring fluorides
Latvia	regulations
Lithuania	Naturally occurring fluorides
Luxemburg	Not deemed a suitable way to medically treat/individual responsibility
Norway	Opposition from political parties, population groups and media, toothpaste is fluoridated
Slovenia	Not recommended by dental profession

Table 2 shows the eleven countries who stopped adding fluoride to community water schemes and provides a summary of the rationale for this decision.

Country	Reasons for no longer adding fluoride
Czech Republic	Other sources available, debates about safety and efficacy especially in adults, economic and technical, environmental impact, fluorosis, forced medication, other sources available
Finland	Efficacy not proved, public pressure
Germany	Deliberate use for public health is not accepted, other sources available (toothpaste, tabs), environmental/ecological concerns, efficacy questioned
Hungary	Technical difficulties, naturally occurring in water, fluoridated toothpaste available,
Northern Ireland	Ceased about 15 years ago? Operational reasons
Netherland	Public protests relating to autonomy/rights, fluoridated toothpaste available, not permitted to add substances to water for treatment
Poland	Complaints from general populations (not medical community) about increased cancer risk and violation of human rights. Other possibilities for prevention available
Romania	Considered an individual's responsibility
Scotland	Reason not given
Slovak Republic	Reason not given
Sweden	Naturally occurring levels adequate in some regions, in low levels regions children are encouraged to rinse with fluoride solutions and use fluoridated toothpaste

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