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 ***Early Habits for a Brighter Smile
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***Table of Contents***

Introduction by Hassan…………………………………………………………….. page 3

Assessment by Yahya……………………………………………………………… page 5

Planning by Yujing………………………………………………………………… page 7

Implementation by Yi Yi……………………………………………………………page 9

Evaluation by Kennedy…………………………………………………………….. page 11

Conclusion by Hassan……………………………………………………………… page 13

References………………………………………………………………………….. page 15

**Introduction**

Oral diseases pose a major issue for many countries and can cause discomfort throughout one’s lifetime. Even with our current vast knowledge of oral health, the majority of the American population suffers from poor dental health. Bulk of the oral health conditions are dental caries and periodontal disease, which are preventable in their early stages.[1] The National Health and Nutrition Examination Survey found that 92% of adults between the age of 20 and 64 have had dental caries in their permanent teeth.[2] Even with the widespread use of fluoride in our drinking water, the prevalence of oral diseases continues to increase. Among those who suffer the greatest burden and experience the most barriers to care are the socio-economically disadvantaged, including children living in low-income or in poorly educated families.[3] Service learning field project was our opportunity to help address this problem as dental hygiene students by implementing an oral health education program to give back to our community.

A peer reviewed journal by Keith A. Mays and Meghan Maguire titled, “Care Provided by Students in Community Based Dental Education: Helping Meet Oral Health Needs in Underserved Communities'' [4] emphasized the importance of making dental care available to underserved communities. The Pew analysis of Department of Health and Human Services data on Health Professional Shortage Areas found that in 2011, 56.1% of Medicaid-enrolled children in Minnesota did not receive dental care, which was due to the small number of dentists in the region that accepted Medicaid. Therefore, to increase access to care, dental schools began to include community-based dental education or CBDE in their curriculum where they provided care in underserved communities. This study developed a three-year profile (2013-2016) of the patients seen by dental students, student dental hygienists and student dental therapists. In the three-year period analyzed, a total of 43,128 patients received care, of which; majority was pediatric care. The results of this study showed that those students in CBDE were able to provide a substantial amount of oral health care in underserved communities while gaining experience in caring for a diverse population of patients.
 There is a wide variation in the prevalence and severity of dental caries according to the socioeconomic status and the level of oral education available to the parents. Providing oral health care to children can be achieved by educating and informing parents about their children’s oral health. Research studies such as “Children’s Oral Health and Barriers to Seeking Care: Perspectives of Caregivers Seeking Pediatric Hospital Dental Treatment” [3] and “A step to infant oral health promotion intervention among parents” [5] tested a few parent’s knowledge. These researches reported that priority of oral health was inadequately addressed in certain parts of the world and many parents weren’t knowledgeable of cariogenic foods and proper oral hygiene habits. Nova Scotia’s First Nations Regional Health Survey (2008–2010) found that children had a disproportionately high rate of decay: 18.7% of infants and 30.9% of preschoolers had teeth affected by early childhood caries. Oral health education is vital for the parents because it reflects how much emphasis they would put in educating their own children about the importance of oral health at home.

**Assessment**

Childhood is a very pivotal period. It is at that age that we consume most information by mirroring adults. For this reason, we chose to target kids as well as their caretakers because adults can help kids develop healthy habits by improving their oral hygiene care at a young age, which is critical in developing strong healthy dentition as an adult. Teaching kids how to brush their teeth may sound simple but it is very difficult due to the nature of kids simply not wanting to brush their teeth. Bacteria (biofilm) in the mouth thrive under poor hygiene environments, and excessive accumulation of biofilm can cause reversible (gingivitis) and irreversible (periodontitis/cavities) diseases. When sugar is introduced to those bacteria, they convert it to acid which in return damages the enamel (decay). Thanks to our perfectly built anatomies our saliva acts as a buffer and is able to reduce the acidity of the acid produced by the bacteria, for this reason dietary, nutrition and frequent sugar consumption plays a major role in the overall health of a kid's dentition. Cavities are the most common chronic disease in children in the U.S with 1 out of 5 children ages 6-11years have at least 1 untreated decay tooth.[6] With the vast knowledge we have about cavities on how to treat and prevent them this issue shouldn’t exist, however, because of the lack of education reaching those who are low in socio economics this problem is still present. Children between 5 to 19 years of age who are from low income households are twice as likely to get cavities compared to those who are in a high-income household.[6] In 2007 a tragic story of Deamonte Driver, 12 year old African American boy whose death came to be because of an untreated tooth abscess causing a brain infection.[7] This highlighted the problem of inadequate dental care and dental education in certain geographic locations. While it is important as a dentist and dental hygienist to educate the kids on how to brush and reduce sugar consumption, parents play a bigger role in maintaining their kids’ oral hygiene by guiding them to brush and helping them astray from candy consumption. This indicates that not only children, but parents and caregivers have to be educated on how to improve their children’s oral health. ECC (early child caries) extends beyond your simple bad breath and can affect the quality of life for the child, with symptoms and conditions such as pain, discomfort, abscesses, chewing difficulties, malnutrition, reduced growth and development, poor speech and premature tooth loss with consequences follow ups such as aesthetic dissatisfaction, low self-esteem and restriction of communication[5]. Oral health programs neglect educating parents and caregivers and are usually directed towards preschool and school children.[5] This illustrates the importance of a child’s oral health and how ECC can drastically affect them negatively. With that being said, we as health care providers are obligated to educate children, parents and caregivers to ensure maximum effective oral hygiene is being practiced. Fluoride toothpaste with the amount of grain size is advised for all children starting at tooth eruption (6 month year old) up to age 3, after that pea-size amount may be used with parents supervision and assistance on brushing.[8] This Furthers the point on how very critical and important it is for the parent’s part because toxicity may occur if a child consumes a certain amount of toothpaste leading to serious consequences (fluorosis).

**Planning**

As discussed above, our target for this presentation were children along with parents and caregivers to ensure effective oral hygiene was being practiced. After receiving the email from Ascension school stating we would be working with 30 kids from kindergarten to 2nd grade, our team agreed to focus our presentation on topics pertaining to the general oral health for children such as plaque, cavity, toothpaste use, dietary counseling, and brushing techniques in a very simple, kids friendly language. Being that we were dealing with young kids with ages ranging from 5-8, keeping their attention at bay will be very difficult. We planned to break up into smaller groups to be able to catch the kid’s attention and engage with them individually. This also helped us focus on each child, allowing us to engage a little more with those who need more attention without the distraction of their classmates. We also had activity pertaining to the dietary counseling where the kids would circle which foods were good for oral health and which food they should avoid eating frequently. Because kids learn better with visuals, at the end of the presentation and group activity, we showed them a short cartoon video that demonstrated the importance of brushing correctly and why we need to brush. To motivate and encourage the children to take care of their mouth and practice oral hygiene, we give out small goody bags containing pencils, erasers and smiley teeth stickers.  Along with an educational pamphlet for the kid’s parents that contained some information on the general oral health. We hoped the pamphlet would increase the parents’ consciousness to prioritize their child’s oral health. Our ideal goal was to deliver a higher awareness of oral health and motivate kids to brush their teeth twice a day since most of them, as we learned, did not brush their teeth regularly and ate a lot of sugary snacks every day.

Based on my group member’s younger siblings, they noted that the kids were very smart and knew a lot about cavities and which foods to avoid. Our main obstacle was to find a way to involve them in caring about their oral health and engaging them to brush their teeth daily. Generally, kids like to play while they learn. Taking this into consideration, we came up with the idea that we could develop a simple educational phone application that would allow kids to check in every time they brush their teeth. Apart from brushing, the application could teach kids about general knowledge regarding oral health, such as what is plaque, what is a cavity, why do we have tooth pain, how much toothpaste to use, if it is ok to swallow toothpaste, etc. During the two minutes of tooth brushing the application can play nursery rhymes, which could vary from Monday to Sunday. We could form an award system if a kid continues brushing his/her teeth every day to encourage them to stay consistent. Overall, the main goal of this application was to make brushing a daily habit for kids; meanwhile, providing them knowledge about oral health.

As a school clinic base we could also develop a sealant program to provide kids with free sealants. The sealant program would benefit the students by allowing them to gain experience with child patients before heading out to the real world. More importantly, this can help kids get over their fear of dental home and be more knowledgeable of their own dental health. The sealant program would also help parents by increasing their awareness of oral health and encourage them to guide their kids during the journey of brushing.

 **Implementation**

          We presented to 30 kids from kindergarten to 2nd grade in Ascension School, located on the upper west side in New York City. From the 30 kids, ten were from kindergarten, twelve from 1st grade and eight from 2nd grade. Before our presentation, we needed to prepare several things including information we were going to teach, pamphlets on oral education for the parents, activity to engage the kids, videos and small goodie bags.

         Once we thought about the topics for our presentation, we separated it into five parts since we had 5 people in our group. These five parts were plaque, cavities, primary and permanent teeth, dietary counseling and circular brushing method. Since we were presenting to young kids, we had to tailor our presentation by finding child friendly words such as “bugs” instead of “plaque”, to help them comprehend; otherwise they wouldn’t be able to understand if our words were too difficult. Once we combined all the information together for our presentation, we formed a pamphlet for the kids to take home for their parents to read. Parents were not present in school when we gave our presentation, but we believed that informing the parents played an important role in a kid's overall oral health; because parents typically supervise and reinforce good habits at home. For an activity we placed several pictures of foods and drinks in a piece of paper to ask the kids to circle good foods and cross out bad foods that might harm their tooth. All kids loved to play games and our activity could help them enjoy our presentation. We also found a short-animated video on YouTube to wrap up our presentation. The video included all the information we planned to teach, and it was easy for kids to understand. Lastly, we prepared goodie bags for kids that included toothbrushes, toothpaste, teeth erasers, teeth pencils and some cartoon teeth stickers to motivate them to take care of their teeth at home.

         On the presentation day, we divided all the kids into five small groups and each group has six kids. Each of our team members were responsible for presenting all the information we had prepared. The information from our presentation included why they should brush twice a daily to get rid of the bugs (plaque), how gum pain/bleeding isn’t normal, how not brushing regularly causes bad breath, how plaque can cause cavities, how much toothpaste they should use, not to swallow toothpaste and to avoid sugary snacks because they help feed the bugs. We also brought our typodont with toothbrush to demonstrate how to brush their teeth in circular method and had them to show us after. We found out that kids nowadays were a lot smarter and they knew more than we thought. Some of them already knew what a cavity was. They were also interested in our typodonts and were eager to show us how to brush using circular method. Followed by the brushing demonstration, we played our prepared game with them to find out how many of them knew about cariogenic foods. Most of them were able to cross soda and sugary snacks out correctly and had a lot of fun during the activity. We also showed them goodie bags and asked them to show the pamphlets to their parents when they got home. After all the groups finished the presentation, we gathered kids together and showed them the animated video. Basically, the video showed what we had taught with bright visuals and gave the kids more ideas about healthy oral hygiene. The last part of the presentation was Q&A. We answered their questions accordingly.

         In this program, our goals and objectives were met successfully. We used a small game and video to accomplish the goals and objectives. We also prepared pamphlets to inform their parents to help reinforce good oral hygiene habits at home. All the kids enjoyed the presentation and they were able to brush their teeth correctly after the program.

**Evaluation**

Evaluation is a way that can help us assess public health actions by using procedures or tools that are useful.  One of the tools we used was an activity that asked the children to pick out which foods would cause harm to their teeth and which would cause the least amount of harm. We used media also as a tool to reiterate what we had taught the children ourselves. Disclosing tabs were also used as a tool so that the children could see what it would look like if plaque was visible to them and they had not brushed their teeth or had not brushed them properly. The disclosing tabs basically help us measure the effectiveness of their home care. These activities are linked to hopefully having an effective relationship with the child’s oral cavity with the use of proper tooth brushing methods and the right diet. By being able to identify which foods help cause cavities more than others, the children will know which foods to stay away from along with their parent’s guidance. Also, along with their parent’s guidance proper tooth brushing can be effective.

Evaluation planning ask what the desired outcomes are and how they will be measured.  Our desired outcomes of this meeting with the children was to improve upon what they have already been doing before we came and spoke with them and to help parents guide them along the way. Had we had a significant number of students we could have gathered a mean plaque score among the students. Mean is commonly known as the average. It’s calculated by taking the value and adding each individual item in a group and then dividing it by the total number of items in the group. We also could have evaluated the kids to maintain a healthy diet if we actually had a whole school year, time, and enough kids. An activity could have been used to evaluate which age was able to identify correctly or maybe even if there was a difference in gender that could better identify which foods were good or bad for the teeth. The disclosing tabs could have helped us determine if a certain age or maybe even gender was able to remove plaque better than the other. Since part of our study was to somehow include the parents in learning, it would have been great to see if we could evaluate over a course of time brushing done with and without assistance. Mean could have been used to find an average and continue evaluating from there.

Our main accomplishment goals were met. We really wanted to communicate with the children and have them engaged in learning about oral health and oral hygiene care. Not only did the kids engage, they were also knowledgeable about unhealthy foods and the potential harm it can cause in their dentition. The video was deemed to be entertaining enough that the kids sat quietly through it and it held their attention for the entire video. The detection of good food vs. bad food was also a success in the fact that the kids enjoyed it and even expressed that we could have made it more challenging for them by adding more choices to choose from.  We did not get to use the disclosing tabs on the kids only because of a safety concern and possible objections from the parents without their permission. Instead we used them on ourselves so that the children could get an idea of what is left on their teeth without proper brushing or no brushing. We did address the issue with the teachers and decided it was best to let the teachers give them out after getting permission from parents or they could send the disclosing tablets to their parents to try them out with their children. Another option was that the teachers could use them on their own teeth as another way to reinforce our point about proper removal of plaque. Since parents can help encourage or even transfer their own oral healthcare to their children we hope that the pamphlets make it home to the parents and that the parents actually read and engage with their children about oral health. There was no way for us to know how the parents will respond to the literature so we can only hope that it is read and some thought given.

**Conclusion**

Children living in socio-economically disadvantaged or in poorly educated families suffer the greatest burden and experience the most barriers to oral care. Service learning field project was our opportunity to help address this problem as dental hygiene students, by implementing an oral health education program to give back to our community. For our project we focused on not only children but also to inform their parents, so parents can practice good oral hygiene at home with their children, as well as themselves.

We started off our project by identifying the status of children’s oral health. Once we learned that early childhood caries is a prevalent chronic disease in the United States, we had to tailor our educating program to help them understand why oral health is important. Our presentation focused on general oral health topics such as plaque, cavity, toothpaste use, dietary counseling, and brushing technique. After we learned that we would be working with 30 kids from kindergarten, 1st and 2nd grade, we decided it would be more ideal to break up the children into small groups and spend only a few sentences explaining our chosen topics in child friendly language. Dividing up the children into small groups also allowed us to be more interactive with the children as they raised their hands to ask questions as well as to eagerly show us their cavities. Since we were planning to work with children between the age of 5-8 years, we knew that they might not understand the full impact of poor oral health. Thus, we created a detailed pamphlet in layman’s term, giving them an overall idea of how to take care of their child’s teeth, as well as what to look out for their own dental health. To engage the children in learning, we also created group activities to demonstrate how to brush on a typodont, teach them about cariogenic diet as well find an appropriate animated video that discussed our topics of the presentation. Most of the kids were eager to show us how they brushed their teeth and stayed engaged during the whole duration of our activities. As we concluded our presentation, we received a positive response from the school faculty for the quality of our performance.

It’s difficult to evaluate the effectiveness of our presentation without a longitudinal study, but we think it’s safe to say that our oral health program served its purpose. Our main goal was to help reduce the prevalence of caries in children by educating them about key factors of oral health. We successfully educated 30 kids from kindergarten to 2nd grade by working with them individually and provided an informational pamphlet on oral health for their parents to read. We also left plaque tablets with the faculty so they can evaluate how well the kids were brushing their teeth. Working with children was very rewarding, and as aspiring social workers we are eager to have another opportunity to give back to our community again.

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