Weaning before Teething

DEN 2413 Public Health Project

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Introduction

Early Childhood Caries (ECC) is one of the major health problems affecting infants and preschool children worldwide. ECC is explained as "the presence of one or more decayed, missing, or filled primary teeth in children aged 71 months (5 years) or younger." (Anil & Anand, 2017). It starts with white spots on the maxillary primary incisors along the cervical third of the crown. It was first related to the improper use of nursing bottles and different terms were used interchangeably to describe it: Nursing Caries, Baby Bottle Tooth Decay, Early Childhood Tooth Decay, Bottle Caries, etc. Nowadays, it is proven that ECC is a multifactorial disease affecting infants that is not only associated with the nursing bottle. The three main risk factors are the microbiological risk factor, dietary factors, and environmental factors.

The microbiological risk factor is associated with the vertical and horizontal transmission of *Streptococcus mutans* (SM) and *Streptococcus sobrinus.* Vertical transmission is from mother to the child, where poor parental oral hygiene and high intakes of sugar can increase the risk of bacterial transmission to the child. Horizontal transmission is from siblings or caregivers to the child by the result of sharing nursing bottles, amongst other factors. Dietary habits also play an essential role in ECC. Children who have high intake of sugary drinks or food have greater risk of developing it. Fermentable carbohydrates are metabolized by both *S. Mutans* and lactobacilli into acids, which starts the demineralization process of enamel and dentin. Finally, environmental factors play a key role in the development of ECC. The socio-economic status of the caregiver, water fluoridation in the community, dental insurance coverage, race and other factors affect the progression or prevention of the disease.

"In primary teeth, dental caries is a preventable and reversible disease if treated in early stages, but when left untreated it will lead to pain, bacteremia, alteration in growth and development, premature tooth loss, speech disorder, increase in treatment costs, loss of confidence,

and negatively affect successor permanent teeth." (Alazmah, 2017). Management of ECC is often expensive, requires extensive restorative care and sometimes extraction of teeth at an early age. The goal as dental hygienists is to educate the parents of infants in how to decrease the risk factors for ECC that their children are being exposed to. This can be achieved by maintaining good oral hygiene, diet counseling, educating parents regarding decay, promoting good feeding behaviors, and use of preventive agents like topical fluoride.

This project is going to focus on educating parents on proper feeding behaviors and different techniques that can be used to accomplish this objective. The next pages will show how we are going to assess ECC, what are the goals and how we will reach them, how we are going to implement our plan to reach this goal and how we are going to evaluate the results at the end of the project.

Assessment

For the Service Learning Project, we decided to target mothers of infants (1-year-olds) who may not be able to receive proper education about early childhood caries. For this, we chose the Marble Hill Nursery School located in the Bronx, New York where we would be able to come in and educate the parents on how to avoid early childhood caries in their children. We must educate the parents and make sure that they understand because parents' roles are pivotal for the success of their children's oral health.

Education is essential because caries in the primary dentition increase the risk of caries in the secondary dentition. By 18 months we may be able to see lingual cavitation. (Oddo, 2021). Early childhood caries may cause the child to have extreme pain, difficulty chewing, cause a malocclusion, and may even affect the growth of the child.

We started with surveys that ask questions that focus on developmental history, medical history, dental history as well as nutritional history. Out of 40 parents, 10% of the parents responded that they took their children to the dentist ever since they were born; 5% responded that they clean their infant's mouth; 50% responded that they are breastfeeding; the other 50% responded that they are bottle feeding their children.

In the area of the nursery school that we chose, the poverty level is 24.4%. There are 56.4% Hispanics and 43.6% Blacks. The median household income was $41,895, which is lower than the overall median household income in the US ($67,521). Only 11.5% of the population has access to health insurance (Census, 2021). Due to these factors, parents would not be able to go to the doctor or even the dentist to receive information in regards to their children's health. With these barriers in mind, it is important to implement free resources and education and follow up so that they can effectively prevent ECC.

Planning

The goal of this program is to educate new parents on when their child should be weaned off of bottle feeding, and to provide them with effective techniques to execute this goal at home. It is important that parents be equipped with this knowledge, as bottle weaning is vital to ensuring their child maintains good oral health at this early stage of development. Early childhood caries (ECC) is a common, yet easily avoidable disease affecting children of this age, and bottle weaning is one of the most important factors in prevention.

The success of this program will be measured by the number of parents within the sample of participants from the nursery school who are able to completely wean their child off of bottle feeding. Different techniques for bottle weaning will be presented to the parents during an initial parent conference session at the start of the program, followed by a check-in session one month

later to measure the participants' progress. The target number for this program is 30 out of the total 40 participants who have successfully weaned their child off of bottle feeding at the time of the check-in session.

The activity for this program will be educating parents about three different bottle weaning techniques and advising them to try each one to see what works best for their child. During the initial parent conference session, parents will be provided with clear, easy to understand instructions for each technique, along with a take-home pamphlet containing visual aids to help the parents try out these methods at home on their own with their child. **Implementation**

There are multiple proven methods to achieve successful results for bottle weaning, with the most popular being ounce reduction, serial dilution, and cold turkey. This would be achieved with the use of visual aids and instructional guides as well as ongoing support.

The method of ounce reduction entails the gradual replacement of bottles with sippy cups as well as the reduction in the amount of fluid in the bottle. Positive encouragement such as praising, smiling, and cheering on is integral to achieving successful results. (Minnesota Department of Health). The sippy cup can contain water, breast milk, or formula. The objective is that once you reduce the number of bottles given daily and also reduce the amount of fluid in the bottle, the child is more likely to reject the bottle. When finally eliminating the bottles off of the daily routine, it is very important to not have the bottles in sight and to instruct family, friends, and caretakers of the switch to sippy cups. The following table is an eight-day schedule that would be distributed to parents of children age 1. (Oddo).

Table 1 - Ounce Reduction

Day 1-3	Morning - Cup	Afternoon - Bottle	Evening - Bottle
Day 4-6	Morning - Cup	Afternoon - Cup	Evening - Bottle

Day 7-8	Morning - Cup	Afternoon - Cup	Evening - Cup

Another method proven successful is serial dilution, by which the formula or breast milk in the bottle is gradually diluted with water over a period of two weeks until it contains only water. At the end of the two week period, it is highly probable that the child will lose interest in the bottle. ("Stopping").

Lastly, maybe the least pleasant method but still showing great levels of success is the cold turkey method. This method is more fitting for children that can listen to reasoning. To implement this method, the dental hygienist would instruct the parents to enthusiastically explain to their child that they have grown-up, and they can now use grown-up cups! Give them the idea of going one step further and possibly throwing the child a party to celebrate this momentous event. ("How to Wean").

Evaluation

Evaluation of the effectiveness of the Service-Learning project is essential to measure the success rate of the project and make necessary improvements. The project was initiated by a preliminary project survey. The results indicated that about 90% of the 1-year-old parents did not have access to dental education or a dentist in the area.

Our project aimed to educate parents on weaning 1-year-old children off bottles to prevent early childhood caries. A presentation by a dental hygienist was given to 40 parents along with a pamphlet describing three weaning method techniques.

The parents were instructed to pick one of the methods that would best suit their children according to their behavioral patterns and needs. At the end of one month, we asked the parents in a post-project survey if the children were able to wean off the bottle and what method was used by the caregiver.

Twenty-five parents picked the serial dilution technique since their children will gradually detach from the bottle. Twenty parents were able to wean their children off the bottle using this technique. Ten parents decided to use the ounce reduction technique since they thought it was a gentler method. Eight parents were able to wean their children off the bottle. Five parents picked the cold turkey technique. Most parents did not pick this technique because they believed it would have been harder for their children since there was no progression towards weaning them off. Two children were weaned off the bottle using this technique.

The success rate for the ounce reduction, as well as the serial dilution technique, was 80%. The cold turkey technique had a success rate of 40%. The overall success of the project was 75%.

The project accomplished the goal that we had since 30 parents were able to wean their children off their bottles. Therefore, potentially preventing early childhood caries due to baby bottle syndrome. In the future, we would need more parents to volunteer at employing the cold turkey technique to obtain more accurate results on this method since the sample population was very small.

Conclusion

The primary objective of this service learning project was to educate parents of the bottle weaning techniques in order to reduce the incidence of early childhood caries (ECC) in infants. It is crucial for parents to be aware of the importance of maintaining good oral health habits as well as the risk factors of ECC. Bottle weaning is just one of many ways to prevent ECC. As previously

mentioned, the management and treatment of ECC is expensive. Following proper preventive measures would not only be less of a financial burden in the long run, but it would be less physically and mentally taxing on both the parent and the child. Hopefully, with continued patient education and awareness, the national number of ECC will steadily decline.

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