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**Debating the Risks and Benefits of Fluoride**

In the 1940s and 1950s, dental caries (dental cavities) were the second largest common illness next to the common flu in the United States. An article written by Charlotte Tucker that was published in *The Nation’s Health* magazine states that “more than 15 percent of World War II recruits were denied the ability to enlist in the Army because they lacked six pairs of opposing teeth” (1). Over 60 years later, the health of the teeth of the American people has significantly improved, but the cause of this improvement has caused an ongoing 60 year debate that has left many still pondering whether or not water fluoridation is the best solution to the problem.

Fluoride is an element of fluorine and its most common use is the prevention of oral disfigures. Although the fluoridation of water has caused the biggest controversy, fluoride is also added to toothpaste, mouthwash, salt, and, in some cases, milk for the same purpose of preventing tooth decay. There are also fluoride medications that can be taken and fluoride varnishes that can be directly applied to one’s teeth by a dentist.

The effects of fluoride was discovered by a dentist named Frederick McKay. Soon after McKay established his dental practices in Colorado Springs, Colorado in 1901, he began noticing stains on the teeth of his patients, which is now referred to as dental fluorosis. These stains showed up on teeth with the complete absence of decay. Curious to find the cause of this mysterious encounter, and after unsuccessful research of the then available resources, McKay began his own research of the staining. He started researching different communities with the same oral relations, only to find that members of an affected community did not have the stains if they were not native to the community. McKay finally came across an answer to his question in 1931. With the help of other scientists and researchers, McKay discovered that these brown stains were an effect of a community’s drinking water that was naturally supplemented with high levels of fluoride. Although the brown staining was a cosmetic disfigure, it was favored over dental caries and tooth decay that was lacking on teeth with these stains. Scientists and researchers then discovered that if a community’s water supply had 1.0 part per million (ppm), it was enough to rid the community’s mouths of cavities, but to leave out the brown staining. Thus, the fluoridation of the USA’s water supply began, starting the long and heated debate.

According to *cdc.gov,* The Centers for Disease Control and Prevention (CDC) has “recognized water fluoridation as one of 10 great public health achievements of the 20th century”. The World Health Organization (WHO) also “continues to emphasize the importance of public health approaches to the effective use of fluorides for the prevention of dental caries” and recommends drinking fluoridated water and brushing with fluoride toothpaste (Jones et al. 671).

Fluoride was added to toothpaste along with water when the discovery of its benefits were made, but there is a big difference between water and toothpaste. Water is intended to be swallowed while toothpaste is not. A study by *Dental Clinics of North America* states that “current evidence strongly suggests that fluorides work primarily by topical means through direct action on the teeth and dental plaque. Thus ingestion of fluoride is not essential for [dental] caries prevention” (Campbell 9). On the contrary, an article from the *Bulletin of the World Health Organization* states that “Water fluoridation has benefits in addition to those associated with the use of fluoride toothpastes alone” (Jones et al. 671).

In 1955, shortly after the discoveries of fluoride were made, Dr. George Waldbott speaks of the illness of a 35 year old woman (Connett et al. 126). Waldbott claims that this woman’s severe headaches, alternating diarrhea and constipation, hemorrhages of the uterus, and gradual loss of strength that eventually led to complete disability were effects of the newly added fluoride in her diet (Connett et al. 126). Her illnesses improved directly after the elimination of fluoridated water (Connett et al. 126). Waldbott also claims to have over 50 similar cases (Connett et al. 126). On the Contrary, fluoride does have it benefits. Charlotte Tucker claims that since the 1970s “the number of teeth affected by decay has decreased from 6.2 to 2.6” (14).

In *The Case Against Fluoride,* entire chapters are contributed to the negative side effects that fluoride has on the brain, kidneys, bones, and many other parts of the body. As the authors of this book, Paul Connett, James Beck, and H. S. Micklem claim that there is “evidence of kidney damage among children drinking water with as little as 2.6 ppm fluoride” (196). Dr. Elise Bassin found that boys exposed to fluoridated water between the ages of 6-8 have a greater risk of contracting osteosarcoma (a rare but fatal bone cancer) (Connett et al. 193). In addition, Chinese researchers claim “that children had lower IQ’s in villages in areas with high natural levels of fluoride in the water” indicating the negative effects that fluoride has on a child’s brain (Connett et al. 149). Public health officials have said that “there is no valid science supporting these [health risk] claims” and that these rumors are upheld by the internet and misinformation (Tucker 14). The *Environmental Protection Agency* (EPA) has set guidelines and contaminant limits to help assess such health risks, and claims that extremely large amounts of water would have to be consumed in order for these health risks to become present. Since the addition of 1.0 ppm of fluoride to water was discovered, The EPA has changed this to 0.7 ppm to take precautionary measures (*epa.gov*).

Although the health risks may be contributing to their opinion, for most citizens against the practice, the health benefits and health risks are not the issue. In a 1956 article, a radiologist named Frederick Exner states that water fluoridation “violates the most sacred rights of God and man” and that “Maybe it won’t hurt me… [but] what I resent is a bureaucrat forcing the stuff down my throat” (Furnas 143). Statements like this turn the argument political rather than scientific. Howard Pollick, a clinical professor at the *University of California San Francisco’s School of Dentistry* points out several examples of supplements added to food to prevent illnesses, such as, “vitamin D added to milk prevents rickets, iodine added to salt prevents goiters, [and] folate added to bread prevents spinal cord disorders” (Tucker 14). Many foods have added supplements to help keep the human body healthy. No one is forcing anyone to drink the fluoridated water. Private wells are not fluoridated and some cities, such as Salt Lake City, provide a free alternative to the fluoridated water.

Paul Connett and the other authors of *The Case Against Fluoride* claim that water fluoridation is poor medical practice and that it is mass medication (7). They also points out that there is no control of dosage by distributing a medicine through a water supply and that a child playing out in the hot sun might consume more water, and thus fluoride, than an adult sitting in an office cubicle (Connett et al. 8). In addition, the CDC encourages parents to control the dose of fluoride given to their infants and children because dental fluorosis develops while teeth are forming (*cdc.gov).*

The CDC endorses the safety and effectiveness of fluoridating a community’s water supply. Water fluoridation has little cost and is the most cost-saving way to distribute the benefits of fluoride to everyone in a community (*cdc.gov*). According to the *American Dental Association,* “the average cost for a community to fluoridate its water ranges from 50 cents per year per person in large communities to $3 a year per person in small communities” and “every $1 invested in water fluoridation saves $38 in dental treatment cost” (Tucker 15). The CDC agrees that the government of these fluoridated communities are doing its residents a favor by saving the entire community money (*cdc.gov)*. Public water systems reach everyone in the community, so one’s age or income does not affect whether or not fluoride will be available to someone in a community with fluoridated water. If fluoride was not supplementing the public water systems, residents with low income would not be able to afford the dental care that their teeth might need.

Despite the reassurance of the small health risks, the current practice of water fluoridation in most U.S. cities should be stopped until further research can more deeply approach the health risks associated with fluoride. Adding fluoride to water is almost eliminating and making it more difficult for American citizens to choose an alternate form of fluoride that does not get swallowed and that does not affect parts of the body that fluoride does not offer any benefits. It is apparent that fluoride has its benefits, but there is not sufficient proof that fluoride does not harm more critical parts of the human body. When a medication is prescribed by a doctor, it is prescribed in a specific dose. If a community’s drinking water is fluoridated, this dose cannot be controlled and more fluoridated water will be consumed by someone who drinks higher amounts of water, therefore, putting them at a higher risk of the negative effects of fluoride.

Fluoride was likely the best solution to all the cavities that were present in the 1940s and 1950s, but, because of the health risks, experts such as Andrew Campbell who discusses fluoride in his article: *Fluoride: What are the facts,* believe that water fluoridation was not (9). Each side of the fluoridation argument is only going to continue to grow until further detailed research is conducted on parts of the body that fluoride may affect negatively, rather than positively.

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