

Dentist's Preference Of Mode Of Teaching Brushing Techniques To Children With Permanent Dentition

Research Article

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Abstract

Introduction: Proper effective brushing of teeth aids in the management of dental caries and periodontal disease, which can lead to eating difficulties, pain, esthetician problems, malnutrition, reducing self estimation, and consequently reducing the quality of life. The method of teaching plays an important role in maintaining oral hygiene in children. The instructions should be given according to the child's degree of readiness for learning brushing techniques and should include reinforcement and systemic training.

Aim: to assess the common methods of teaching tooth brushing in young children with permanent dentition.

Materials and Methods: From the patients visiting the private dental hospital, those of the age group 13 to 18 years were considered in the inclusion criteria. Exclusion criteria involved those with poor maintenance of records and follow-up of uncooperative patients. The final sample size was 100. The gender and age were considered and tabulated, followed by their statistical analysis using SPSS software version.

Results: From the results of the current study, the most preferred method of teaching brushing technique to children was found to be audiovisual aids such as electronic devices (89%), while 8% preferred to demonstrate using cast and 2% preferred vocal training and reinforcement. Electronic devices were commonly used to demonstrate for both male and female patients which was statistically significant. (p value =0.02)

Conclusion: Within the limits of this study, it can be concluded that using audiovisual aids like electronic devices were majorly preferred among dentists to teach children of 13 to 18 years of age (permanent dentition) about the proper methods of brushing. This data is useful because this method is both inexpensive and easily taught.

Keywords: Brushing Techniques; Innovative Methods; Permanent Dentition; Dental Caries.

Introduction

Dental caries, or tooth decay, is an infectious process that leads to damage of the tooth by causing breakdown of the tooth enamel. Caries is caused by the complex interaction between acid-producing cariogenic bacteria in combination with fermentable carbohydrates intake in diet and other dietary, genetic, behavioral, social, and cultural factors [1]. Children are susceptible to caries as soon as the first teeth appear, which usually occurs around age 6 months [2]. Poor oral hygiene in children may lead to the early loss of permanent teeth due to caries and periodontal problems. Poor

dental hygiene among the school children can have many detrimental effects on children, some more major than others. One of these effects is physical pain due to deeper spread of caries which leads to eating problems, sleeping problems and behavioral problems [3], all of which at such a young age should be avoided as much as possible. According to American Dental Association, oral health is the aesthetic, functional, structural, physiologic and psychosocial state of well-being and is important to an individual's general health and quality of life. Maintaining good oral hygiene is considered a lifelong habit [4]. Mover, these oral habits are to be undertaken at an early stage of life. It is imperative to teach

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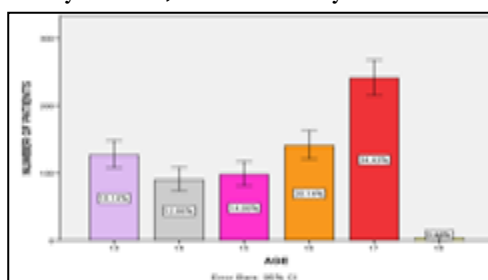
its importance to children in order to increase their knowledge on maintaining good oral hygiene and a positive attitude towards oral health. A better knowledge about oral health is needed for good oral health related behaviour [5].

Proper effective brushing of teeth aids in the management of dental caries and periodontal disease, which can lead to eating difficulties, pain, esthetician problems, malnutrition, reducing self estimation, and consequently reducing the quality of life [1]. The principal etiological factor in dental caries and gingivitis is dental plaque. Removal of plaque from tooth surfaces using proper brushing technique can help in the management of both periodontal problems and caries. The various methods of tooth brushing used are Fones brushing technique, Bass brushing technique, Modified Bass brushing technique, Scrub brushing technique, Charters brushing technique, Roll brushing technique and Stillman brushing technique [6]. These techniques are effective in removing plaque biofilm and debris from the surface of the teeth, stimulates the gingiva and aids in delivery of fluoridated dentifrice to the tooth surfaces [7]. According to previous studies, Fones technique is the most commonly preferred brushing technique to be taught to children [8]. It was also observed that the average percentage of plaque removal from the lingual and labial tooth surface was higher in Fones method compared to other techniques [8, 9].

The method of teaching plays an important role in maintaining oral hygiene in children. The instructions should be given according to the child's degree of readiness for learning brushing techniques and should include reinforcement and systemic training [10]. Although manual dexterity and ability are needed to properly implement such techniques, intensive individual training is crucial. The physiological development of children plays a major role in the method of education in oral self-care. Oral hygiene instructions through individual educational lectures result in highly significant improvements in oral health. However, the grammatical understanding in young children could impede such techniques [11]. This can lead to the difficulty in training and practice of oral hygiene techniques in children using instructions taught verbally [12]. The use of audiovisual methods is also suggested for such children [13]. Our team has extensive knowledge and research experience that has translate into high quality publications [14-26, 27-33]. This study was undertaken with the aim to assess the common methods of teaching tooth brushing in young children with permanent dentition.

Materials and Methods

Figure 1. The bar graph represents the frequency distribution of age groups of patients. Lilac represents patients who are 13 years old, grey represents 14 year olds, pink represents 15 year olds, orange represents 16 year olds, red represents 17 year olds, and yellow represents 18 year old patients. 18.14% of the subjects were 13 years old, 12.86% were 14 years old, 14% were 15 years old, 20.14% were 16 years old, 34.43 were 17 years old and 0.43% were 18 years old.



This retrospective study was conducted as a university setting which includes children of age group 13 to 18. The approval for this study was obtained from the institutional ethical committee (ethical approval number: SDC/SIHEC/2020/DIASDATA/0619-0320). This study had advantages of large data availability, similar ethnicity, but it had disadvantages of smaller sample size, geographic limitation and no external validity. This was a convenience sampling conducted between June 2019 to March 2020. Data was collected from the dental records, patient management records of the Department of Pediatric Dentistry. The number of case sheets reviewed was 1000. Inclusion criteria were the patients with permanent dentition (13 to 18 years). Patients with only primary dentition (0-5 years) and mixed dentition (≥ 13 years), including the incomplete and repeated data were excluded from the study. Cross verification was done using a photographic method to eliminate the errors made while recording. To eliminate bias, simple random sampling was done. Final sample size taken up for the study was 700 cases. The data obtained were tabulated in excel, imported to SPSS software by IBM, a statistical software with variables defined. The significance of this study was obtained using the statistical test, Chi-Square and the results were interpreted.

Results

18.14% of the subjects were 13 years old, 12.86% were 14 years old, 14% were 15 years old, 20.14% were 16 years old, 34.43 were 17 years old and 0.43% were 18 years old (Figure 1). 51.51% of the subjects were male children and 48.43 of them were female children (Figure 2). 89% of the Dental students preferred electronic devices as a method of teaching while 9% used demonstration using cast and 2% used vocal method of teaching (Figure 3). Electronic devices were commonly used to demonstrate for both male and female patients which was statistically significant (Figure 4). (p value = 0.02).

Discussion

Proper tooth brushing technique is required in order to ensure good oral hygiene. It aids in the prevention of plaque accumulation, gingiva, and periodontal diseases [34]. Plaque accumulation is the primary cause for inflammation of gingiva and can result in compromised periodontal health. The lingual surfaces of the teeth are often overlooked during the brushing process leading to increased plaque accumulation in that area which causes compromised oral health [35]. The relation between incomplete plaque

Figure 2. The bar graph represents the frequency distribution of gender of patients. Light blue represents male while brown represents female. 51.51% of the subjects were male and 48.43 of them were female.

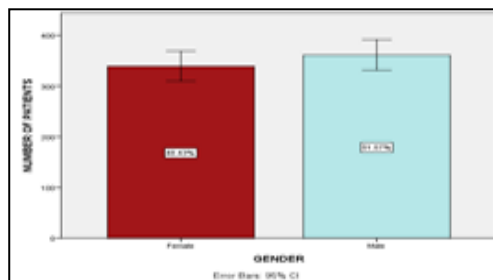


Figure 3. The bar graph represents the frequency distribution of modes of teaching methods preferred by dentists. The blue colour indicates teaching using electronic devices; green indicates demonstration using cast and yellow indicates vocal training. 89% of the Dental students preferred electronic devices as a method of teaching while 9% used demonstration using cast and 2% used vocal method of teaching.

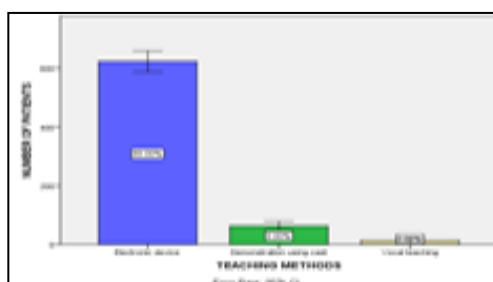
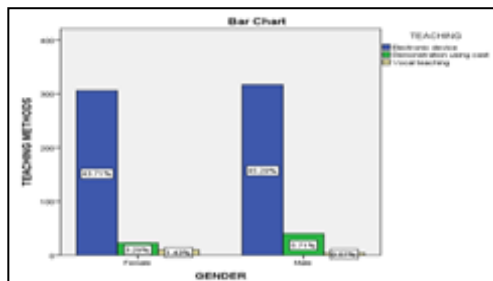


Figure 4. The graph represents the association between the mode of teaching and the gender of the patient. The x axis represents the gender of the patient and the y axis represents the mode of teaching. The blue colour indicates teaching using electronic devices; green indicates demonstration using cast and yellow indicates vocal training. Electronic devices were commonly used to demonstrate for both male (45.2%) and female (43.7%) patients which was statistically significant. (Chi Square test; p value =0.02; p<0.05: hence significant)



removal, sequelae of gingivitis and periodontitis and occurrence of dental caries has been clinically proven [36]. It is the responsibility of a dentist to incorporate such methods of brushing in patients, especially of the younger age group. The mode of teaching plays an important role in making sure the patient could process the right information and implement it in their everyday life.

In this study it was found that using electronic devices and reinforcement to implement the proper brushing techniques was found to be most preferred. This is more likely due to the fact that children nowadays tend to respond positively to audio-visual reinforcement compared to other methods. It is also less time consuming and easier for the dentist to convey information using such devices. This is in correlation with a study by Soraya *et al.*, who found that children who were taught brushing techniques using audio-visual aids and individual reinforcement had better plaque control [37]. Vocal teaching was not as much preferred as patients of a younger age group may not remember the proper sequence of brushing and there may be a gap in understanding. However, a study by Williford *et al.*, [38] reported that educational lectures result in highly significant improvements in oral health

when applied in adolescents. According to Simmons *et al.*, [12], most children were not able to understand the use of prepositions such as "on top of", "inside", "behind", etc. Thus, the difficulty found in teaching tooth brushing skills to these children using just words. Therefore, other methods, such as audiovisual should be indicated for children with such difficulties [39]. Demonstration with a cast was preferred but it depends on the availability of casts. It can provide a good way of conveying the proper information to children.

The most crucial reason for proper, effective and frequent tooth brushing is to preserve the health of the oral cavity. It is also safe to say that, if proper tooth brushing habits are established at home, the clinical situation is more easily accepted by the child. Early establishment of good oral hygiene habits may also play a role in the perception of oral health of a child.

Advantage of this study was that it had easy access, the large availability of data and similar ethnicity. It was also used to identify any mistakes in the brushing techniques advised. Limitation of this study was that it had no external validity. The sample size was

small and inadequate. It was a uni centered study with a geographic limitation. The future scope was that it should be conducted as a multi centered study with extension in the geographic limitation and to create more effective ways of teaching brushing technique to decrease the caries incidence and periodontal problems in children with permanent dentition.

Conclusion

Within the limits of this study, it can be concluded that using audiovisual aids like electronic devices are majorly preferred among dentists compared to vocal teaching or demonstration using cast to teach the proper brushing techniques to children of 13 to 18 years of age (permanent dentition stage). This data is useful because this method is both inexpensive and easily taught. It is imperative to find which method of oral hygiene instruction is more adequate for each child considering their age group as each child responds differently to different modes of teaching.

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