Tooth Brushing in Children

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Abstract

Toothbrush is a well-known tool in oral care. Effective tooth brushing can help in the management of dental caries and periodontal disease. Familiarity of children with this device is important. Dentists and their assistant need adequate information about children's oral hygiene to educate them and their parents. The aim of this review was to pinpoint the main issues of brushing teeth in children such as toothbrush design, methods of tooth brushing, and possible hazards of tooth brushing. In conclusion, tooth brushing twice daily under parent's supervision is recommended. Parents can help children and keep them safe from possible hazardous events.

Key words: Child, Dental plaque, Oral hygiene, Tooth brushing, Orthodontic appliances.

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Introduction

Dental caries and gingivitis are common diseases affected children. They can cause pain, eating difficulties, malnutrition, esthetic problems, reducing self-estimation, and consequently decreasing quality of life. Their treatment is expensive and time consuming (1). Bacterial plaque serves as a principal etiologic factor for dental caries and gingivitis (2, 3). Then, plaque removal from dental surfaces may help the management of both.

The toothbrush is the most popular tool for plaque removal (1). Although tooth brushing has become a daily habit in most people, the frequency of using toothbrush varies among people of different countries (1, 4). Frequency and duration of tooth brushing are important factors in plaque reduction, albeit, unfortunately people are not very successful in this term (4). This is more difficult in children, as it required manual dexterity which was not developed under age 8 years (5). There are many literatures about tooth brushing in children but each one assessed one issue. The aim of this study was to review main points of tooth brushing in children.

Toothbrush and other adjunctive requirements

Toothbrush with soft, rounded bristles is the best for children. The head of brush prefer to be small to adapt properly with size of their mouth. The handle is shorter with large diameter (Fig. 1) (6, 7). Tooth brushing start with the eruption of first primary tooth. At the beginning, parents brush their child's teeth until pre-school age (8, 6). When a child can grasp the toothbrush (toddlers), she/he must take part in this job (6). Parents must supervise the tooth brushing of school-age children until age 7 to 8 years (6). Tooth brushing twice daily was found as an effective and low-cost protocol for caries reduction in childhood (9). Recommended time for

toothbrush replacement is after 3 months. If the bristles splay sooner than that time, the toothbrush replacement must do to avoid gum damage and improve cleaning efficacy (6).

Figure 1. Children's toothbrushes should be proportional with the size of their mouth and hand. Their toothbrushes have small head and short but large handle. Up to down showed TePe Mini, for age 0 to3 years; TePe Kids, for above 3 years-old; and TePe adult toothbrush

Dental flossing can reduce interproximal caries and control gingival inflammation (10, 11). Flossing in children is needed when tooth brushing cannot clean all surfaces of teeth (6). Children has low dexterity in dental flossing. Therefore, they depend on their parents for removing dental plaque from interproximal surface of teeth (12). Parents can floss children's teeth using floss holder (7). Dentists can educate parents and child how to use dental floss (6). Mattos-Silveira stated that "children who do not use dental floss will become adults who probably will not use it" (12).

Combination of fluoride dentifrices and tooth brushing is beneficial in caries reduction, admitting fluoride has adverse effects on the body like fluorosis (13). Fluoride in children is important in two ways. First, the children cannot expectorate the toothpaste properly and swallow of fluoride is probable. Second, permanent teeth in children is developing and exposure to high volume of fluoride (from swallow of fluoride toothpaste) may interfere with their development and susceptible them to fluorosis (14). Then, fluoride dentifrices can use with caution and should be avoid swallowing especially for pre-school children. The parents' supervision is needed. Rice-size and pea-size toothpaste recommended for children under 3 years old and 3 to 6 years old, respectively (6).

Powered (electric) toothbrush is another tool which children and adults can use instead of manual toothbrush. The advantages of powered toothbrushes are not only superiority in plaque removal, but also they can enhance patient motivation (3, 15).

Method of tooth brushing in children

Horizontal scrub and Fones technique were two methods recommended for children commonly (5, 14). There is controversy which one is the best (5, 7). In horizontal scrub technique, the head of brush is placed perpendicular to the tooth surfaces and plaque removal is done with back and force movement. Some authors suggested horizontal scrub for children and claim that this technique had better plaque removal than Fones method (5, 16). In Fones technique, the child occluded their teeth, the toothbrush bristles place perpendicular to the tooth. The plaque remove with fast, wide, circular motion extended from marginal gingiva of the maxilla to the marginal gingiva of the mandible using light pressure (7). This technique recommended for young children because it is easy to learn (7, 14). There is no enough study in this issue to choose the best technique for children. As both techniques had adverse effects for gingiva and tooth structure (gingival recession and tooth abrasion), they must be changed as soon as possible (7). Mascher et al. (17) suggested to educate sulcular technique (Bass method) to children aged 8 and above as they obtained required motor skills and hand abilities.

Children with special needs

Proper oral hygiene performance is an important factor in handicapped children. The plaque removal is a skill that needs manual dexterity along with the appreciation of the reasoning behind this. Oral hygiene methods need to be simplified in physically and mentally disabled patients (18). It was proved that powered toothbrush had superiority in plaque removal and decrease gingivitis in patients with neuromuscular disability, visual impairments, and cerebral palsy (19-21). Besides the ease of use and better motivation and compliance with powered toothbrushes for physically and mentally disabled patients, better plaque removal from interproximal areas can help in reducing gingivitis. Goyal et al. (18) concluded that verbal oral hygiene instruction in mentally handicapped patients was less comprehensible. They suggested that visual demonstration of tooth brushing technique had a superior effect in this group of patients even with manual toothbrushes. Instead, in visually impaired children tell and touch method on a model seems to be an effective method of oral hygiene instruction (22).

Children with orthodontic appliances

Orthodontic appliances are plaque retentive devices which make plaque control more difficult and finally

predisposed the patients to dental caries and periodontal diseases (23, 24). Powered toothbrushes with soft filaments are very effective in plaque removal and around orthodontic appliances. Also, specific orthodontic head for powered toothbrushes exist (7). Shukla et al. (25) found increase colonization of Streptococcus mutans and Candida albicans in oral cavity of patients with fixed orthodontic appliances during treatment period. They claimed that tooth brushing especially with powered toothbrush can control this condition, especially, if started within the first month of orthodontic therapy. Special orthodontic toothbrushes (bilevel) with short middle row was also designed which can use directly over the appliances with short horizontal stokes. Sulcular technique (Bass or Modified Bass method) is the method of choice for plaque removal at marginal gingiva, if the patients were not predisposed to gingival recession. If regular toothbrush was used, the patient instructed to use charter's method for cleaning the gingival side of brackets. Super floss or interproximal brush were used for interproximal cleaning. Mouthwashes are recommended as an adjunctive for plaque removal (7).

Hazards of tooth brushing for children

It is doubtless that toothbrush is a useful tool with many benefits for oral health. Additionally, it was manufactured as a safe device with smooth surfaces and round corners. But there are some adverse events associated with its use (26-28). Olivera et al. (26) in a systematic review found that ingestion and impaction of toothbrush was the most reported problem associated with oral use of toothbrush. They found that majority of toothbrush impaction was occurred during accidental fall and most of cases were under age 10 years. Toothbrush impaction mainly occurred in oropharynx and adjacent to the mandibular ramus (26). These events can be life-threatening (27, 28). People should not walk or run when toothbrush was in their mouth. Parents must supervise their children during tooth brushing (26- 28).

In conclusion, attention to child's oral hygiene is necessary as oral diseases such as dental caries and gingivitis can affect systemic health and self-estimation. Parents' supervision during tooth brushing is vital, especially for young children. They can help them and prevent from toothpaste swallowing and possible hazardous events.

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