



ABSTRACT

The purpose of this study is to determine what method of delivery of oral hygiene information is most effective in the pre-adolescent age group and causes the highest retention and subsequent behavior modification.

The study is designed to determine which method is most effective in pre-adolescent children. A pretest was administered to 21 patients, ages 8 to 12 years, at a hygiene appointment in the dental clinic. This pretest included 10 questions that gauged the patient's current behavior and background knowledge of oral hygiene, such as brushing habits and various other topics related to oral health. At the next hygiene appointment 6 months later, the patient was given a post-test. The test is the same that was administered 6 months prior. The post-test was administered in the same manner that the pre-test was administered.

The results determined if the patient learned or improved their knowledge of oral hygiene after receiving their respective education method. The post test scores for oral hygiene education and behavior showed improvement for all 3 intervention methods; however, there is no statistical significance among one specific intervention method. Verbal, visual, and interactive intervention methods are all effective methods of education, with no method being significantly better than the other. Therefore, teaching oral hygiene information in each of these manners would be effective in clinical practice.

INTRODUCTION

Dental caries is the most prevalent chronic childhood disease². The CDC reports that approximately 23% of children ages 3-5 years have dental caries in primary teeth. The COVID-19 pandemic has worsened the rate of untreated caries due to restrictions and closures that have affected access to dental services⁴.

Oral hygiene information is imperative in maintaining the health of the oral cavity and preventing tooth decay. Oral hygiene information is reviewed often throughout dental appointments, but it may not be retained due to the way the information is delivered. If further evidence was gathered regarding the most effective method of educating patients, it would provide correct guidelines to potentially improve oral health among pre-adolescent children and reduce the incidence of childhood caries.

The objective of this study is to determine what method of delivery of oral hygiene information is most effective in the pre-adolescent age group and causes the highest retention and subsequent behavior modifications. We hypothesize that children who receive oral hygiene information through an interactive method, such as a demonstration paired with discussion, will exhibit longer retention of positive oral habits. The interactive method stimulates multiple senses and will lead to children practicing oral hygiene beyond their dental appointments.

METHODS

Twenty-one pre-adolescent patients, ages 8 to 12 years, were selected as participants in the study.

There were 8 participants in the visual category, 7 participants in the interactive category, and 6 participants in the verbal category. The pre-test consisted of 9 multiple choice questions and 1 true and false question. After the patients completed the pre-test, they continued with their hygiene appointments and underwent their assigned intervention method.

The methods of intervention to convey this oral hygiene information included a verbal method, a visual method, and an interactive method. The verbal method consisted of the dentist verbally explaining the proper way to care for the oral cavity. The visual method consisted of a brochure filled with explanations and graphics to explain how to care for the oral cavity. Patients who underwent the visual method were provided with a brochure to take home with them. Lastly, the interactive method allowed for the dentist and patient to discuss ways to care for the oral cavity with one another. This method included the demonstration of proper brushing techniques on the patients themselves using a toothbrush and mirror.

Six months after the hygiene appointment, at the next hygiene appointment, the patient was given a post-survey. This assessed if the patient learned or improved their knowledge of oral hygiene information after their respective education method. Furthermore, the post-test assessed if the patient has begun implementing what they learned and if they have begun to make behavior modifications accordingly.

Figure 1: Pre-test and post-test administered to participants during hygiene appointments.

Subject ID: _____

Pre-Test & Post-Test

1. How many times per day do you brush your teeth?
A. 0x daily
B. 1x daily
C. 2x daily
D. 3x daily

2. How long do you brush your teeth?
A. 5 minutes
B. 1 minute
C. 30 seconds
D. 2 minutes

3. How much toothpaste do you place on your toothbrush when you brush your teeth?
A. Size of a pea
B. Size of a grain of rice
C. Size of an almond
D. Size of a tootsie roll

4. How many times per day do you floss?
A. 0x daily
B. 1x daily
C. 2x daily
D. 3x daily

5. How many times per day should children brush their teeth?
A. 0x daily
B. 1x daily
C. 2x daily
D. 3x daily

6. How many times per day should children floss their teeth?
A. 0x daily
B. 1x daily
C. 2x daily
D. 3x daily

7. How much toothpaste should be placed on the toothbrush?
A. Size of a pea
B. Size of a grain of rice
C. Size of an almond
D. Size of a tootsie roll

8. What type of bristle toothbrush should you use?
A. Soft bristle
B. Medium bristle
C. Hard bristle

9. True or False- Fluoride protects your teeth from cavities.

10. What is the sticky film that is filled with bacteria and coats the teeth?
A. Sugar Bugs
B. Leftover food particles
C. Plaque
D. Cavities

Figure 2: Oral hygiene brochure that was provided to participants for visual intervention method.



Table 1: Participants

| Age (years) | Verbal (n) | Visual (n) | Interactive (n) |
|------------------|------------|------------|-----------------|
| Category 1: 8-12 | 6 | 8 | 7 |

Table 2: Descriptive Table by Intervention Group
Mean (SD) of different survey responses are reported, as are P-values for testing equality of those survey responses by group.

| | Visual (8) | Interactive (7) | Verbal (6) | PVALS |
|-------------------------------|------------------|-----------------|---------------|-------|
| Pre Test Score for Bx | 31.25 (25.88) | 42.86 (31.34) | 25 (22.36) | 0.517 |
| Post Test Score for Bx | 60.71 (31.81, 1) | 57.14 (34.5) | 33.33 (20.41) | 0.205 |
| Pre Test Score for Education | 60.5 (12.39) | 59.71 (25.15) | 41.67 (32.61) | 0.463 |
| Post Test Score for Education | 62 (15.95, 1) | 73.71 (30.05) | 53 (22.27) | 0.165 |
| Total Pre Test Score | 48.75 (12.46) | 52.86 (19.76) | 36.67 (25.82) | 0.307 |
| Total Post Test Score | 61.43 (20.35, 1) | 67.14 (26.9) | 45 (17.61) | 0.171 |
| Change for Bx | 32.14 (44.99, 1) | 14.29 (40.46) | 8.33 (20.41) | 0.604 |
| Change for Education | 0 (13.88, 1) | 14 (20.17) | 11.33 (45.28) | 0.389 |
| Change for Total | 12.86 (22.89, 1) | 14.29 (25.73) | 8.33 (36.56) | 0.968 |
| Change PCT for Bx | Inf (NaN, 1) | Inf (NaN) | Inf (NaN) | 0.59 |
| Change PCT for Education | 0.01 (0.26, 1) | 0.24 (0.31) | 1.14 (1.55) | 0.238 |
| Change PCT for Total | 0.35 (0.65, 1) | 0.34 (0.6) | 1 (1.65) | 0.707 |

RESULTS

Overall, 20 of the 21 participants in the pre-adolescent age group returned for their hygiene appointment and completed the post-test. Table 2 shows the total scores for each intervention method. The category with the least amount of improvement in behavior was the verbal method, and the category with the least amount of improvement in education was the visual method. Participants who underwent the visual intervention method showed the greatest increase in score for behavior. Participants who underwent the interactive intervention method showed the greatest increase in score for education knowledge of oral hygiene. Although these intervention methods showed the greatest increase, the increase was not statistically significant.

DISCUSSION

The study consisted of a heterogeneous population, of 12 boys and 9 girls. Limitations of the study include participants not returning for their 6 month hygiene appointment. The participants had a 25% chance of answering the multiple-choice questions correctly and a 50% chance of answering the true or false question correctly. Furthermore, the participants may not accurately answer the questions regarding their behavior. There is the possibility that some words may be beyond the participant's vocabulary level. Additional limitations include the unequal distribution of participants in the intervention methods, with the most participants enrolled in the visual category. The sample size was affected by scheduling limitations, such as COVID and Hurricane Ida, which reduced the amount of clinic time that patients were being seen during the recruitment period.

The results helped to understand if the targeted age group is most susceptible and impressionable to a specific education method.

CONCLUSION

1. Determining the most effective intervention method allows dental professionals to implement oral hygiene information in a way that is understood and accepted by adolescents.
2. Positive oral hygiene habits will not only potentially lower the caries rate among children, but also among adults. Habits developed at a younger age will remain throughout life and lead to healthier lifestyles.
3. Participants who underwent the visual intervention method showed the greatest increase in score for behavior.
4. Participants who underwent the interactive intervention method showed the greatest increase in score for knowledge of oral hygiene.
5. Participants who underwent the verbal intervention method did not show the greatest increase in score for behavior or knowledge, despite it being one of the most common practices in dental offices and institutions.
6. Verbal, visual, and interactive intervention methods are all effective methods of education, with no method being significantly more effective than the other. Therefore, teaching oral hygiene information in each of these manners would be effective in clinical practice.