

You Are What You Eat!

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Introduction

Children are not aware of how the foods they eat can affect their oral health. During the mixed dentition phase, the deciduous teeth serve as space maintainers for the incoming permanent teeth. Healthy eating behaviors help to preserve the primary teeth from tooth decay. The individual's knowledge of oral health plays a crucial role in dental education.

According to a recent survey, nearly half (46%) of 8 year olds have experienced dental caries [1]. The long exposure of teeth to sugary foods such as starchy foods and soft drinks enables bacteria to lower the pH in the mouth [1]. PH at 5.5 causes enamel demineralization. Healthy foods can balance the pH and promote oral cavity self-cleansing by stimulating the saliva which acts as a natural buffer and strengthening the enamel structure [1]. Therefore, parents should be aware when preparing meals for children.

Cultural, socioeconomic and educational level of parents can affect what children choose to eat. For example, the highest levels of caries tends to occur in low income areas [1]. In addition, there is a direct correlation of the mother's oral health in comparison to dental decay found in children. Furthermore, as children grow older there is an increased positive relationship between food and tooth decay [2]. Moreover studies showed that for children between ages 5-12 years old, acidic drinks such as soft drinks, sports drinks and energy drinks contribute to soften enamel and lead to dental erosion [3]. Therefore, we want to educate children and their parents on the importance of food selection in regards to dental care.

Assessment

The target population is the students ages 8 to 9 years old from one of the after school program sites of Commonpoint Queens, located at P.S. 139. These children are in 3rd grade and their sense of independence is becoming stronger. This includes making choices regarding the foods they eat and the foods they do not eat. At a young age, students are taught about making healthy food choices. However, they are not informed how those choices impact their oral health. Thus, due to their lack of awareness students are making poor nutritional choices that are risk factors for caries and erosion. This was evident from the group interview that was performed as the ice breaker portion of the lecture. 50% of the students drank juice that day, 75% preferred chocolate milk, 60% preferred crunchy food and 70% snacked more than 3 times a day: snacks are foods or drinks that are consumed throughout the day and are not part of breakfast, lunch or dinner.

The socioeconomic status of the Rego Park community in which these students live are on the slightly higher side of the spectrum. 73% of the residents have a college degree or more [4]. The median household income is \$66,907 which is above the national's median of \$55,322 [4]. However, there may still be some cultural, financial and personal barriers that limit access to oral healthcare and influence the food choices the students' make. For instance, 44% of the population are Caucasian and 32% are Asian [4]. The majority of an American diet consists of a high carbohydrate intake and Asian households typically have rice in all their meals. Cultural preferences established at home can influence a child's personal preference and what they continue to eat outside of home. Additionally, 22% of the household income is less than \$25,000

[4]. A lower family income decreases the variety of food readily available at home and parents tend to lean towards cheaper foods that may not benefit the child's oral health. With many potential barriers in mind, our program's objective is to at least provide awareness to how certain foods can impact one's oral health.

Planning

Our main goal was to bring awareness to the students that their nutritional choices can affect their oral health. To achieve this goal, we created three sub-goals. First, we would teach how sticky foods impact the teeth. Secondly, how crunchy foods can benefit our oral health. Lastly, how the acidity of drinks can alter the teeth. We would obtain our goals through a show-and-tell demonstration and a hands-on activity with the 17 students.

To achieve a successful program, we developed our lesson plan with various questions to engage the students interests, showed the educational acid experiment video, and played a category poster game. We begin with asking questions to divide the students into groups to analyze the typical eating habits of the students, such as their drinking and snacking routine. In the acid experiment, we used an egg shell to resemble tooth enamel and vinegar to resemble the acid in our food. We recorded the acid experiment process at home, and showed the students the time-lapse video with a projector in their classroom. After the video, we would let them touch the egg to emphasize the end result of what the acid would do to our teeth. At the end of the activity, we use a poster board divided by categories with good and bad foods for the teeth. We would hand out photos to the students and ask them to place the photo on the category which they believed it belongs to.

In order to see if our goals were obtained, we set a few measurable objectives. We hoped that after each subtopic, 50% of the students would be able to identify foods that are considered sticky, crunchy and acidic. Furthermore, we anticipated that 75% of the students would be able

to differentiate what foods are good for their teeth and which foods are bad for their teeth. This would be accomplished by the concluding activity, in which each student independently places the food/drink in the right category on the poster. Since the students' parents are not present during this event, we would like to "train the trainer" by providing copies of our lecture for them to read at home. Thus, enforcing behavioral changes in the entire family.

Implementation

We divided our lesson into three topics to execute our goals. The first topic focused on explaining why sticky foods are not good for us and the importance of brushing daily. During the explanations, we emphasized certain pictures and asked questions to see if the students can associate the picture to the information taught. If the student answered correctly, we would give them positive reinforcement. As for crunchy foods, we would explain how some are good for us and can clean our teeth while others are not and can actually harm our teeth. The next topic we explained how certain drinks like soda can be harmful for our teeth after frequent exposures. To explain the significance of acids, we compared tooth enamel to an egg shell and showed a time-lapse video of an egg being submerged in vinegar for 24 hours. Afterwards, we passed around the egg and showed them how the hard egg shell had become rubbery and soft. Thereafter, we explained how drinking acidic drinks such as sodas and juices throughout the day can be more harmful than just drinking at one sitting. The explanation of cavities and erosion from sticky foods and acidic drinks are motivation for the students to watch what they consumed.

For the summary, the students would be handed a photo of a certain food and they would then have to place it on a poster board that was divided into “good food for our teeth” and “bad food for our teeth”. When the students were having trouble assigning the food, we would then let them ask for help from the other students for support. For motivation, we would give out an assortment of fruits for the students and staff to snack on. Lastly, we would give them a packet of the powerpoint to aid their parents to help them reinforce their nutritional choices.

Evaluation

During the discussion, most of the kids understood how sugary and sticky foods pose a caries risk. Only a few students did not know how crunchy, deterrentive foods like apples, carrots and celery naturally cleanse the teeth as they masticate. Five of the children knew that Coca Cola was acidic; however, when hearing that fruit juices, soda and energy drinks were naturally acidic they were astonished. At the end of the lesson, it was evident that the children had new profound knowledge.

Our main focus was to educate them about sticky foods, crunchy foods and how acidic drinks can harm their teeth by using a powerpoint presentation and a time lapse video of the acid egg experiment. Our group decided to use the poster board challenge to measure the effectiveness of our teachings. During that process, we took notes of how many students were able to answer correctly. Approximately 15 out of 17 students (88.2%) were able to distinguish the sticky from the crunchy foods and 13 out of 17 students (76.4%) were able to differentiate between acidic and non-acidic drinks. These numbers exceeded our set goals and prove that our program is effective.

Conclusion

Our public health project was designed to create awareness of how food choices impact our oral health. Our measurable objectives were accomplished but it may have been skewed since a few children were discussing amongst themselves. We do not know if they were just chatting or discussing which category to put the photos in. We should have ceased their conversation to make sure that our statistics are more reliable. Moreover, behavioral changes are crucial for the program's success. We were unable to follow up with the students to see if their daily eating habits changed at home and in the long term. So, we made copies of our presentation slides for the students to bring home to show their parents. It is essential for the parents to be part of our program plan because they have the power at home to decide what the child is fed.

This was a positive experience because it gave us a chance to teach and advocate good oral habits to young children. They were very cooperative and attentive, which made it easier for us to follow through with our lesson plan. The children really enjoyed the acid egg experiment and had a blast poking at the brown, semi-transparent egg as we passed it around. Everyone cheerfully participated in placing the photo of food onto the poster board and demonstrated their new knowledge about what is good and bad for the teeth.

This public health project, for us student hygienists, promotes dental health and prevents oral disease. We had an excellent experience with this public health community project. We were able to use the knowledge we learned from school and come up with an effective lesson plan for a small community. It was also fun and interesting for us to present oral health education with

young children in a non-clinical setting. We look forward to doing more activities such as this when we progress into our career.

Reference

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