

Effectiveness of toothbrushing technique among school children

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Abstract

Background/ Objective: To evaluate the effectiveness of the Modified Bass method demonstrated using cast & video aids to children within the classroom setting.

Materials and Methods: A total of 80 healthy children aged 8 to 10 years old were chosen at random from Holy Angel's Aided School in the Dakshina Kannada district of Karnataka, India. A cast model and video were used to illustrate the Modified Bass brushing technique to students in a school environment. After a month, all the children were reexamined and reviewed, and the plaque index was reassessed to acquire follow-up data.

Statistical Analysis: The results were compared to the

baseline data, and intra group comparison was done using Wilcoxon Signed Rank test.

Results: Plaque scores after using the Modified Bass approach dropped significantly from baseline to follow-up ($p < 0.01$).

Conclusion: The plaque index scores were seen to significantly improve after the demonstration of Modified Bass Technique of toothbrushing in school children.

Keywords: Modified Bass, toothbrushing, plaque score, children.

Introduction

The highest prevalent dental concern in school aged children is dental caries. The bulk of dental disorders, such as caries and periodontal disease, are associated to dental plaque and its resident microbial flora. Plaque was first recognised as an etiologic agent in a classic study by Loe et al. in 1965, which showed that gingivitis developed within a few days of ceasing oral hygiene habits.

Toothbrushing is the most commonly recommended and practised oral hygiene habit. It is the primary mechanical means of eliminating substantial amounts of plaque in order to avoid oral diseases such as gingivitis and dental caries, as well as reducing halitosis and helps in maintaining dental aesthetics. Most of the parents might not know the proper method of tooth brushing technique that is to be followed. Currently, there is not a single recommended method that can be taught to all children. Parents might instruct the children to follow their own method of brushing which may be right, wrong or partially correct method. Therefore, direct one on one communication with the child as well as with parents have proven to be an effective and essential way of providing oral hygiene measures.¹

Tooth brushing still prevails as the most efficient and long-term means of eliminating dental plaque in children.² Children's age as well as their individual dexterity and motivation greatly determine their capacity to use the toothbrush.³ This study was undertaken to evaluate the effectiveness of the modified Bass method demonstrated on cast and video to each individual child within the classroom setting.

Material & Methods

A total of 80 healthy youngsters aged 8 to 10 years old were chosen from Holy Angel's Aided School in the Dakshin Kannada district of Karnataka, India. A cast

model and film were used to illustrate the Modified Bass brushing technique to students in a school environment.

The following criteria were used to choose the study's sample:

Criteria for inclusion:

- i) Healthy children between the ages of 8 and 10 year,
- ii) Children who were co-operative, and
- iii) Children willing to engage in the study.

Criteria for exclusion:

- i) Children who are wearing orthodontic or prosthodontic devices

Permission was acquired from the pertinent school authorities prior to the start of the study. A thorough questionnaire was used to collect information about the participants' oral hygiene routines, including their brushing style, at the start of the study. A mouth mirror with a good reflecting surface and a dental explorer were used to do the oral examination in natural daylight. To collect baseline data, all of the children were assessed for plaque using the Sillness and Loe plaque index. Following which the Modified Bass method of toothbrushing was demonstrated using cast and video aids. They were instructed to brush their teeth twice a day using the demonstrated method, first in the morning and again before bedtime. After a month, all of the children were re-examined and reviewed, and the plaque index was reassessed to acquire follow-up data. The results were compared to the baseline data, and statistical analysis was performed Wilcoxon Signed rank test for intergroup comparison.

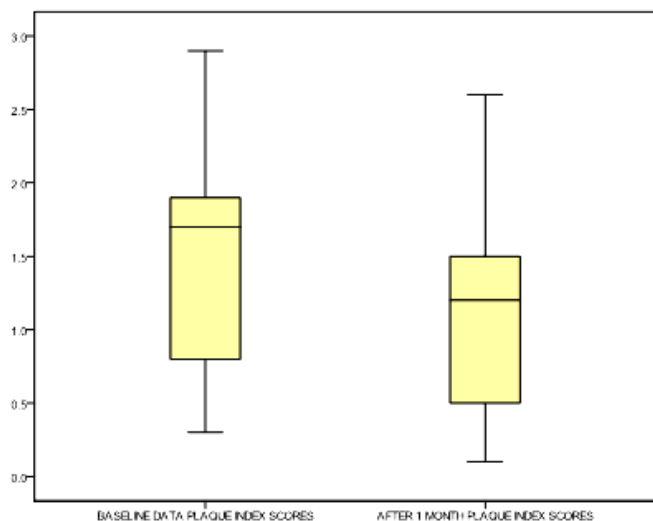
Results

Plaque scores after using the modified Bass approach dropped significantly from baseline to 1 month follow-up ($p < 0.01$)

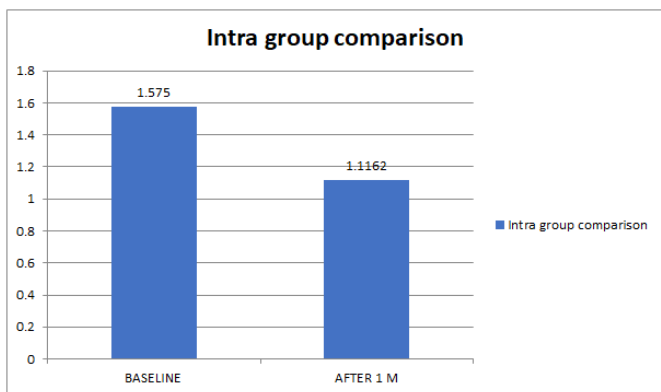
Table 1: Intra group comparison of plaque index scores

	Mean	Std. Deviation	Mean diff	Std. Deviation of diff	Median	Z value	p value of Wilcoxon Signed Ranks Test
BASELINE	1.5750	.76762	.45875	.2641891	1.7	-7.597	0.000**
AFTER 1 M	1.1162	.63414			1.2		

Graph 1: Boxplot of median



Graph 2: Intragroup comparison of plaque scores



Discussion

The purpose of this study was to see how effective the Modified Bass technique of brushing was at removing plaque in children aged 8 to 10 years.

The demonstration was as follows:

1. Bristles were directed at a 45 degree angle to the tooth's long axis and directed towards the base of the tooth at the gum line.

2. The brush head was kept in touch with the gingiva and the tooth, and mild force was used to insert bristle ends between the gingiva and the tooth; five delicate but firm vibratory strokes were employed without removing bristle ends from the gumline.

3. The brush filaments were inserted at a 45-degree angle on the attached gingiva and rolled down 5 times over the tooth occlusally.

When compared to other toothbrushing approaches, this strategy provided better plaque control. 4

Variations of the horizontal scrub technique were consistently used by the children in this study. Various studies reported the method of choice of toothbrushing to be horizontal scrub technique in a younger age group of children owing to their inability to indulge in other tooth brushing methods.^{5,6,7} Toothbrushing for adequate plaque removal requires certain skills and manual dexterity, which develops in children aged 8 years and above.² In their study, Mescher et al⁸ found that children as young as 8 years old may develop sulcular brushing skills.

An effective and essential way of inculcating oral hygiene measures in children is by providing direct one on one communication with the child (Chachra et al, 2011). According to Acharya et al⁹ demonstrating oral hygiene procedures using a child as a model is the most effective training strategy for promoting oral hygiene and gingival health.

Children were placed into groups of 10–15 in this study, and they were taught the Modified Bass technique of teeth brushing through direct communication in the classroom utilising a cast and video as a model to follow. They were encouraged to brush twice a day along with accommodating other oral hygiene measures in their daily routine.

Plaque removal efficacy improved dramatically in one month after the Modified Bass technique of toothbrushing was taught (Fig 1, 2). These data support Kropfl's conclusions that the Modified Bass and Modified Scrub procedures were the most generally suggested tooth brushing methods.¹⁰ The capacity of modified Bass to remove plaque was significantly more than that of the horizontal scrub approach. Kremers et al¹¹ and Zhang et al¹² demonstrated that the Bass technique was more effective than the other techniques in removing interdental plaque. In the present study children above 8 years who had the manual dexterity, skills and comprehensive ability to follow the Modified Bass method of toothbrushing were taught the method. They were instructed to follow the method for the time period under observation and that showed a significant improvement in their plaque index scores.

Fig 1: Baseline data- plaque scores before demonstration of toothbrushing

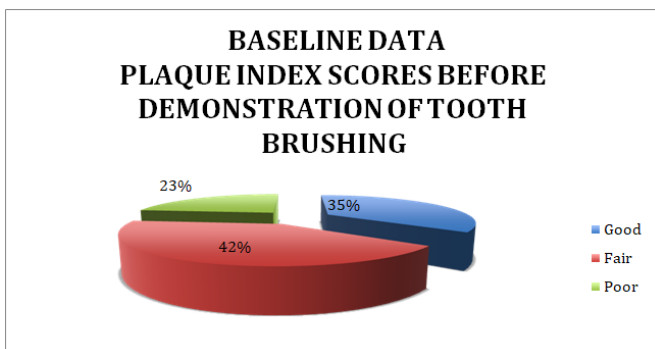
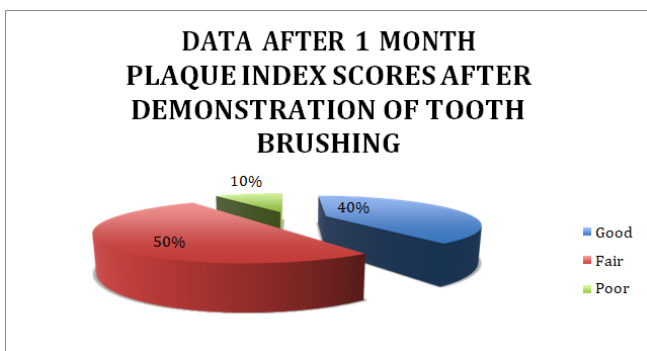


Fig. 2: Follow up data after 1 month- plaque scores after demonstration of toothbrushing



Conclusion

The plaque index scores were seen to significantly improve after the demonstration of Modified Bass Technique of toothbrushing. The use of casts and videos for demonstration of this technique proved to be effective in the school going children who had the comprehension to understand and manual dexterity to incorporate this method of toothbrushing in their daily routine.

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