

The Sugar bug elimination program
Topic “Diet and Caries”

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Introduction- Diarra Samb

A healthy lifestyle begins with a vigorous diet as it promotes overall well-being. Nutrition is a fundamental component of oral health, with diet being a multifactorial element in the etiology and progression of oral diseases. Some of these diseases include periodontitis, erosion and predominantly caries, being the main cause of tooth loss, in which nourishment plays a significant role. The incidence of dental caries have drastically increased among children under the age of 11, due to inadequate oral hygiene practices, decreased access to dental services, and most importantly, frequent consumption of fermented carbohydrates.

In the original article “The association between sugar-sweetened beverages and dental caries among third-grade students in Georgia”, Wilder examines the relationship between sugared beverage consumption and the development of caries among third graders in Georgia. A school based sample was provided as a method, and Georgia third graders consumed approximately two servings of SSB per day on average , as a result, the analysis revealed that each additional SSB consumed was associated with a 22% increase in caries experience. The author concludes that there is a need of providing healthier beverage options for children as a means of preventing cavities. This article justifies our programs need to educate children regarding their sweetened diet, as a risk factor for caries, through brushing techniques, and less carbohydrates food consumption (nutrition counseling) as means of preventing this disease.

Each member of the sugar bug elimination program has a goal of educating, not only the elementary children, but the parents as well, as they hold responsibility for their diet.

There are many healthy sugar substitutes such as raw honey, maple sugar, brown sugar etc.....,

that could be introduced to these children, by placing them in certain baked products, candies, and even natural juices for a more pleasant and fruitful taste.

Our program aims to provide children to have access to more fluoridated resources and products such as toothpaste, mouthrinses, while motivating them to drink a good amount of water daily. We will guide the parents in rewarding their children for any new changes regarding their diet, as it may encourage them in continuing their healthy behaviors. At last, we aim to provide dental services, by applying Fluoride varnish, and sealants on molars, as a primary prevention from any further demineralization.

Assessment: Carlos Hernandez

We are targeting early childhood caries in children ages 6 to 7 years old attending first grade at P.S. 182 Jamaica - Samantha Smith Elementary school, by focusing on creating better eating habits and encouraging children to drink more water while in school. We are targeting this demographic because the first permanent molars usually erupt between ages 6 and 7 years. [2] For that reason, they often are called the “six-year molars.” They are among the “extra” permanent teeth in that they do not replace an existing primary tooth. These important teeth sometimes are mistaken for primary teeth and we tend to forget that we will have them for the rest of our lives. A carious lesion is produced when acidic waste from bacteria is fermented after a person ingests carbohydrates, or if there is a lack of fluoride in the saliva. When a child is 6-7 years old, they are becoming more aware and better able to understand the importance of self-care, and so it is the perfect time to start educating, informing, and putting into practice habits that will decrease carious lesions. Teaching them about good eating habits and encouraging them to drink more water in order to improve their oral health are our main objectives in this study. In more recent days, schools are trying to implement a healthier menu for their cafeterias. Unfortunately, healthy meals are usually more expensive and so alternative food choices may be favored instead.

[3] Water fluoridation has been one of the great public achievements of the 20th century and a staple for oral health. There is a higher concentration of fluoride in a school’s water supply due to the limited time the students are present at school. So, we are trying to encourage students to take advantage of this beneficial agent and drink more water while in school. Most school budgets can barely cover the essentials (i.e. school supplies and extracurricular activities) and so there is very little left to invest in the quality of the student’s food options. Understanding these

limitations that most schools have to work with, we are trying to make sure these children and their parents can make better choices and understand that eating healthier and drinking more water can have a great impact on their oral and systemic health.

The socioeconomic status of the school district has an impact on the amount of money a school receives, which in turn has an impact on the quality of food they can provide to their students. Families in the Jamaica School District are on the lower income spectrum when compared to the national average. [1] 95% of the students receive free or reduced lunch, most being of Hispanic, Asian, and African American descent. Less than 30% of the residents have a college degree. [1] The median household income is \$61, 808 which is below the national median of \$62,843. When the school's financial situation is difficult, it makes it very challenging for students to receive a healthier meal.

During our direct observation study, we used a variety of methods to understand the children's level of awareness around the food they eat and the impact it has on their dental health. We used verbal surveys, sticker charts and show of hands to acquire as much data and information as possible to achieve the best results. We asked them about what types of food they ate regularly and if they drank water with every meal, and over 90% of the children said no or did not raise their hands. We handed parents and teachers pamphlets to raise awareness of the relationship between diet and cariogenic bacteria and the importance of drinking water. After our presentation we gave the children sticker charts for them to choose between foods that are good or bad for their teeth. 95% of the children responded great to these visual cues and were able to recognize bad from good food. To reinforce their habits of drinking water instead of soda we played a video about tooth decay using eggs and placing them inside a jar with vinegar, milk, and

soda and see their corrosive effect on the eggshells. We also provided each student with a 32oz jug for them to fill at school the day of the presentation and a post-survey was given out.

Planning- Kayla Nunez

The main goal of the Sugar Bug Elimination program is to educate and inform young children about nutrition. In order to raise awareness on the relationship between diet and caries as well as the importance of drinking water. To achieve this goal, we created three sub-goals. First, we would teach how foods impact the teeth. Secondly, we would show the benefits of drinking water. Lastly, how acidic or sugary drinks can alter the teeth. We would obtain our goals through a show-and-tell demonstration and a hands-on activity with the students.

In order to execute this program successfully, we had to be realistic and time-oriented. The local leaders, two co-teachers, were not able to partake in the activity because of the limited time available to train the leaders so we created a pamphlet for the faculty at the school in order provide them with information and we also asked them to distribute a pre-survey a few days prior to our presentation in order to save time and to help us get a baseline of the students current habits. We also developed a lesson plan with various questions to engage the students interests, included an educational experiment video, and incorporated a cut and paste activity. We will 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. The acid experiment used egg shells to resemble tooth enamel, vinegar to resemble acetic acid, cola to resemble phosphoric acid and milk to resemble lactic acid in our food. We will bring the mason jars with the eggs and after the video we will encourage the students to touch the egg to highlight the end result of what acid can do to our teeth. After the experimental video, we will hand out a cut and paste activity with two

categories, bad foods for the teeth and good foods for teeth. The students will independently place the photo of the food on the category which they believe it belonged to.

In order to ensure the goals we set were obtained, we set a few measurable, achievable, realistic, time-oriented objectives. We hoped that after each subtopic 80% 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 or drink in the right category on their activity sheet. Lastly, we predicted that one week after the presentation 80% of the participants will report drinking a complete 32 oz of water daily. This would be measured using a post survey which would be collected by the teachers.

Implementation- Luis Marquez

On the day of the activity, the presenting team will arrive 30 minutes before the start time to meet with the principal, introduce ourselves with the class teacher and to set up the classroom. We will organize the classroom so the students sit in a semi circle facing the front of the room where the powerpoint will be projected.

Once setup is complete, we will start the icebreaker activity. First, we will introduce ourselves each by name and will explain who we are, what we do, and why we are here. Second, in order to encourage participation we will do a round of “show of hand” questions like “Who brings a bottle of water to school?”, “Who brushes their teeth once a day?”, “how about twice a day?!” , “Who went to the dentist in the past year?”, “Who likes to eat sweet snacks?”.

Following the icebreaker, we will provide the students with a 3 minute pre survey to evaluate water drinking and snacking habits. After the survey is completed and collected, we will

proceed with the PowerPoint Presentation. Students will be shown an interactive set of slides on the following topics: caries process, types of food that are more cariogenic and the benefits of water drinking. Additionally, within the slides, students will be shown a video titled “Tooth Decay, a Science Project” showcasing a visual experiment where three eggs are submerged in vinegar, milk, and soda for a week to evaluate the effect of each substance on the egg structure.

After the powerpoint presentation, we will do a Q&A session for 5-10 minutes to answer students’ questions and to review in more detail any information that needs to be clarified. Following the Q&A, we will explain the cut and paste activity and will provide each student with one Mr. Happy tooth card, one Mr. Sad tooth card, and one “food to feed Mr. Happy and Mr. Sad tooth” card with pictures of different food groups. Students will be given 10 minutes for the activity where they would cut each food and paste it on each of the cards using the knowledge acquired in the presentation. While students are engaging with the cut and paste activity, the team will hand the post survey to the class teacher which they will give to the students a week after the activity. A member of the team will stop by the school one week and one day after to collect them.

Upon completion of the activity, the team will collect all the materials, make a closing statement to the students thanking them for their attention and praising their participation. Next, we will provide each student a reusable 32 oz water bottle with a straw and oz markings for them to use in school in between meals/snacks. Lastly, we will assist the teacher in putting back together the classroom and break down our set up before leaving the facility.

Evaluation- Denise Ferreira

Based on “The Sugar bug elimination program” goals to educate young children about nutrition, promote awareness on the relationship between diet and caries as well as the importance of drinking water, we conducted two tools evaluating our overall objective to have 80% of students able to differentiate what is the good food and what is the bad food for our teeth with the understanding that drinking water is beneficial following our presentation. Our first tool was a pre-survey and a post-survey completed by each child and our second tool was giving out 32 oz plastic water bottles to every child in the classroom.

The pre-survey was created to have a starting point representing the children’s views on nutrition and the importance of drinking water before we began our presentation. This was a 2 question survey that took 3 min. to complete. It was handed out after our icebreaker activity and all the children answered in a timely manner. After reviewing the surveys 95% of the children preferred having a doughnut for lunch rather than an apple. Also, on average 85% of the children were drinking 16oz of water per day.

In order to re-evaluate if there was a change in frequency of drinking water from before and after our presentation we provided a reusable 30oz plastic water bottle that was given out to all the children at the end of our presentation. These water bottles were given in hopes of motivating the children to drink more water. We informed these water bottles are for them to use in between meals and snack time. A week later one of our team members went back to the school to re-evaluate how our presentation implemented the children’s views and educational decision making. It was confirmed the children were still using the water bottles given a week prior and a post-survey which is the same survey that was handed out the first time was given out to complete by the same group of children. After collecting all surveys 85% of the children

preferred an apple rather than the doughnut which is an increase of 80% and while using our water bottle given on average 95% have been drinking 24oz of water per day, an increase of 8oz of water per day. Based on the results from both surveys and the implementation of the 30oz plastic water bottles, “The Sugar bug elimination program” accomplished their overall goal in increasing awareness on both great nutrition and the importance of drinking water.

Conclusion - Denise Ferreira

As you can see as future dental hygienists our goal is to promote as much educational awareness not only on oral health but overall health. During this community project we’ve all played an important role as educators, motivators, and established a relationship with great children who were completely engaged throughout our whole presentation and the parents and teachers who helped us in the process. We all went into this classroom with the mindset of implementing a strong message in the most creative, fun way and we accomplished just that. Not only did we get the kids involved but the teachers and parents were involved too. This was an experience we all will take with us in our future dental hygiene careers striving for overall great health in the best possible way.

References

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LESSON PLAN

Session Title	<p>The Sugarbug Elimination Program</p> <p><i>By Luis Marquez, Carlos Hernandez, Kayla Nunez, Diarra Samb and Denise Ferreira</i></p>		
Objective(s)	<p>Goal: Participants will be able to raise their awareness on the relationship between diet and caries as well as the importance of water drinking.</p> <p>Objectives:</p> <ul style="list-style-type: none"> ● By the end of the presentation, 80% of participants will be able to recognize what kind of food groups are healthier for their teeth ● One week after the presentation, 80% of the participants will report drinking a complete 32 oz of the water bottle provided every day. 		
Activity	Time	Tasks	Materials
Setup/Icebreaker	20 min.	<ul style="list-style-type: none"> ● Meet with the principal and classroom teacher. ● Set up the classroom. ● Introduce ourselves to the students. ● Do a “Show of Hands” round of questions. 	<ul style="list-style-type: none"> ● Classroom Chairs and desks
Direct Instruction	15 min.	<ul style="list-style-type: none"> ● Powerpoint presentation on caries process, diet, water drinking ● Showing of the video titled “Tooth Decay, a Science Project.” 	<ul style="list-style-type: none"> ● Laptop ● Projector ● Speakers
Whole Group Practice	15 min.	<ul style="list-style-type: none"> ● Students will cut and paste cardboard images of food groups and assign them to either a “Mr. Happy Tooth” or “Mr. Sad Tooth” card. 	<ul style="list-style-type: none"> ● Cardboard images ● Scissors ● Glue sticks
Review and Q&A	15 min.	<ul style="list-style-type: none"> ● Take questions from students and review the material. 	
Assigning Homework	5 min.	<ul style="list-style-type: none"> ● The team will hand out the teacher and explain the post survey that will be applied a week following the activity to evaluate water drinking. 	<ul style="list-style-type: none"> ● Post survey
Closing	10 min.	<ul style="list-style-type: none"> ● Collect the cut and paste activity. ● Give a closing statement with a final message. ● Provide each student with one 32oz reusable water bottle with instructions to use. ● Reorganize the classroom. 	<ul style="list-style-type: none"> ● 32 oz water bottles

In this session we will cover: The caries process, the effects of different food groups in tooth decay and oral health, and the importance of water drinking in between meals and snacks.