

Dentist's Preference Of Brushing Technique Taught To Children With Mixed Dentition

Research Article

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Abstract

Introduction: The transition period after the eruption of the permanent first molar and incisors and before the remaining deciduous teeth are lost is known as the mixed dentition period. There are various phases of the mixed dentition period. This age is when changes in occlusion take place making it an important time frame. Maintenance of good oral hygiene should be a daily habit adapted by everyone. Suitable brushing techniques are used to maintain good oral health.

Aim: The aim of this study was to evaluate the commonly used brushing technique preferred by dentists in children with mixed dentition (ages 6-12).

Materials and Methods: The study was conducted in a University setting. 5,00,000 case sheets were analysed and after application of proper inclusion and exclusion criteria between June 2020 to Feb 2021. Verification of the data was done with the presence of additional reviewers. Records were finally obtained and tabulated using MS Excel. The data was exported to SPSS and further statistical analysis was carried out. The resultant data was displayed as graphs.

Results and Discussion: The results of this study show that within the university, 68% of the dentists preferred Fone's technique of brushing and 25% preferred Modified Bass technique. No difference in the commonly taught brushing technique was noticed between gender of the patient which was not statistically significant (p-value = 0.295).

Conclusion: Fones technique of brushing was the most preferred technique within the institution with no difference based on gender of the patient. Maintenance of oral hygiene is of key importance during mixed dentition which requires continuous reinforcement.

Keywords: Brushing; Mixed Dentition; Children; Plaque; Oral Health; Hygiene; Innovative Teaching.

Introduction

Mixed dentition period is the transition period after the eruption of the first permanent molars and incisors but before the remaining deciduous teeth are lost. This age is when significant changes in occlusion take place; hence it is an important phase. Brushing and maintaining oral hygiene are very essential practices for good oral health and proper brushing techniques enhance the effectiveness. For maintaining good oral hygiene it is imperative that a parent ensures his/her child is brushing and flossing daily and in a proper manner [1, 2]. It is known that kids of this age group have a tendency to excessively consume chocolates and other sticky sweets, improper brushing may lead to tooth decay, hence brush-

ing technique should be closely monitored to maintain a good oral hygiene [3]. Regular visits to the dentist and a parent's sound knowledge about oral health maintenance is essential to maintain a child's oral hygiene [4]. Brushing skills should be taught to the children according to the needs, characteristic and existing dental status. If the child has any disabilities, even those should be taken into consideration while choosing a brushing technique [5, 6].

Dental caries, otherwise known as tooth decay in simple terms, is one of the most prevalent chronic diseases. Caries can affect any individual throughout their lifetime [7]. Dental caries is a biofilm-mediated, sugar-driven disease that results in destruction of tooth structure. It can have various etiological factors, the major one

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being poor oral hygiene [8, 9]. Dental caries are easier to arrest in their early stages when they are still reversible in nature. A good oral hygiene will prevent any other development of caries [10, 11]. As discussed earlier, local risk factors for caries are poor oral hygiene, arrangement of the teeth and saliva flow. General risk factors include sex, geographic location, socio economic status and ofcourse, age. Children are more prone to caries than elders [12, 13]. Poor oral health status in children is a growing concern worldwide and has been causing dental problems widely. Therefore, promotion of oral health, especially prevention of caries from an early stage needs to be implemented [14, 15].

Tooth brushing can be effectively achieved by a variety of techniques. Every technique has its own benefits and in the end leads to removal of plaque. The brushing technique should be chosen according to the dental status and current oral hygiene of the patient. The different known techniques are Bass, Modified Bass, Roll and Fones technique [16]. Tooth brushing should be supplemented with interdental aids and ideal shape of tooth brush to achieve complete plaque removal [17]. Dental plaque is considered as the main etiological factor behind dental caries. Hence plaque removal using an appropriate technique of brushing is ideally needed to try and prevent caries [18, 19]. Our team has extensive knowledge and research experience that has translate into high quality publications [20-32, 33-39]. The aim of this study was to analyse the different types of brushing techniques in children with mixed dentition.

Materials and Methods

This study is a retrospective study conducted in a University setting. Ethical approval was obtained from The Institutional Ethical Approval Board to access patient data. The study involved two people, inclusive of one cross examiner. The required data for the topics was obtained by analysing over 5,00,000 case sheets from June 2019 to January 2021.

The inclusion criteria for the study were children with mixed dentition (i.e., children between the ages 6 to 12), children who were provided oral hygiene instructions after ultrasonic scaling proce-

dure. Children under special care, children with only primary dentition (less than 6 years of age), children with permanent dentition only (more than 12 years of age), incomplete records and insufficient data were excluded from the study.

The sampling bias was minimised by doing a random sampling. Cross verification of the data was carried out by the second examiner. The necessary data was collected from the case sheets- Age, gender and advised brushing technique. This data was compiled and tabulated using Microsoft Excel. The data was then verified by a cross examiner using photographs and data validation. There was no resolution of conflict.

The tabulated data was exported to IBM, SPSS Software, Version 23, Chicago. Descriptive Statistics was done. Comparison of gender and brushing technique was done using Chi-Square testing. The independent variables were age and gender and the dependent variable was considered to be the technique of brushing.

Results

The study sample consisted of 2085 patients belonging to the ages 6-12 (mixed dentition period). The study involved both males and females. 45% of the population were females and 55% were males (Figure 1). Within the age group that was considered, 4% were 6 year olds, 7,8 and 9 year olds consisted of 15%, 17%, and 16% of the population respectively; 17% consisted of 10 year olds, 17% were 11 year olds, 12 year olds made up for 15% of the population. On analysing the data, it was found that 65% of the population were taught Fones technique of brushing (Figure 2). No difference in the commonly taught brushing technique was noticed between gender of the patient which was not statistically significant (p-value = 0.295)(Figure 3).

Discussion

On analysing the data, it was found that 65% of the population were taught Fones technique of brushing. This is contradicting the results obtained by Smita et al, which proved that Fones tech-

Figure 1. Bar chart representing the gender of the patients. Female participants are represented by Blue (45.25%) and Male participants by Orange (54.75%).

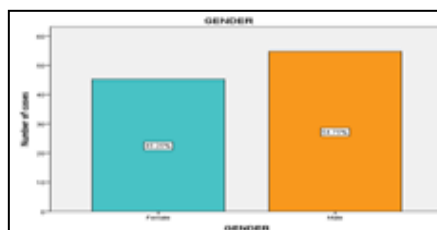


Figure 2. Bar chart showing the distribution of various brushing techniques preferred by dentists. Bass technique is represented by Red (2.96%), Modified Bass technique is represented by Purple (29.65%), Roll technique is represented by Blue (1.21%) and Yellow represents Fones technique (66.18%).

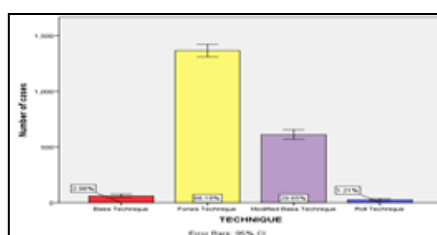
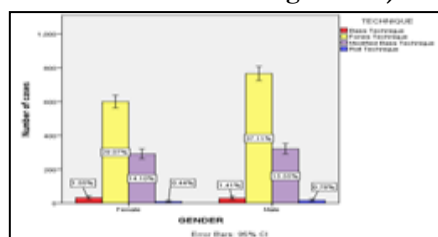


Figure 3. Bar graph depicting a comparison between Gender and Brushing technique that is preferred. X axis represents the gender of the patient and Y axis shows the technique of Brushing that is preferred. Across both, males as well as females, Fones technique was most commonly preferred, followed by Modified Bass technique and Bass technique. Roll technique was of lesser significance. Green represents Bass technique, Purple represents Fones technique, Blue represents Modified Bass technique and Red represents Roll technique. No difference in the commonly taught brushing technique was noticed between gender of the patient, which was not statistically significant (Pearson's Chi-square value = 0.387, p-value = 0.295 - not significant).



nique was the least effective method of brushing. 29% of the population under study were taught Modified Bass technique, this is in relation to the study done by Smita et al, which had the same results. 2.9% of the subjects were taught Bass technique of brushing and this was in correlation with a study done by Wade et al in 2008, which also showed superior results of using Bass technique. A study done by Joanna et al contradicted all of these results; the study concluded that no technique is superior to the other techniques in terms of plaque removal.

Tooth brushing is a very important plaque control measure. The relationship between incomplete plaque removal, sequelae of gingivitis and periodontitis and also the occurrence of dental caries has been proven [40]. There was a wide diversity between recommendations on tooth brushing methods. Tooth brushing is the cornerstone of dental health education to prevent caries and periodontal disease. More high quality and long term studies are required to investigate the effectiveness of brushing techniques in the prevention of gingivitis, periodontitis and caries. Patients pay poor attention to the lingual sites during their regular tooth brushing practices, this may be because these sites do not affect the aesthetics and have more difficult access [41]. So, special attention should be given to brushing techniques in lingual sites. Certain factors may influence the effectiveness of the tooth brushing technique like the dexterity of the patient, level of comprehension of the patient after demonstrating the technique, the features of the toothbrush including filament arrangement, orientation, size, shape and flexibility [42].

Another study performed by Jagadheeswari et al, concluded that Modified Bass technique is the most commonly taught brushing technique to children [43]. This study obtained results that were similar to the study done by Khalid *et al.*, which also concluded that Modified Bass technique is highly effective in plaque control. In addition to this the study also concluded that Stillman's technique has lesser effectiveness in removal of plaque deposits [44].

Advantages of this study were that it had easy access, large availability of data, similar ethnicity and high internal validity. It was also used to identify any mistakes in the brushing techniques advised. Limitation of this study was that it had low external validity. Sample size was small and inadequate. It was a uncentered study with geographic limitation. Future scope was that it should be conducted as a multicentered study with extension in the geographic limitation. And also to attain effective brushing technique to decrease the caries incidence and periodontal problems.

Conclusion

Within the limitations of the present study, the most preferred technique of brushing that was taught by dentists for children of age group 6-12 years and in both genders was the Fones technique. Followed by this, Modified Bass technique was preferred by the dentists. Maintenance of oral hygiene is of key importance during mixed dentition which requires continuous reinforcement.

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