

# Dentists' opinion on effectiveness of water fluoridation in controlling dental caries in Saudi Arabia: A nation-wide cross-sectional survey

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## **Abstract:**

**Objective:** The populations in Saudi Arabia suffer from high prevalence of Dental Caries. Water fluoridation is significant public health measure for such population. A nation- wide cross sectional survey was undertaken to evaluate the dentists opinion on effectiveness of water fluoridation in controlling dental caries. **Materials and methods:** The survey was conducted by the Directorate of Dentistry, Ministry of Health Riyadh, Kingdom of Saudi Arabia. Dentists working in all the provinces of the country were randomly selected from the official register of directorate of dentistry, Ministry of health to participate in the survey. Results - completed questionnaires were received showing the opinions of dentists (n= 398). Fifty nine percent of dentists (n= 235) answered as “yes”, 13.8% of them (n= 55) replied as “no” • and 27.13% of the dentists (n= 108) answered as “not sure and need an update” • . **Conclusion –** Majority of dentists have opinion towards benefit of water fluoridation. However, there is a need for continuing dental

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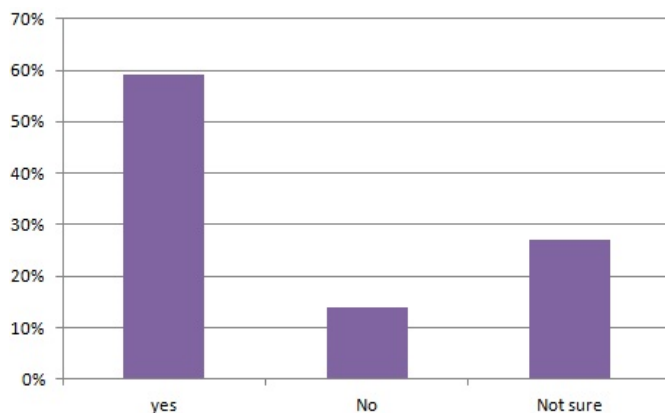
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education programs with special emphasis on fluorides, for dentists in the country.

**Key words:** Dental education, dental Health, dental health education.

Option	Dentists (n=398)
Yes	235
No	55
Not sure & need an update	108

**Table -1 showing the opinions of dentists in the Kingdom of Saudi Arabia.**



**Figure 1 - Bar graph showing the opinions of dentists**

### Introduction:

One of the most common pandemic diseases that affect mankind after common cold is Dental caries (DC).<sup>[1]</sup> DC is a microbial disease that forms through a complex interaction over time between acid-producing bacteria and fermentable carbohydrate, and many host factors including teeth and saliva.<sup>[1]</sup> Risk for DC includes physical, biological, environmental, behavioral and life style related factors such as high numbers of Mutans streptococci, inadequate salivary flow, insufficient fluoride exposure, poor oral hygiene, inappropriate methods of feeding infants, and poverty.<sup>[1]</sup> However, DC is a preventable disease, community water fluoridation (WF) being one of the effective forms of prevention. WF is the addition of a controlled amount of fluoride to the public water supply with the

intent to prevent DC in the population. WF is considered a safe and healthy way to effectively prevent DC for the past 65 years.<sup>[2]</sup> Decrease in rates of DC from drinking fluoridated water is well documented and in 2001, Centre for Disease Control and prevention (CDC) has recognized WF as one of ten great public health achievements of the 20th century.<sup>[3]</sup>

According to several studies reported in literature, DC is a major problem in the kingdom of Saudi Arabia estimating the prevalence of the disease to be as high as 75-96%.<sup>[4-7]</sup> Dentists are the professionals who educate the public about the oral health care and influence their patients' oral health related behavior, hence assessing their knowledge is worthwhile. The country does not yet have a national policy on community WF and there was no baseline data on assessment of knowledge of oral health care providers in this context. At this outset, a nation- wide cross sectional survey was undertaken to assess the dentists' knowledge on effectiveness of WF in controlling DC.

### Materials and method:

The survey was conducted by Directorate of Dentistry, Ministry of Health (M.O.H), Kingdom of Saudi Arabia. A total sample of 418 dentists working in all the provinces of the country was selected by simple random sampling from the official register of directorate of dentistry and was asked to reply to the question asked in english, "Do you believe water fluoridation can be effective in countering the increase in dental caries in the Kingdom of Saudi Arabia?" The possible replies were "Yes", "No", "Not sure and need an update". The questions were distributed and then collected by official mail. The dentists were given a time frame of four weeks to reply and no attempt was made to send any reminder mails.

At the end of four weeks, completed questionnaires were returned by 398 dentists and those 20 who did not return were excluded from the study. The questionnaires were completed anonymously. The data was analyzed using Microsoft excel sheet and descriptive statistics were obtained.

### Results:

A total of 398 questionnaires were received and analyzed, giving a response rate of 95.2%. Table-1 shows the opinions of the dentists (n= 398) in the country. More than half, i.e. 59% of dentists (n= 235) answered as "yes", 13.8% of them (n= 55) replied as "no" and 27.13% of the dentists (n= 108) answered as "not sure and need an update" (Figure 1).

### Discussion:

The M.O.H is the biggest provider of dental services in the Kingdom and employs dentists qualified from Saudi universities as well as expatriate dentists from other countries. This is the first national study undertaken to obtain a baseline data on the level of knowledge among the dentists regarding the effectiveness of WF in controlling DC in Saudi Arabia.

Saudi Arabia is one of the driest regions in the world, with no perennial rivers. About 50% of drinking water comes from desalination of sea water, 40% from the mining of non-renewable groundwater and 10% from surface water.<sup>[8]</sup> In urban areas, where 88% of the population lives, 97% have access to municipal water supply.<sup>[8]</sup> Recommended level of fluoride in the water for warm countries like Saudi Arabia should be in the range of 0.6–0.7 ppm, due to the larger amount of water consumption in the hot climate compared to the temperate countries.<sup>[9]</sup> In a country like Saudi Arabia, the daily water intake is with municipal water and bottled water, especially in rural areas where community drinking water supply is lacking. There is no WF of municipal water and the fluoride content of the bottled water was variable (in the range of 0.6–1 mg/L) among different brands, but within a safe range for use as a source of systemic fluoride.<sup>[2]</sup>

Fluoride is one of the very few chemicals shown to cause significant beneficial effects on teeth when consumed in low concentrations through drinking-water.<sup>[10]</sup> WF prevents DC mainly by providing teeth with frequent contact with low levels of fluoride throughout each day and throughout life. Even today, with other available sources of fluoride, studies show that WF reduces DC by about 25 percent over a person's lifetime.<sup>[11]</sup> In our survey, 59% of the dentists (n= 235) believed that WF is effective. More than one-eighth of the respondents (13.8%, n=55) felt WF was ineffective and 27.13% of the dentists (n=108) responded that they were not sure and needed an update about WF. As water fluoridation is also a socio-political issue and difference of opinion among dentists exist from time to time. Hence, continued education programs on the fluoride are necessary to have an updated knowledge among dentists.

#### **Conclusion:**

The fact that majority of the dentists are knowledgeable of the benefits of WF is a positive finding. For graduated dentists working in the kingdom of Saudi Arabia, should be updated on the benefits of WF. At the level of undergraduate dental education, minimal hours on Dental public health and preventive

dentistry should be finalized with specific hours on teaching of fluoride.

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#### **References:**

1. Selwitz R, Ismail A, Pitts N. Dental Caries .The Lancet 2007;369:51-9.
2. Aldrees AM, Al Manea SM. Fluoride content of bottled drinking waters available in Riyadh, Saudi Arabia. Saudi Dental J.2010;22:189-93.
3. Centers for disease control and prevention. Community water fluoridation. Available from <http://www.cdc.gov/fluoridation/> (Accessed on 23/1/2012, updated on 11/7/ 2011).
4. Wyne AH, Al-Ghorabi BM, Al-Asiri YA, Khan NB. Caries prevalence in Saudi primary schoolchildren of Riyadh and their teachers' oral health knowledge, attitude and practices. Saudi Med J 2002;23:77-81.
5. Al Dosari AM, Wyne AH, Akpata ES, Khan NB. Caries prevalence and its relation to water fluoride levels among schoolchildren in Central Province of Saudi Arabia. Int Dent J. 2004;54:424-8.
6. Al-Malik M, Rehbini Y. Prevalence of dental caries, severity, and pattern in age 6 to 7-year-old children in a selected community in Saudi Arabia. J Contemp Dent Pract 2006;7:46-54.
7. Al Wazzan KA. Dental caries prevalence in 6-7 year-old schoolchildren in Riyadh region: A comparative study with the 1987 - Oral Health Survey of Saudi Arabia Phase I. Saudi Dent J 2004;10:54-60.
8. Water supply and sanitation in Saudi Arabia. Wikipedia. Available from [http://en.wikipedia.org/wiki/Water\\_supply\\_and\\_sanitation\\_in\\_Saudi\\_Arabia](http://en.wikipedia.org/wiki/Water_supply_and_sanitation_in_Saudi_Arabia) (Accessed on 23/1/2012, updated on 27/1/0/2011).
9. Al Dosari, AM, Akpata ES, Khan NB, Wyne AH, Al-Meheithif A. Fluoride levels in drinking water in the Central Province of Saudi Arabia. Ann. Saudi Med. 2003;23:20-3.
10. World Health Organization. Fluoride in drinking-water. Available at [www.who.int/water\\_sanitation.../fluoride\\_drinking\\_water\\_full.pdf](http://www.who.int/water_sanitation.../fluoride_drinking_water_full.pdf) (Accessed on 26/1/2012).

11. Brunelle JA, Carlos JP. Recent Trends in Dental Caries in U.S. Children and the Effect of Water Fluoridation. *JDent Res* 1990;69:723-7.

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