



# TOOTH BRUSHING TECHNIQUES; RELATIVE EFFICACY AND COMPARISON IN THE REDUCTION OF PLAQUE SCORE IN 8-11 YEARS OLD CHILDREN

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**Article received on:**  
20/09/2017

**Accepted for publication:**  
14/11/2017

**Received after proof reading:**  
02/01/2018

**ABSTRACT... Objective:** This study is performed to ascertain the efficacy of “horizontal scrub” Fones method and “modified bass” brushing techniques. **Method:** A group of 150 school children of age 8-11 years were randomly selected in different schools of Gojra city. Three groups of schoolchildren were made by random selection and children of each group were demonstrated by one of the three techniques. Group 1(Fones method). Group 2(modified Bass). Group 3(Horizontal scrub). All the kids under this study were reexamined after two days and re-assess the plaque index and to obtain follow-up data. **Result:** The result concluded by statistical analysis and intergroup comparison also concluded by using ANOVA test. Reduction in plaque score was assessed and compared with each other. **Conclusion:** Modified Bass was found most effective in the reduction of plaque score, horizontal scrub was the second effective technique and least one was Fones.

**Key words:** Children, Brushing Technique, Dental Plaque, Teeth.

**Article Citation:** Ilyas M, Ashraf S, Jamil H. Tooth brushing techniques; relative efficacy and comparison in the reduction of plaque score in 8-11 years old children. Professional Med J 2018;25(1):135-139. DOI:10.29309/TPMJ/18.4429

## INTRODUCTION

Dental caries is the most common problem in children of age group 8-11 years, affecting 60% of 5-17 years olds worldwide. Dental caries is affecting the lives of children in the form of pain, restlessness, rendering poor eating habits and esthetic as well.<sup>1</sup>

Tooth brushing is an act of scrubbing teeth with toothbrush and with toothpaste. Oral health is commonly correlated with systemic health. Tooth brushing is very efficient measure to maintain good oral hygiene and to prevent dental caries as well as periodontal problem.<sup>2</sup> Any effort taken to help public in maintaining good oral health should include the guidance regarding maintenance of oral hygiene as it prevents the accumulation of microbial plaque.<sup>3</sup> And normal tooth brushing is sufficient in preventing the adherence of dental plaque.

Sqizer et al recommended that brushing the teeth daily is a sufficient measure that prevents the interdental caries and gingivitis.<sup>4</sup> There are number

of techniques that are used for tooth brushing and for removing dental plaque, every technique has its own different levels of effectiveness. In this study we examined the efficacy of three brushing techniques. i.e.

### Fones Technique

Tooth brush is held at right angle to the tooth surface and large sweeping motion and scrubbing circles are made over the occluded teeth.

### Horizontal Scrub

Brush is held at 45° angle to the neck of the tooth and is moved across the surface of tooth in short horizontal movements.

### Modified Bass

Brush is placed directed apically 45° angle to the tooth surface. Press the bristle slightly so that they enter the gum line, vibrate the brush back and forth with 10-15 strokes for each position and then roll the brush towards the occlusal surface of the teeth, full tufts occlusally after cleaning cervical area.

**Material and Methods**

Under this study 150 schoolchildren were selected from different schools of Gojra, age between 8-11 years. They were selected under the following criteria;

Inclusion criteria

- a. Physically and mentally healthy children
- b. Cooperative children
- c. Children who were eager for the study

Exclusion criteria

- a. Children with physically and mental disability
- b. Children having dental caries or periodontal

problem

The selected children were divided equally into three groups i.e. (1, 2&3).The numerical detail of children in each group is shown in Table-I. All the examination was done under natural light with mouth mirror, dental explorer and tongue depressor. Plaque disclosing tablets (plaq Search, plaque disclosing chew tablets) were used to get the better results. Plaque score of every child was checked by using plaque index purposed by Silness P and Loe H under natural light, and baseline data was collected.

Groups	Tooth brushing techniques	Age (years) (%)			Gender (%)	
		8-9	9-10	10-11	Male	Female
A	Fones technique	15 (30%)	21 (42%)	14 (28%)	27 (54%)	23 (46%)
B	Horizontal scrub technique	16 (32%)	14 (28%)	20 (40%)	21 (42%)	29 (58%)
C	Modified Bass technique	18 (36%)	15 (30%)	17 (34%)	22 (44%)	28 (56%)

Table-I.

Each group consisting of 50 children was demonstrated by one of three brushing techniques i.e. Fones to Group 1, Modified Bass to group 2, Horizontal scrub to group 3 on dental models. Every child was provided with a toothbrush and toothpaste and then they were asked to brush their teeth in front of a mirror and supervised by a dentist. Children were recommended to brush their teeth two times a day once in the morning after having their breakfast and once at night before going to bed. Follow up data was collected after 48 hours and set against baseline data. Intergroup comparison was using analysis of obtained variance (ANOVA) test and statistical analysis was got by paired test.

Numerical details and comparison between groups 1, 2, and 3

**RESULTS**

Comparison between the follow up data and baseline data was made using paired t-test. Plaque scores were individually assessed and compared. Group 1 (Fones method): plaque score was reduced from baseline score i.e. mean= 1.29 to follow up score i.e. mean=0.7934 that was statistically significant (P<0.001) as shown in (Figure-1).

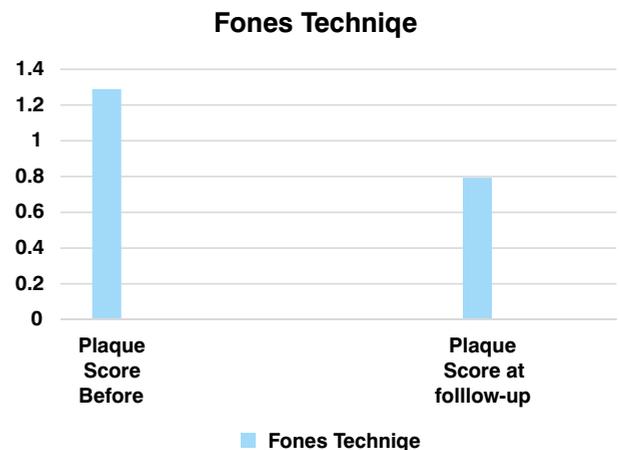


Figure-1. Comparison between plaque scores before and after use of Fones method.

Group 2(modified bass technique): The reduction in plaque score was evident in follow up data i.e. mean=0.4351 from baseline score i.e. mean=1.29 and it was statistically significant (<0.001) as shown in (Figure-2).

Group 3 (horizontal scrub): The reduction in plaque score was also evident in follow up data i.e. mean=0.6623 from baseline data i.e. mean =1.30 and it was also statistically significant (<0.001) as shown in (Figure-3).

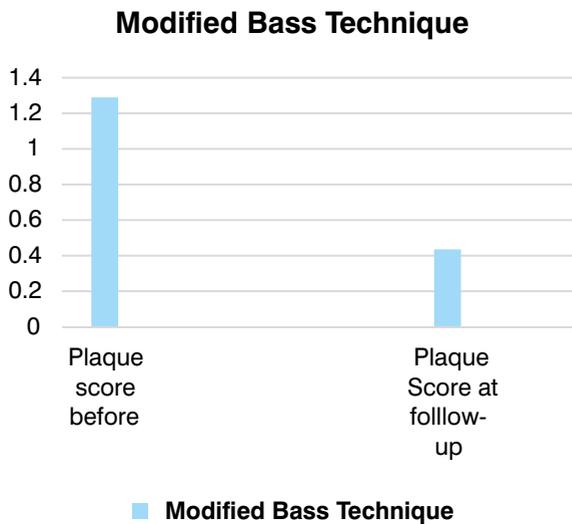


Figure-2. Comparison between plaque scores before and after use of horizontal scrub technique.

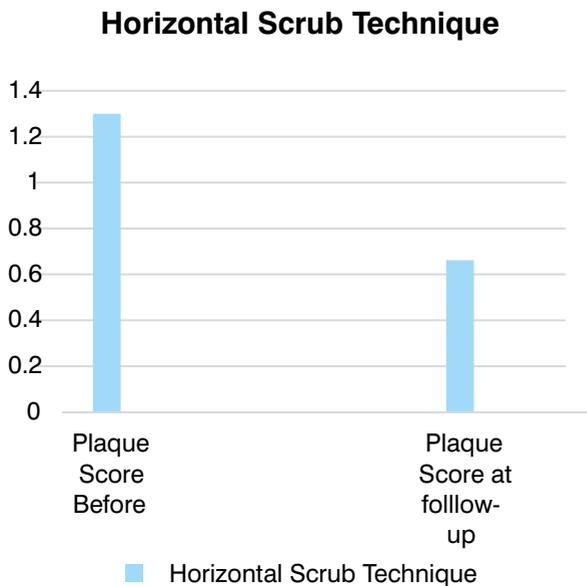


Figure-3. Comparison between Plaque scores before and after use of modified Bass technique.

Baseline data and follow up data from all three groups was set against each other (Figure-4). The obtained results were compared by using single ANOVA test. First place was taken by modified bass technique by reducing plaque score more evidently as compared to the rest of both techniques. Horizontal scrub took the second place and Fones method found to be least effective among all.

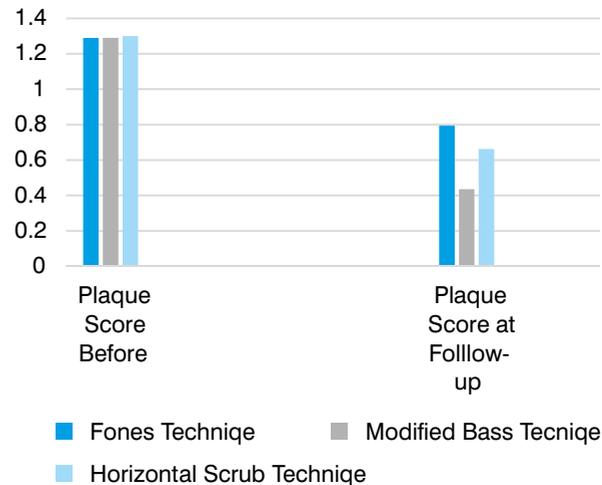


Figure-4. Comparison between plaque scores before and after use of Fones, horizontal scrub and modified Bass techniques.

**DISCUSSION**

Good oral hygiene is the basic need for maintaining a good health. Tooth brushing is the most common method used to maintain oral hygiene. It is estimated that over 90% people naturally use vigorous vertical, horizontal or other circular motions similar to scrub technique.<sup>5</sup>

McClure D.B says in his study on “comparison of tooth brushing techniques for preschool child”, in preschool children horizontal scrub is an efficient method for tooth brushing.<sup>6</sup> The relative efficacy of different tooth brushing techniques i.e. Fones, modified bass and horizontal scrub was evaluated in this study. Most uninstructed people do use horizontal scrub motion for tooth brushing.<sup>7</sup> In our study, it was also observed most of the participants were seen using variation of horizontal scrub method.

Developed motor movement and learned manual dentistry for tooth brushing are mostly progressed in young ages i.e. 8 years above.<sup>8</sup> Different methods for tooth brushing are recommended for children of different age groups i.e. for preschool children, horizontal scrub is efficient and for children with mixed dentition Fones method and modified bass method both are considered.<sup>9</sup>

Unkel et al. suggested that manual tooth brushing skills are learned after four to five years

as the chronological age is the evident medium to tell about developed motor skills.<sup>10</sup> Nikhil et al. suggested that individual cast instructions are more effective than audio visual instructions.<sup>11</sup>

In a study by Okada, it is observed, learning of brushing techniques is an important factor, as brushing under guidance, have better results.<sup>12</sup> That is why in this study each child was demonstrated individually a specific technique on dental cast/model.

In this study, the effectiveness of the modified Bass technique was evidently high compared to the other techniques followed by horizontal scrub and then Fones.<sup>13</sup> Wade and Gibson compared the relative efficacies of the modified Bass technique and the Roll technique in plaque reduction, the efficacy of the modified was high. Bergenholtz et al also found the similar results.<sup>14</sup>

It is seen clinically; people hardly bother to clean lingual sites during tooth brushing practice, because they consider that these hidden areas are not aesthetically important and affecting them and have difficult approach.<sup>15</sup>

Chirshantha et al. observed in his study found that both Fones method and modified Bass method were very useful in improving oral hygiene.<sup>16</sup> Anaise concluded that horizontal scrubbing method has the most evident effect in plaque reduction than other techniques.<sup>17</sup>

In this study we also found similar results, horizontal scrubbing technique has better efficacy in removing plaque than Fones method. Fones method is least effective because it is found to be less effective in removing the interdental plaque. But our result is contrast with Hernacke D et al, who found Fones method superior in removing plaque as compared to modified Bass technique.<sup>18</sup> Our results are in accordance with Robinson, who found Bass technique as most effective in the plaque removal.<sup>19</sup>

## CONCLUSION

In this study, we have concluded that the efficacy in the reduction of plaque score is evidently high

with modified bass technique and horizontal scrub comes after it. And least is seen with Fones method. Children should be instructed proper brushing technique on the model has better result.

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*Every day is a chance to get better.*

– Unknown –

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#### AUTHORSHIP AND CONTRIBUTION DECLARATION

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