Brush the Germs Away!

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**Introduction**

Dental hygiene is very important to our oral health. Our body is connected in many different ways. For instance, if there is an infection in our oral cavity, it can spread through our bloodstream affecting other parts of our body. When this infection is left untreated, it can cause pain and discomfort which can affect the way we speak, eat, smile, etc. Without proper daily hygiene, it will eventually cause tooth decay and gum disease.

Dental plaque is the primary cause of dental diseases. When plaque is not mechanically disrupted, it can cause the onset of inflammation, swelling, and pain. Oral health problems can become severe enough to lead to tooth and bone loss. The lack of daily hygiene can cause oral diseases, such as dental caries, gingivitis, and periodontitis. When oral health problems are severe enough, they can cause tooth and bone loss. According to BMC Oral Health, “plaque removal on a regular basis is a central part of oral health prophylaxis.”(Deinzer, 2019) Educating children about the importance of oral health is essential, so their teeth maintain healthy and strong. It is also crucial for parents to be educated and supervise their children. Also, parents play an important role in shaping their children’s hygiene routine and eating habits.

Oral hygiene should begin when the first tooth is present in a child’s mouth. Brushing twice daily, morning and night, with fluoridated toothpaste is recommended. Toothbrushing with the appropriate amount and strength of fluoridated toothpaste can help prevent tooth decay and help remineralize demineralized surfaces. It is also essential to floss daily because brushing alone is not enough to clean the interproximal surfaces. In addition, children and adults should have a dental exam and cleaning every 6 months which can help detect early tooth decay, gum disease, and oral health problems and educate patients to take care of their gums and teeth.

**Assessment**

The target population for the service learning was children in the 4-5 year old age range who are at high risk for tooth decay if not properly informed and supervised. Most kids are not supervised when they are brushing their teeth, therefore some may not brush correctly or skip brushing which leads to the rampant decay of their teeth due to the accumulation of bacteria especially if combined with a diet high in sugar and carbohydrates. Throughout our dental hygiene education, we have learned that early childhood caries is a major health program affecting infants and preschool children that is preventable with patient/parent education along with nutrition counseling. Our focus for this project was two pre-K classes in a neighborhood in Brooklyn. The kids are at a developing age in which they are becoming independent and learning to do things by themselves. Not only that, but it is also an important age to ingrain the importance of oral health so they can carry it throughout their whole life. As dental professionals, it is our duty to introduce and help implement healthy habits and explain the importance of dental care.

We assessed the students’ knowledge of dental care through verbal surveys at the beginning of the presentation. We asked at the beginning of the presentation how many of them have been to the dentist, how many of them brushed their teeth every day, and what teeth brushing method they used. Then we ended with using the Tell-Show-Do method at the of the presentation by asking the students to demonstrate the teeth brushing method we taught during the presentation and demonstrated on the typodonts.

**Planning**

After identifying our target population, we created a few goals to achieve with our presentation. As our target audience consists of 80 kindergarten students of ages 4-5 years old, it was important to implement the “Tell-Show-Do” method to educate them on toothbrushing techniques that include the motion of the toothbrush, duration of brushing, and frequency of brushing per day. Proper tooth brushing and prevention are vital in reducing early childhood caries, which can affect the overall health and quality of life of a child (Wang). In order for us to achieve this goal, we first have to let the children become familiar with the topic of dental care. To do this, we prepared a few icebreaker questions, visual pamphlets that describe the toothbrushing steps, a few Colgate typodonts for demonstration purposes, as well as stickers and toothbrushes for the children to take home. The stickers would serve as a reward and motivation for the children to participate in the icebreaker and pre-assessment portion, as well as the reevaluation portion at the end of our presentation. Because our target population consists of kindergarten students ages 4-5, we felt that our presentation should be simple yet engaging, so that the children would not become too overwhelmed with information. Therefore, we decided to make our presentation colorful, with cartoon images that would appeal to a child’s tastes, as well as using simple layman’s terms that they would easily understand.

Our last and final goal in this presentation was to ultimately engage the child’s guardian and/or parent at home, aka “Train the trainer.” Therefore, the pamphlets will serve as their “homework” with their guardian to read at home in order for all toothbrushing methods to hopefully be implemented. Supervised brushing can decrease plaque score, attain brushing habits as an adult, and prevent dental caries; however, this can only be achieved if the adult/guardian is able to properly demonstrate this to the child (Zacharias).

 To gauge whether we have achieved our goals, we must have some measurable objectives in place for us to reach. As mentioned before, our main focus is to see an increase in the percentage of students that answer the three main brushing techniques correctly after the presentation and demonstration, which were: circular brushing, brushing for 2 minutes, and brushing twice a day. Out of the 80 kindergarten students, we predicted that at least 25% (20 out of 80 students) would correctly demonstrate the circular toothbrushing method and 50% (40 out of 80 students) would correctly answer our questions about the frequency and duration of toothbrushing. Ultimately, our goal was to increase the percentage of students that answered correctly after our presentation.

**Implementation**

 Following the informative and interactive session with the kindergarteners, students performed a small activity and answered two questions to demonstrate if they were able to recall and learn the information presented. Each student was given a chance to show the correct brushing method, Circle/Fones method, on a large Colgate typodont with a toothbrush. They were then individually asked the pre-assessment questions again, ‘how do we brush (method)?,’ ‘how many times do we brush a day?’ and ‘how long do we brush each time?’ If the student showed the incorrect technique or answered the questions incorrectly, they were corrected and then asked again for their learning purposes. However, only their initial responses were recorded for data collection.

**Evaluation**

 The goal of the project was to provide kindergarteners with knowledge regarding the method of brushing, the frequency of brushing, and how long the brushing should be. In order to evaluate whether this project accomplished the desired goals, we performed the pre-evaluation by asking 3 questions: how many of the students brush two times a day, how many of them know how long they should brush, and how many of them know the proper method of brushing and had the students answer the questions by raising their hands. To the first question of how many times they brush a day, 10 out of 80 students (12%) raised their hands and responded ‘two.’ To the second question of how long they should brush, 4 out of 80 students (5%) responded by saying ‘a minute or two.’ To the last question of how they brush, 3 out of 80 students (4%) hesitantly responded by saying ‘up and down’.

 After the presentation, the same questions were asked again to assess whether the students have successfully grasped the knowledge. Approximately 63%, which is 50 out of 80 students, responded that they should brush two times a day. Regarding the question of how long they should brush, approximately 44%, which is 35 out of 80 students, responded by answering ‘two minutes’. In regards to the last question of how they should brush, 38%, which is 30 out of 80 students, were able to demonstrate a circular motion when using the toothbrushes. These results show that there is a difference between pre and post-presentation, proving that the goal of the project was achieved.

**Conclusion**

 To conclude, even though the project was not 100% successful in having all of the 80 students answer and demonstrate correctly to the assessment questions, the results and data before and after the presentation proved that the project was indeed effective in providing knowledge of how to brush, how many times to brush and for how long to a portion of the targeted group.

 For future replications, the students should be asked questions individually before and after rather than asked in a group. When asked questions in a group setting, students were able to hear and see other students’ answers which can influence their own answers when responding. This can give false data and skewed results. Asking individually, separated from others, gives the student time to formulate and come up with their own answers without any outside influences and provides a more accurate data collection.

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