

Development and Evaluation of a Novel Audio-Visual Tool “Happy Tooth Song” For Oral Health Promotion in Children

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Abstract

Aim: The aim of this study was to assess improvement in motivation for tooth-brushing, the timing of tooth-brushing and the understanding of oral hygiene, healthy food habits and regular dental visits in children using Happy Tooth Song as an oral health promotion tool.

Methods: 3-6 year-old children from an urban pre-school of Navi Mumbai were selected. Group A was given Happy Tooth Song and Group B acted as a control. On day one, instructions were given to both groups regarding tooth-brushing, importance of oral hygiene, healthy food habits and regular dental visits. Parents played the song on the cell phones while brushing their child's teeth. Two groups of children were assessed after 15 days.

Results: 89% children showed liking towards the song, 88% could memorize it; 83% children were motivated to brush twice a day. In group A, 27.70% of children always brushed twice daily compared to nil in group B. 22.22% children brushed for >120 seconds in group A as compared to 12.5% in group B. A higher percent of children correctly answered the questions pertaining to the frequency of dental visits and the importance of clean teeth. All children in group B categorized the junk and healthy food correctly compared to 88.88% children in group A.

Conclusion: The happy tooth song had a positive impact on motivation for, the frequency and time of tooth brushing and understanding the importance of healthy food habits and dental visits in children.

Keywords: Oral Health Promotion; Tooth Brushing; Motivation; Technology; Dental Health Education

Introduction

Despite hundreds of studies involving thousands of individuals, we know remarkably little about how best to promote oral health [1]. The Ottawa Charter defined 'health promotion' as the "process of enabling people to increase control over and to improve their health" [2]. Health promotion is distinguished from the health education; the latter "comprises consciously constructed opportunities for learning involving some part of communication designed to improve health literacy, including improving knowledge, and developing skills which are conducive to individual and community health" [2]. Health education' has been defined as 'any learning activity which aims to improve individuals' knowledge, attitudes and skills relevant to their oral health'. 'Oral health promotion' by contrast has been described as 'any process which enables individuals or communities to

increase control over the determinants of their oral health [1].

Tooth brushing in children is essential for plaque control and delivery of fluoride, which in turn is significant in prevention of dental caries and periodontal diseases [3]. There is a need of a good introduction to, and constant reinforcement and motivation for tooth brushing by the parents. Motivating children for performing tooth brushing effectively is important in plaque control [3]. Traditional educational approaches to change behavior seem to be inadequate in children. And therefore there is a need to for a health promotional approach which uses appropriate tools and settings. Several oral health promotion tools have been mentioned for motivating, improving tooth brushing and thereby oral health in the literature such as audio-visual aids, dental casts, child model, class presentations and newer ones being smiling robots [3,4]. Children have an active imagination. Rhymes are a source

of entertainment and motivation for children. They like to listen to music, sing songs particularly when made to their taste. The search thus continues for a simple, practical, cost effective tool specifically designed and accepted by children, motivating them for tooth brushing, improving timing of brushing and imparting knowledge related to healthy dental behavior.

The aim of this study was to assess improvement in motivation for tooth-brushing, the timing of tooth-brushing and the understanding of oral hygiene, healthy food habits and regular dental visits in children. The study had following objectives

To assess the level of acceptance of the tool among children

To assess the impact on motivation of the tool in children for brushing

To assess the improvement in frequency and time of brushing and

To assess the improvement in the knowledge related to healthy dental behaviors.

Materials and Methods

The study was carried out in an urban pre-school of Navi Mumbai. The preschool selected had upper middle class society children whose parents had easy access to modern technology and where the school communicated with the parents through internet and technology. The study was approved by the ethical committee of the institute. Permission from the school was taken before carrying out the study. Information sheet about the study and consent forms were given to the parents through the school authorities prior to the starting of the study. The sample consisted of 40 children, aged 3-6 years, divided in two equal groups of 20 each. Children of this age group were selected as the parents have a better control and command over the brushing methods of these children.

Group A was provided with Happy Tooth Song and Group B acted as a control (without Happy Tooth Song). On day 1, a presentation was given to the parents and children explaining the benefits of brushing and healthy dietary habits. After the demonstration Fone's method of brushing was taught to the parents and children. The parents were instructed to brush the teeth for their children in both the groups. Group A children were shown a video along with tooth song and the tooth song was given to the parents to play on the cell phones while brushing their child's teeth. Brushing was recommended to be performed as long as the song played. The duration of this song was 2.15 minutes that included the brushing time of 2 minutes and 15 seconds for the preparation. The parents were asked to sing along with the song after the brushing cycle was completed. On day one, the group A was instructed about tooth-brushing, importance of oral hygiene, healthy food habits and regular dental visits and was provided

with the tooth song to be used over next 15 days (Figure 1).

The Group B (control) was given the same instruction as Group A regarding tooth-brushing, importance of oral hygiene, healthy food habits and regular dental visits. Two groups of children were assessed for a period of 15 days (Figure 2).

The Development of Tool

A simple, novel, easy to understand and innovative tool i.e. the Happy Tooth Song used for motivation of children was written by one of the authors of the paper and composed and sung by two authors of this paper. The lyrics of song consisted of inculcation of good oral hygiene habits, information about healthy food products and food products that were harmful for teeth, inculcation of good habits about visiting a dentist for checkup at least twice in a year. A catchy rhythm was given to make the song appealing to children. Children were asked to join in the chorus while recording to improve the acceptance of the song. Emphasis was given on clear pronunciation of words during recording for the better understanding of words for the children. The tool was validated through a process of interaction involving a group of children, parents and teachers (not belonging to the study groups). Once the tool was validated, the Happy Tooth Song was arranged and recorded professionally in a studio using state of art equipment.

At the end of 15 days the parents were asked to submit filled questionnaires. The questionnaire developed for the purpose of the study consisted of eight open and close ended multiple choice questions pre-validated by experts. The first three questions consisted questions pertaining to the tooth song and thus were not included in the questionnaire provided to group B. Questions 4-7 were based on the feedback of the parents and were to be filled by them. Question 8 involved completion of a task i.e. categorization of food item as healthy and junk by children which was then scored by the parents. The questionnaire was collected by the class teacher on the subsequent day. The response rate of the study was 85 %.

Results

Table 1 describes the study population. Of the 34 children who remained available for the analysis, 18 children were in group A and 16 were in group B. 23 boys and 17 girls took part in the study.

Table 2 describes the analysis of the results of the study based on the questionnaires given to both group. It can be seen that in group A, approximately 89% children showed liking towards the song, 88% could memorize and reproduce the song. Approximately 83% children were motivated to brush twice a day while listening to the tooth song. 27.70% of children always brushed twice daily in group A as compared to nil in group B. 22.22% children brushed for more than 120 sec in group A as compared to 12.5% in group B. 66.67% children answered the dental visit should be twice a

year as compared to 56.25% children in group B. The importance of tooth cleaning for both no pain and healthy teeth was answered by 66.67% children in group A as compared to 62.50% in group B. All the children present in group B categorized the junk food and healthy food correctly as 88.88% children in group A who categorized 8-10 items correctly.

Discussion

The use of technology has dramatized health interventions and promotion. Technology has many applications in dentistry. A study stated the use of YouTube videos for modeling dental procedures for reducing anxiety in children towards dentistry [5]. The urban schools make use of technology (for e.g. videos) to improve health behaviors in children at school and home. Improvement in health literacy and empowering the parents to have better control on behavior of children has been possible through use of technology [7,8]. The oral health tool in the study was designed by the authors specifically for children in order to improve the knowledge and awareness of both children and parents related to the oral health behavior. The study included development, evaluation and testing of the tool in a suburban setting where the parents were well accustomed to the use of modern technology that was required to use this tool. The overall impression based on the findings of the current study was that there was a fair level of acceptance towards the audiovisual tool. The parents reported that their children showed liking towards the song and memorized it easily. Furthermore, the song provided sufficient motivation to a majority of children for tooth brushing, as reported by the parents.

Twice a day brushing has been shown to be a standard for oral health [9]. Oral Health promotion tool used in the study helped this cause in terms of children adhering to the standards of brushing twice daily, and also improved their average time of brushing. This is in agreement with a study from Ireland in which use of television improved the brushing time to more than three minutes by keeping them engaged in the oral health motivation play [6]. "Education does not mean teaching people to know what they do not know, it means teaching them to behave as they do not behave" [10]. The same was reflected in terms of children understanding the importance of dental visits and clean teeth with the help of Happy Tooth Song. Categorization of food into healthy and junk was done by children of both groups however; the group that was given the song did not outperform the control. This could have been because the parents of group A relied on the song for reinforcement and did not reinforce the children while parents of group B reinforced their children. The health literacy of the caregivers is an important factor. The literacy of parents is known to influence the health of the children. When compared to parents with higher literacy, those with lower literacy demonstrated less health knowledge, and behaviors that were less beneficial to their children's health [11, 12]. The

current study focused on the education of parents and children regarding the children's oral health behaviors. The short term behavior change was noticeable and encouraging with respect to the Happy Tooth Song. The present investigation has a few limitations. The sample was conveniently chosen, and cannot be termed representative. This study may have limited scope in the current context due to technology being available to few; however, the use of technology has been spreading at an enormous pace which confirms the future acceptability of such a tool. Another limitation could be that the excitement pertaining to the song may be more in the initial phase. Hence, it may be necessary to confirm whether it helps over a period of time. However, the tool may prove valuable in the introduction, reintroduction and reinforcement of tooth-brushing behavior on a periodic basis, and also help in providing knowledge and its retention. A multicentric study including a representative sample with the qualitative and quantitative design can throw more light on the effectiveness of the tool.

Conclusion

From the study we thus concluded:

The happy tooth song was well accepted by children and it had a positive impact on motivation for tooth brushing.

There was an improvement seen in the frequency and brushing time of children using the Happy Tooth Song.

The happy tooth song did have a significant role in the knowledge related to healthy dental behaviours.

Recommendations

However we recommend that our findings need to be substantiated through a study using randomized control trial design and for a longer duration with possible addition of qualitative component. It could also be possible to include parameters related to oral hygiene improvement such as plaque index; the ultimate aim being effective plaque control. A modification of the tool as a single device such as a "powered brush with Happy Tooth Song" (battery operated) can be recommended for the ease of use and acceptability.

References

1. Kay EJ, Locker D (1998) Effectiveness of oral health promotion: a review. Health Education Authority.
2. World Health Organization (1986) The Ottawa Charter for Health Promotion. Health Promotion Geneva.
3. Rodrigues JA, dos Santos PA, Garcia PP, Corona SA, Loffredo LC (2003) Evaluation of motivation methods used to obtain appropriate oral hygiene levels in school children. *Int J Dent Hyg* 1(4): 227-32.

4. Srivastava N, Vasishat A, Gupta G, Rana V (2013) A Comparative Evaluation of Efficacy of Different Teaching Methods of Tooth Brushing in Children Contributors. *Oral Hyg Health* 1: 118.
5. Gao X, Hamzah SH, Yiu CK, McGrath C, King NM (2013) Dental Fear and Anxiety in Children and Adolescents: Qualitative Study Using YouTube. *J Med Internet Res* 15(2): e29.
6. Friel S, Hope A, Kelleher C, Comer S, Sadlier D (2002) Impact evaluation of an oral health intervention amongst primary school children in Ireland. *Health Promot Int* 17(2): 119-126.
7. Haloi R, Ingle NA, Kaur N (2012) Caries Status of Children and Oral Health behavior, knowledge and attitude of their mothers and school teachers in Mathura City. *Journal of Contemporary Dentistry* 2(3): 78-83.
8. Al-Omiri MK, Al-Wahadni AM, Saeed KN (2006) Oral Health Attitudes, Knowledge and Behavior among School Children in North Jordan. *J Dent Educ* 70(2): 179-187.
9. Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents. *Clinical Guidelines*. 36(6): 127-134.
10. Atwood SE (2008) John Ruskin on education In: *The encyclopedia of informal education*.
11. Sanzone LA, Lee JY, Divaris K, DeWalt DA, Baker DA, et al. (2013) A cross sectional study examining social desirability bias in caregiver reporting of children's oral health behaviors. *BMC Oral Health* 13:24.
12. Das UM, Singhal P (2009) Tooth brushing skills for the children aged 3-11 years. *J Indian Soc of Pedod Prev Dent* 27(2): 104-107.