What are the means to deliver fluoride?

1. toothpaste (Topical)

2. mouthwash (Topical)

3. supplements (systemic)

4. water and salt fluoridation.

5. Food Fluoridation.

What’s in common between water and salt? (why are they put in the same category)?

- because both are found in diet and it’s use doesn’t need compliance like using a toothpasteor a mouthwash.

--Water and Food Fluoridation:

Fluoride has to be in contact with enamel in order to be efficient.

Water fluoridation doesn’t need compliance and water is available for everyone so it’s a universal method of fluoride delivery ( but people can decide whether they want salt and milk with or without fluoride).

Water fluoridation is relatively cheap

People who have poor compliance are the ones who really need fluoride in the water ( like low socioeconomic class people)

Water fluoridation has some down sides for example the consumption can’t be controlled and it differes from one country to another. And it doesnt eliminate systemic consumption(same applies to milk and salt). The quantity of water consumption also differs from one person to another(same applies to salt and milk). It requires constant monitoring for the level of fluoride in water(sameappliesto milk and salt). And it needs a centralized water supply.

Water is present naturally in water

In sea water : 81.4 ppm (parts per million)

Ppm = milligram per liter as well.

Fresh water surface : very low but they are exceptions usually around 25 ppm

Ground water : depends on the resvoir and the type of stone surrounding the water and the process by which the water reaches the resvoir. It can be up to 300 ppm. Which is very high

1.5 ppm is the highest amount of fluoride that is considered safe in water stated by the WHO.

Fluoride pits : depends on the area. Which are 4 areas of ground water. Jordan is one of these fluoride pits.

The relation between fluoride (above 1ppm) in wanter and (missing/filled/cavitated teeth) is not constant (غير طردية( for both primary and permanent teeth.

Ways to remove fluoride from water

1. charcoal

2. septation method

3. activated sth (?)

Artificial water fluoridation:

Water fluoridation changed the epidemiology of caries

Countries with hot climates consume more water so more consumption of fluoride from water.

Who (World health organization)

Hot climates level of fluoride in water should be between .7-1 ppm

And normal to cold climates 1-1.5 ppm

 Dean’s study was about natural water fluoridation. (level of caries and level of fluoride in water🡪 after 1ppm العلاقة تصبح غير طردية

Efficiency of artificial water fluoridation :

Non-fluoridated vs artificial 🡪 artifially fluoridated area has ½ caries of non-fluoridated

Naturally fluoridated vs artificial 🡪 same efficiency as long as the concentration is similar

Self-control study 🡪 same area before and after water fluoridation.

Water fluoridation has a legal issue because people have no choice but drinking fluoridated water otherwise theyneed to buy bottles water.

Claims of people who are against water fluoridation:

Cancer caused by water fluoridation 🡪 all studies say that it doesn’t cause cancer

Bone fractures🡪 some studies say water fluoridation causes bone fractures and some say itdoesnt (inconclusive)

 Before 70’s🡪 fluoride wasn’t present in toothpaste

The most recent data we have on water fluoridation is cochrane review:

* Water fluoridation reduces dmft by 35% and DMFT by 26% in children.
* Evidence in adults was not available.
* At 0.7 ppm, 40% of the population showed signs of fluorosis (clinical evidence)
* 12% had aesthetic concerns (it matters more)

All the studies were done without fluoridated toothpaste

Milk and salt fluoridation were put in a substite of water fluoridation because what happens is that you get the choice to choose this salt that contains fluoride or doesn't.

Needs to be accompanied by promotion and education.

Fluoridated salts;

Concentration 250ppm

Caries preventive effect approximates that of fluoridated water; that's why it's recommended as an alternative of water fluoridation.

A study in Switzerland:

Areas of (1-controlled; no water fluoridation, 2-fluoridated salt, 3-fluoridated water, 4-preventive programs at schools)

Best results were for 4, 3and 2 were close together (they only differed in ages), 1 had the highest DMF.

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