Impact of Sugary Dietary Habits of Adolescence on Dental Health

New York City College of Technology

Dental Hygiene

DEN 2413- Introduction to Dental Public Health

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Introduction

Oral hygiene and nutrition are significant factors to implement throughout all stages of life. Age should not prevent an individual from learning the proper techniques and nutritional habits to achieve good oral health for a lifetime. Our service-learning project was aimed to target individuals at a young age who would benefit from nutritional guidance.

As authors M.A Peres, A. Sheiham and others have pointed out in their research report *Sugar Consumption and Changes in Dental Caries from Childhood to Adolescence*, "that there is a change in behavior from early childhood to adolescence being more independent in selecting their foods and drinks." Since early childhood dietary habits are fully controlled by caregivers, it has been proven that there are lower incidents of dental caries development. While individuals between the ages of 15 to 18 choose a more sugary diet such as ". . . cake, chips/snacks, cookies, ice cream or popsicle, sugar, candies, chocolate in powder or chocolate bars, pudding, non-diet soda, natural fruit juice, and processed fruit juice.:", they have much higher incidents of developing dental cavities. The authors aimed to assess ". . . the progression and dynamic growth of dental caries in the permanent dentition from 6 to 18 years of age. "

As mentioned in the article, *Dental Caries Level and Sugar Consumption in 12-Year-Old Children from Poland*, many studies have provided evidence for the role of sugar consumption in the development of dental caries. It has been noted that sugary dietary habits cause the development of dental caries worldwide. It is essential to provide and incorporate.

"… education in oral health and motivation to a change a lifestyle . . ." in patient care. In fact, not the dietary implications affect periodontal disease as well. Thus, nutritional guidance plays a vital role at all stages of life.

Moreover, caries are ". . . one of the most prevalent disease worldwide." A study that carried out involved school children between 12- and 15-year-old: pointed out despite caries ". . . being largely preventable, the disease remains a major public health problem. To decrease the development of caries, dental professionals should educate their patients on proper dental techniques as well as nutritional habits. Because it has been shown that ". . . toothbrushing frequency of more than once a day displayed lower caries level than individuals who reported a lower frequency, developing good dental habits from the early stages of life is a fundamental rule to optimal oral health from childhood to adulthood.

In addition to combating the barriers to teaching oral hygiene instructions to children, we, as healthcare providers, need to understand the importance of nutrition fully. As dental hygiene students, we are taught to expect bad oral hygiene and nutritional habits from children. It is very clear from our seminar lectures that children and adolescence are more prone to oral health issues when their oral hygiene and eating habits are poor. To achieve optimal oral health in all our patients, nutritional guidance is a must in dental hygiene care.

Assessment

This Service-Learning Field project's target population are students between the ages of 13 to 18 years old from an after-school program at Pixel Academy, located in Pacific Street, Brooklyn, NY 11201. The population group included 30 students, which consisted of 15 girls and 15 boys.

Daily brushing of teeth is not a guarantee against tooth decay. The type of food and drinks the students are consuming can affect dental health and tooth decay development. Adolescences are lack adequate knowledge of self-care with oral hygiene and usually make poor nutritional choices.

We conducted our assessment by interviewing the principal, Mr. Tony, about their oral health and nutritional intake conditions. This would show us the level of the student's knowledge about their oral hygiene and food intake. Moreover, based on Mr. Tony's information, the socioeconomic status of these students was revealed as mostly from low-income families. That can increase the risk of developing caries due to a lack of access to high-quality dental care. According to Mr. Tony, the students do not have a program about oral health care and increased tooth pain-related students' dismissals from the classes were noted. The standard school lunches include a sugary drink and highly carbohydrate snacks. As oral health care educators, we are aware that sugary food can become a feeding ground for biofilm development. After a conversation with the principal, we concluded that a significant lack of oral hygiene and sugar intake education is present, which required our intervention. This learning project's main purpose was to educate and improve students' knowledge about self-oral care, the impact of sugar on the teeth with expectations to help them achieve the correct oral hygiene and healthy dietary habits and maintain them in adulthood.

Planning

After an interview with the principal and collecting the needed data, we were able to create a presentation with the most beneficial content for the students. The participants (adolescents) will be educated on how to minimize sugar-induced oral diseases while maintaining a healthy diet and showing the effect of sugary foods on the oral cavity. During the presentation, "tell-show-do," the communication technique will be integrated within the presentation to educate the participants. Different topics will be separated into 3 to 5 minutes segments to control this presentation's time efficiently. The following topics will be presented during the presentation: introduction of moderators, general talk about the oral cavity, appearance of a healthy/ unhealthy mouth, choosing the proper foods/drinks, induced carious lesions and erosion on teeth, how does sugar perform in the mouth, how to prevent sugar-induced caries and Q&A segment. During each 3 to a 5-minute segment of the above topics, PowerPoint slides, pictures, dental-related props, and interactives activities will enhance the learning experience easier and assimilate the provided information. At the end of the presentation, dental souvenirs will be given to the participants to practice OHI at home. Before and after the presentation of this project, the study group will be asked to take a quiz, which would allow us to verify any change in their knowledge from the objectives presented to them. Our goal is to increase their understanding of the oral cavity structure basics, caries formation, and oral hygiene care by at least 20 %.

Implementation

After the students were placed in the class, we gave them a pre-evaluation questionnaire to collect preliminary information about sugar impact on teeth and Oral hygiene instructions. We introduced ourselves to the students and explained our role as dental hygienists to develop a personal relationship. It was crucial to make a positive and comfortable environment with the students as it would alleviate the potential discomfort. We presented PowerPoint slides that visually showed the main oral cavity structures. We questioned an audience about any additional structures they would like to mention or ask for. Their function was briefly explained to the students. Another activity we provided for the students was a brief explanation of how a healthy-looking mouth is supposed to look and entertain the audience by guessing which picture on PowerPoint presents the teeth' healthy versus unhealthy appearance.

Additionally, we used the analogical method of comparison healthy food versus cariogenic food. We helped the students to make healthy food choices. We asked the students do they ever read what is the amount of sugar in their favorite drinks. After achieving the majority's attention, we presented the board of most common sweetened beverages with attached sugar cubes representing the actual amount of sugar per bottle/can. Additional explanation of good drinking choices and possible substitution of them was given to students. This activity aimed to make students aware that healthy food choices need to go along with healthy drink choices.

To increase the awareness among the participants, we wanted to show them some possible consequences of not maintaining low- sugar diet and oral hygiene. We presented the pictures with moderate to severe decay cases, gingivitis, and the teeth' unpleasant appearance affected with erosion. Additionally, we played a video from PowerPoint about sugar metabolism and its

effect on the teeth to help students visualize this process. Afterward, we received expected questions about the proper oral hygiene instruction to prevent decay development. Moderators divided students into three equal groups, presented the correct toothbrushing method on typodonts, and educated students about the toothbrushing's timing and frequency. After OHI presentations, students were informed and encouraged to dental visits every six months to maintain oral health. We decided to give our students dental souvenirs bags that included a toothbrush, toothpaste, and a brochure about healthy food choices. After a brief Q & A segment, students were asked to take a secondary evaluation questionnaire to collect data and compared it to the pre-evaluation obtained at the beginning.

We hope that our presentation will improve awareness and oral hygiene habits in our study group enough to note significantly improve from questionnaires by 20 % on average.

Evaluation

After the target group showed up in a designed place, moderators introduced themselves as warm, welcoming, and confident. This approach and appearance made students' anxiety significantly decreasing and made them feel much more comfortable and willing to participate in the project. The results average score of the pre-evaluation questionnaire was 63.6% (30 participants). General conversation about oral cavity and dental structures significantly improved the student's participation. The majority (27 participants) of all 30 students expressed acknowledge what enamel, dentin and root of the tooth are by raising a hand. They responded with great surprise when moderators explained additional definitions like nerve, gum and cavity. After a brief Q&A section, moderators achieved their aim to get the study group on the same level of knowledge in basic dental anatomy despite different biology educational levels.

Moderators used the PowerPoint surface to present examples and questioned an audience to classify appearance as healthy or unhealthy dentition. Students very easily recognized healthy and unhealthy teeth' appearance. The conversation about food choices made the most significant impact on the study group. After showing the board with sugar amounts in sodas, most of the students were shocked about the sugar cubes number in their favorite drinks. All groups verbally agreed that drinking soft drinks is not as essential as they thought. They decided to improve their beverage choices. Students also presented acknowledge of alternative options for sweetened beverages like water. Participants responded with a shock to the images showing moderate and advanced cavities cases, edema, gingivitis, and edentulous oral cavity due to not maintaining oral health and sugar intake consequences daily. This approach achieved significant motivational success. It made all students fully engaged in the following part of the presentation about toothbrushing technique, toothpaste usage and maintain the proper frequency of tooth brushing

and dental visits. After the OHI section, students were encouraged to ask any questions about the learning project's material. All participants were willing to take a quiz evaluating the improvement of their acknowledgment earned from a presentation. The average of the final testing was 90.9% (28) participants. Acknowledge of the study group about healthy food choices and consequences of sugary intake improved by 27.7 %. These statistics let us achieve a goal of enhancing students' knowledge about the impact of sugars on the teeth by 20 %. Unfortunately, 2 of the participants had to leave earlier; thus, we could not obtain a post-presentation questionnaire from them. After taking a quiz, all participants received a basic cleaning kit. All the participants were happy that they had a chance to renew their old toothbrushes and improve their oral hygiene habits.

Conclusion

As the dental hygiene students, it was a great experience to present and educate adolescent study groups. As we all know, the adolescent age group can be challenging when gathering their attention and cooperating in activities during the projects. Accomplishing our target in over 20 % improvement of the questionnaire's average score assured us that effort, care, and stepping out into the community can significantly improve awareness in the people who lack proper dental care in their schools or region.

As dental hygienists, we have to be aware that our adolescent patients may lack fundamental knowledge about oral hygiene care and healthy food choices. Our profession's essential aim should be assurance that children of adolescent age will be prepared to make the right food and beverage choices and maintain proper oral hygiene habits. That is preparation for the young generation to maintain their oral health and general when their health decisions will be independent.

References

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LESSON PLAN

Session Title	"Impact of Sugary Dietary Habits of Adolescence on Dental Health"		
Objective(s)	Participants (adolescents) will be educated on how to minimize sugar induced oral diseases by: • Education of the basic tooth anatomy • Education about cavity formation mechanism • Impact of the sugar's intake on the oral health • Maintain balance of their sugary diet by showing the impact of sugary foods in oral cavity. • Replacing sugary diet • OHI education		
Activity	**Time**	**Tasks**	**Materials**
Introduction of moderators	4 min.	• Briefly introduce us to the audiences, including the role as dental hygienists	PowerPoint slide
Education about teeth structures and their functions.	5 min	• Show colorful posters or PowerPoint pictures of simple oral cavity structures. • Ask participants and explain to them additional definitions related to teeth and cavities.	Poster/on-screen PowerPoint
The importance of having a healthy mouth.	5 min	• Explain how important to maintain a healthy-looking mouth. • Recognition of healthy clinical appearance of the teeth • Ask the audience of what they consider a "healthy-looking" mouth to them	PowerPoint
Activity about awareness and education about the right foods/drinks	5 min	• Accomplish students' participation by pointing certain foods. • Asking students to categorize them as healthy/ unhealthy choices. • Explanations given right away after answers.	Pointer
Sugar amount in the soft drinks	4 min	• Visual presentation of the sweetened drinks with attached sugar cubes in their content.	Board
Sugar-induced caries	3 min.	• Showing consequences of sugar impact our teeth • Presenting moderate and severe cavities, gingivitis, and dentition with erosion to participants	Color pictures of disease state in oral cavity

How does sugar perform in the mouth?	5 min.	• Mechanism of sugar metabolism in our mouth and its effects on enamel and other structures of the teeth. • Provide an alternative to decrease side effects when sugar intake occurs	Video content
How to prevent sugar-induced caries	5 min.	• Promoting healthy food and drinks choices • Maintain proper OHI and regular visit to general dentists. • Utilize typodont for demonstration in 4 groups. • Cleaning kits and brochures giveaway	Activity in groups
Q & A	5 min.	• Encourage the audiences to ask questions	Verbal group discussion
Evaluation questionnaire	5 min	• Evaluating improvement of the students before and after presentation	Obtain quizzes

SUMMATIVE STATMENT

The above presentation was based on the topic "Impact of Sugary Dietary Habits of Adolescence on Dental Health" it was consisted of introduction of moderators, general talk about the oral cavity, recognition of changes in oral cavity due to sugar impact, choices of the right food/ drinks, presenting clinical appearance of sugar-induced caries, how they form, and how to prevent them. Q & A time for the study group.