

Fluoride for All!

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Introduction

Dental caries is one of the most prevalent oral cavity diseases that affects people of all ages. It is an irreversible disease characterized by demineralization of the inorganic portion of the enamel or dentin.¹ Teeth are most prone to caries after eruption from ages two to five for primary teeth and early teenage years for permanent teeth. Early childhood caries (ECC) can impact around 60 to 90% of children around the world.² It is important for parents to explain the importance of oral hygiene and encourage children to develop healthy habits at a young age in order to lessen the risk of ECC.

The addition of fluoride in oral rinses has a myriad of benefits. It is an effective way to lessen the risk of ECC by slowing down the demineralization process in enamel, and decreasing the dissolution of calcium hydroxyapatite. Additionally, it can form fluorapatite, which can increase tooth resistance to acid dissolution, promote remineralization, and inhibit the cariogenic microbial process.³ Studies have shown that with the addition of fluoride in oral rinses, there can be a 43% reduction in new caries occurrence.¹ Aside from the clear benefits of fluoride, it happens to be affordable, safe, and easy to use.

A rinse containing 0.2% sodium fluoride is a common formulation that is cost effective, beneficial, and safe for children. We plan to introduce this specific formulation in school once per week to third graders living in Massapequa, NY, which is a non-fluoridated area. This will allow the children to obtain the benefits of fluoride while decreasing their risk of developing ECC. In order to participate in the program, we will first need to oversight by a licensed dentist, and will then need to communicate with the children's parents to obtain consent. Participating students will need to be monitored to avoid a potential fluoride overdose, which can lead to a

cosmetic condition called fluorosis, or fluoride toxicity. Therefore, we plan on adequately training our program volunteers to carry out this program in a safe and effective manner. We have high hopes our rinse program will promote healthy habits for the students as they get accustomed to using mouthrinse for remineralization at a young age.

Assessment

The overarching goal of this Service Learning Project is to reduce the risk of caries by exposing third graders living in a non-fluoridated community to a 0.2% sodium fluoride rinse once per week in school. Research shows ECC impacts a tremendous amount of children, particularly during early teenage years, and fluoride helps reduce the risk of ECC by promoting remineralization. We initially knew we wanted to target individuals living in a non-fluoridated community because they would truly reap the benefits of fluoride exposure. Next, we concluded that since third graders are nearing their pre-teen years, which is when the risk for ECC is heightened, this would be an ideal age to begin forming healthy oral habits, such as rinsing with fluoride. Putting them on a supervised rinse routine and having them understand *why* they are rinsing will be significant in helping them achieve and maintain healthy oral health habits.

Our volunteers sought out a local dentist who agreed to oversee this program. Once this was established, obtaining consent from parents in order for their children to participate in the rinse program was the next crucial step. Program volunteers will mail home a detailed information packet, the consent form and a survey questionnaire for the parents to fill out. The questionnaire will have parents answer the following questions: Does your child use toothpaste containing fluoride? How often do they brush? Do they use an oral rinse? If so, how often, and does it contain fluoride? Does your child have any cavities? Does your child have an established

dental home? Are you aware of any benefits fluoride has? We are hopeful the information packet paired with the survey questions will encourage parents to begin thinking deeper about their child's oral health care, and that they will be open-minded to having their children participate in the rinse program.

Planning

The main priority of the fluoride rinse program is to increase fluoride intake for third graders living in the non-fluoridated water community of Massapequa, NY, in order to help prevent ECC. We need to first obtain parents' consent before any of this can occur. Our measurable goal is to receive consent from at least 20% of the parents allowing their children to participate in the fluoride rinse program.

We will send home an information packet with permission slips and the questionnaire to each family. Every detail of the program will be discussed, including the rinse ingredients, frequency and volume of usage, pros and cons of the program, and exactly how the program will be carried out. The permission slip will have three options for parents to check off; "consent", "decline", and an option that allows them to make a decision after seeing exactly how the program will work. In order to increase the chances of the success rate of this program, we will present parents with the option to come observe a live visual demonstration (following the 'tell-show-do' model) at the school put on by the program's volunteers. This will allow parents to more clearly understand the program and its benefits. Regardless of the parent's answers, each response will be anonymous, documented accordingly, and families will have the option to change their decision at any time.

We will be using a 0.2% sodium fluoride rinse, and each child will swish 10 mL for 60 seconds once per week. The students will learn how to properly swish for 60 seconds and spit all of the contents out. School staff will be trained on infection control, proper administration of the rinse, careful observation from start to finish, appropriate disposal of materials, and they will continue to explain the benefits of fluoride as necessary. They will also be provided with laminated step-by-step guides for guidance. Negative outcomes of excess fluoride intake (fluorosis and toxicity) must be emphasized, and the staff will be trained on how to proceed if children accidentally swallow the rinse.

Implementation

Our main goal is to reduce the risk of caries in third graders by introducing them to a 0.2% sodium fluoride rinse once per week. To achieve this, we must first succeed at fulfilling our measurable goal of obtaining consent from at least 20% of parents allowing their children to participate in the program. Having direct contact with the parents is the most effective way to reach this goal. Therefore, program volunteers who are sending out information letters with the consent forms and surveys are also including an invitation to the school's auditorium to participate in our implementing activity. Because engaging with a "tell-show-do" model is the most effective way to retain information, our implementing activity of inviting parents to come to the school's auditorium to watch a live demo of exactly how this program will be carried out will allow parents to have a clear visualization and understanding of exactly how the program work. The dentist overseeing our program will be present at this demo to reinforce information and answer any questions the parents may have. The volunteers will reenact exactly what will occur during the rinse program. We are hopeful through this activity, parents will understand

how simple, cost effective, and beneficial this program is, give their consent, and allow us to achieve our goal and help children further obtain optimum oral health.

Evaluation

To measure the effectiveness of our program, we used surveys as a tool for evaluation. The pre-evaluation was done by surveying the parents and asking several questions, including whether their children use mouthrinse at home and if so, how often, if they have a dental home, if they have had any cavities, etc. Based on the pre-evaluation surveys, only 2% of the students used mouthrinse daily at home.

After obtaining the pre-evaluation data, parents were educated on the advantages of fluoride and our weekly fluoride rinse program. With the effort of our program volunteers who sent out the information packet that included the invitation to the live demo at school following the “tell-show-do” model, 95% of the parents allowed their children to participate in our program.

Although 5% of the parents did not give consent or believe in the benefits of fluoridation, our program did accomplish our measurable goal of obtaining consent from at least 20% of parents to allow their children to participate in the weekly rinse program. All participating students were successfully able to use 0.2% of 10mL sodium fluoride rinse for 60 seconds weekly under the supervision of school staff. Therefore, our program also accomplished our main goal which was to increase the participating students’ fluoride intake.

In order to re-evaluate our objectives, we sent out a questionnaire survey one month later to the parents of participating students to see if their children continued to use mouthrinse regularly at home as an oral care habit. Questions included whether their children use mouthrinse once daily, if they have been to a dental office regularly, and if there have been any new decayed

surfaces on teeth. 3% of the parents reported that their children did not use mouthrinse regularly because their children did not like the flavor of the mouth rinse or parents were too busy to supervise their children. However, 97% of the parents reported that their children have been using mouthrinse once daily at home with the same formulation the program utilized. This is an increase of 95% compared to only 2% of the students who used mouth rinse once daily at home before starting our program. In addition, 50% of the parents claimed that dental professionals noted a decreased number of decayed teeth in their children's mouths during their recent dental visits. These results confirm our program was very effective and encouraging in terms of the goals we sought to establish.

Conclusion

It is crucial to establish healthy oral hygiene habits at a young age. Rinsing with fluoride, particularly in a non-fluoridated community, is the most cost-effective way to promote remineralization of teeth and prevent ECC. We were excited and determined to teach third graders and their parents about the benefits of fluoride and our program.

Our program was a success based on the notion of achieving our measurable goal of obtaining 20% of parents' permission. Regardless of parents' decisions, we felt confident we were able to bring at least some awareness of the benefits of fluoride to everyone we reached out to, and we believe we were successful in educating children how to use a fluoride mouthrinse. As future hygienists, we were able to take information we learned in class and implement it in a real world setting while improving the oral health of a population of people.

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