



Research Paper

The Importance of Oral Health Care Strategies and Home Care Motivation

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ABSTRACT: Microbial dental plaque is primarily responsible for inducing and progression of oral disease. It is well known that these diseases are largely preventable through self-motivation, plaque removal by brushing and flossing. Because of these diseases have multifactorial structure, there is no standard level of oral hygiene to be recommended to the patients. Variables such as oral hygiene habits, cariogenic food intake, systemic diseases, saliva flow and buffer rate, the need of preventive agents' usage should be identified, and a balanced combination and oral health care goal should be established. The aim of this review is to describe oral disease' development process and present oral health care strategies and individual and professional preventive methods.

Keywords: child, dental caries, flossing, toothbrushing, preventive

I. INTRODUCTION

Dental caries is a multifactorial disease which has many etiologic factors such as microorganisms, dental plaque, enamel and dentin composition, socioeconomic factors, and education status [1]. Dental caries usually requires long and expensive treatments, with physiological and psychological problems. Occlusal anomalies, and dysfunction and aesthetic defects in the chewing system may develop following tooth extraction in progressive lesions [2]. Microbial dental plaque removal by tooth brushing and flossing are the most crucial individual practices for the prevention of dental caries and gingival diseases [3]. Daily mechanical plaque removal methods have crucial importance for individual prevention [4].

Dental plaque is only one of the inducing factors for dental caries and is not enough for dental caries development. The disease has a multifactorial structure and there are numerous factors that increase or decrease the demineralization rate [5]. Therefore, there is no standard level of oral hygiene to be recommended to the patients [4]. Ideally, all variables of the patient and the risk of dental caries should be identified, and a balanced combination and oral health care goal should be established [4,5].

Because dental and periodontal diseases are largely preventable diseases through motivation and oral hygiene instructions, the role of preventive practices in preventing these diseases are crucial. These treatments may basically be listed as follows; oral hygiene educations and home care motivation, reducing the consumption of fermentable carbohydrates, use of fluoride toothpastes and prophylactic agents [6].

II. ORAL HYGIENE EDUCATION

Over 700 bacterial species have been isolated from the human oral cavity and most them are associated with dental biofilm. Microorganisms in the supra-gingival biofilm cause dental caries [7]. The sub-gingival biofilm is associated with gingivitis and periodontal disease [8]. Cariogenic microorganisms in mature dental plaque lead to demineralization of hydroxyapatite crystals in the tooth enamel [9]. The most important indicator in determining the prevalence and severity of caries is plaque accumulation [10]. Therefore; the objective of oral hygiene education is to control plaque formation by oral hygiene practices. The two most practical oral care strategies are dental brushing and flossing. Brushing teeth with fluoride toothpaste and using dental floss for interdental cleaning protects dental tissues against acid attacks [11]. In addition, it is recommended to use

"tongue cleaners" to clean the tongue where bacterial adhesion occurs due to the papillae and "mouthwash" to clean soft tissues in the oral cavity [4].

Tooth brushing is known as the most effective way to mechanically reduce dental plaque. Mechanical plaque control procedures are effective in reducing plaque and gingivitis. Bass and modified Bass technique, Charter's technique and Fones circular technique are the most recommended brushing techniques [4]. Instead of recommending a standard brushing technique, the method should be modified regarding to the size and shape of the patient's mouth, brushing skills, and the need for plaque control (presence of gingivitis or periodontitis) [4]. It is claimed that electric toothbrushes are more effective than manual ones in preventing gingivitis [12].

When applied effectively, dental floss or interdental brushes are effective methods for removing interproximal plaque [4,13]. Patients can prevent periodontal diseases such as gingivitis by flossing after brushing procedure [13]. Patient motivation should be improved by demonstrating flossing techniques on a model and explaining with visual aids. Usage of waxed dental floss will prevent damage to the interdental papilla. For patients who have difficulty using dental floss or who do not have sufficient skills (provided they do not have teeth with tight contact points), interdental brushes may be recommended [4]. Even though mouth irrigators are quite expensive, the efficiency of plate removal is low and therefore these tools are not recommended [4,14].

III. HOME CARE MOTIVATION

Brushing teeth with fluoride toothpaste, and using dental floss or interdental brushes are oral hygiene procedures that the patients should maintain a daily routine. Dental professionals should educate to provide daily motivation so that they can settle into a routine of oral hygiene practices to prevention of oral diseases [15]. According to the concept of preventive dentistry; increased knowledge and awareness will encourage healthy habits. Patients should be informed about the importance of oral hygiene practices in preventing dental caries and periodontal diseases. For this purpose; written material, slides, and other visual elements can be used in patient education. Dental x-rays or photographs can be used to better understand the pathology of dental diseases and treatment procedures [4, 16].

The most difficult patient type is those with an elevated risk of caries but low motivation. It is considered these patients who do not want to change their behavior do not sufficiently understand the importance of the oral hygiene matter. A friendly approach should be taken instead of putting pressure on the patient to change behavior. A special motivation and treatment plan should be prepared for these patients and specifically be followed up [17]. The most principal factor that can be used in predicting the number of decayed tooth surfaces in adults is oral hygiene status (18). In addition to clinically scored plaque indices, plaque disclosing solutions can be used to demonstrate the current plaque and to provide visual motivation for the patient. Plaque disclosing solutions; due to their erythrocyte content, stain the plaque and allows to see the plaque amount and localization. Typically, the dye stains the teeth in two tones, showing 'new' plaques in pink and 'old' or 'mature' plaques in blue (19).

In a study of the relationship between toothbrushing skills and dental decay prevalence in children aged 4-6 years, the prevalence of decay was found to be 39.4% in children with regular brushing habits (68.5%), and 73.6% in children with irregular brushing habits (31.5%). It was also stated in the study that the prevalence of tooth decay in children was 78.7% at the age of 4, 97.3% in children at the age of 5 and 95.3% in children at the age of 6 (10).

IV. REDUCING THE CONSUMPTION OF FERMENTABLE CARBOHYDRATES

Dental plaque is the most crucial factor in the initiation of tooth decay and gingivitis (7). Fermentable carbohydrates are metabolized by cariogenic microorganisms. Increased carbohydrate consumption and reduced saliva secretion, increase dental plaque acidity and contribute to caries formation (20). Although it is not possible to completely remove glucose from the daily diet of the patients, they should be reminded to consume high-carbohydrate foods with main meals stimulating high saliva flow (21). Consumption of sticky, acidic and refined sugar-containing foods should be limited (21). Foods that can be recommended as anti-cariogenic include eggs, cheese, peanuts and walnuts (4, 22). Furthermore, it is advisable to keep a 7-day food intake diary in order to understand the dietary pattern of the patient. During this time, all food and beverages consumed by the patient should be recorded. The content, nutritional value, approximate amount of the food and how it is prepared should also be stated (23).

Saliva plays a significant role in the colonization and metabolism of bacteria in the oral cavity in terms of its chemical content and cleansing properties (24). Patients who have systemic disease and who use drugs that reduce the flow of saliva should be identified at the beginning of treatment. Patients' consultation with doctors and use of artificial saliva preparations may be necessary (25). In addition; the use of chewing gums containing Xylitol may be recommended because it cleanses the debris in the mouth, increases the saliva flow and neutralizes the plaque acid by promoting remineralization (4).

V. USE OF FLUORIDE TOOTHPASTES AND PROPHYLACTIC AGENTS

Fluoride is the most commonly used prophylactic agent for the prevention of dental caries. Personal or professional fluoride treatments are necessary for increasing resistance of dental tissues to acid attacks. The most simple home care method is toothbrushing with a fluoridated toothpaste and this routine is very significant for caries management (22). Fluoride have topical effect on dental tissues, and it may directly affect the mineralization phase of the enamel. Topical fluoride treatments protect enamel tissue after eruption during maturation period. Furthermore, it is possible to protect the pits and fissures in occlusal surfaces with "fissure sealants" which will be applied within 2 years following tooth eruption (22).

Professional tooth cleaning involves the removal of supragingival or subgingival plaque and calculus from tooth surfaces with mechanical instruments and prophylactic paste. Oral hygiene measures have limited effects to subgingival microflora in individuals with severe periodontal disease. Therefore, professional plaque control in moderate and deep gingival pockets can change subgingival flora to a "healthier" composition. In addition, the ultrasonic enstruments used in professional cleaning can smooth the root surface and reduce plaque adherence. The frequency of check-ups should be scheduled to the needs of each individual patient (26).

Chlorhexidine (CHX) containing mouthwashes are recommended to help with mechanical cleaning procedures and to control gingivitis (27). According to a systematic review published in 2017, the use of CHX mouthwash for 4-6 weeks control gingival inflammation and reduce periodontal symptoms. However the effect of reducing plaque formation is uncertain, this is related to the concentration of the mouthwash or the frequency of rinsing. Chlorhexidine rinse has a positive effect on gingivitis and inconclusive role in caries reduction [3]. Charagundhla et al. (28) reported that fluoride and CHX mouthrinses reduced plaque accumulation and gingivitis especially in caries-free subjects. The most reported side effects of chlorhexidine mouthwash are extrinsic stains, reduced taste perception, irritation in the oral mucosa, desquamation, mucosal ulceration and erosions (27).

VI. CONCLUSION

The aim of preventive dentistry should be impart oral health care knowledge and gain oral hygiene skills to dental patients (20). In order to prevent dental caries and periodontal diseases caused by dental plaque;

1. The plaque control skills of patients should be improved.
2. The importance of dental plaque should be explained, and the plaque should be demonstrated with disclosing solutions.
3. Information on interdental cleaning and use of mouthwash should be provided.
4. Diet recommendations should be made.
5. If necessary, oral health should be maintained with professional fluoride treatments, supragingival and subgingival plaque cleansing, and pit and fissure sealants.

REFERENCES

- [1]. J.D.B Featherstone, The continuum of dental caries-evidence for a dynamic disease process, *Journal of Dental Research*, 18, 2004, 39-42.
- [2]. B. Edelstein, The dental caries pandemic and disparities problem, *BMC Oral Health*, 15 (Suppl 1), 2006, S2.
- [3]. E. Figuero, D.F. Nóbrega, M. García-Gargallo, L.M. Tenuta, D. Herrera, and J.C. Carvalho, Mechanical and chemical plaque control in the simultaneous management of gingivitis and caries: a systematic review, *Journal of Clinical Periodontology*, 44 Suppl 18, 2017, S116-S134.
- [4]. A. Felton, A. Chapman and, S. Felton, *Basic Guide to Oral Health Education and Promotion*, Practical Oral Hygiene Instruction, Page 174-177.
- [5]. O. Fejerskov, and E. Kidd, *Dental Caries, The Disease and Its Clinical Mangement* (Blackwell Munksgaard: Oxford, 2004).
- [6]. N. Tinanoff, M.J. Kanellis, and C.M. Vargas, Current understanding of the epidemiology mechanisms, and prevention of dental caries in preschool children, *Pediatric Dentistry*, 24(6), 2002; 543-51.
- [7]. I. Struzycka, The oral microbiome in dental caries, *Polish Journal of Microbiology*, 63(2), 2014, 127-35.
- [8]. L. Abusleme, A.K. Dupuy, N. Dutzan, N. Silva, J. Burleson, L.D. Strausbaugh, J. Gamonal and P.I. Diaz, The subgingival microbiome in health and periodontitis and its relationship with community biomass and inflammation, *ISME J*, 7, 2013, 1016-1025.
- [9]. F. Garcia-Godoy, and J. Hics, Maintaining the integrity of the enamel surface, The role of dental biofilm, saliva and preventive agents in enamel demineralization and remineralization, *JADA*, 139, 2008, 25S-34S.
- [10]. J. Razmienė, G. Vanagas, E. Bendoraitienė, and A. Vyšniauskaitė, The relation between oral hygiene skills and the prevalence of dental caries among 4-6 year-old children, *Stomatologija*, 13(2), 2011, 62-67.
- [11]. M.S. Wolff, and C. Larson, The cariogenic dental biofilm: good, bad or just something to control? *Braz Oral Res*, 23 Suppl 1, 2009, 31-38.
- [12]. F.A. Van der Weijden, and D.E. Slot, Efficacy of homecare regimens for mechanical plaque removal in managing gingivitis a meta review, *Journal of Clinical Periodontology*, 42 Suppl 16, 2015, S77-91.
- [13]. S. Sälzer, D.E. Slot, F.A. Van der Weijden, and C.E. Dörfer, Efficacy of inter-dental mechanical plaque control in managing gingivitis--a meta-review, *Journal of Clinical Periodontology*, 42 Suppl 16, 2015, S92-105.
- [14]. J.J Echeverria, and Sanz M (2003) *Mechanical Supragingival Plaque Control*. In Lindhe J, Karring T, Lang NP (Eds) *Clinical Periodontology and Implant Dentistry*, 4th edn, pp. 449-463, Blackwell Munksgaard, Oxford.

- [15]. R. Naidu, J. Nunn, and J.D. Irwin, The effect of motivational interviewing on oral healthcare knowledge, attitudes and behaviour of parents and caregivers of preschool children: an exploratory cluster randomised controlled study. *BMC Oral Health*. 15, 2015, 101.
- [16]. V. Reddy, D. Bennadi, S. Gaduputi, N. Kshetrimayum, S. Siluvai, and C. V. Konda Reddy Oral health related knowledge, attitude, and practice among the pre-university students of Mysore city. *J Int Soc Prev Community Dent*. 4(3), 2014, 154-158.
- [17]. G.A. Bennett, H.A. Roberts, T.E. Vaughan, J.A. Gibbins, and L. Rouse, Evaluating a method of assessing competence in Motivational Interviewing: a study using simulated patients in the United Kingdom. *Addict Behav*, 32, 2007, 69-79.
- [18]. E. Bjertness, The importance of oral hygiene on variation in dental caries in adults. *Acta Odontologica Scandinavica*, 49(2), 1991, 97-102.
- [19]. C.M.C. Volgenant, F.Y. Mostajo, N.A.M. Rosema, F.A. van der Weijden, J.M. Ten Cate, and M.H. van der Veen, Comparison of red autofluorescing plaque and disclosed plaque-a cross-sectional study, *Clinical Oral Investigations*, 20(9), 2016, 2551-2558.
- [20]. A. Georgios, T. Vassiliki, and K. Sotirios, Acidogenicity and acidurance of dental plaque and saliva sediment from adults in relation to caries activity and chlorhexidine exposure. *J Oral Microbiol*, 7, 2015, 10.
- [21]. M.M. Naeeni, S. Jafari, M. Fouladgar, K. Heidari, Z. Farajzadegan, M. Fakhri, P. Karami, and R. Omid, Nutritional Knowledge, Practice, and Dietary Habits among school Children and Adolescents, *Int J Prev Med*, 5(Suppl 2), 2014, S171-S178.
- [22]. M. Igić, M. Apostolović, L. Kostadinović, O. Tricković-Janjić, and D. Surdilović, The importance of health education in prevention of oral health in children, *Medicinski Pregled*, 61(1-2), 2008, 65-70.
- [23]. G.V. Chour, and R.G. Chour, Diet Counselling – A Primordial Level of Prevention of Dental Caries, *IOSR Journal of Dental and Medical Sciences*. 13 (1), 2014, 64-70.
- [24]. S.P. Humphrey, R.D.H, and R.T. Williamson, A review of saliva: Normal composition, flow, and function. *J Prosthet Dent*, 85, 2001, 162-169.
- [25]. J. Miranda-Rius, L. Brunet-Llobet, E. Lahor-Soler, and M. Farré, Salivary Secretory Disorders, Inducing Drugs, and Clinical Management. *Int J Med Sci*, 12(10), 2015, 811-824.
- [26]. E. Westfelt, Rationale of mechanical plaque control, *Journal of Clinical Periodontology*, 23(3 Pt 2), 1996, 263-267.
- [27]. P. James, H.V. Worthington, C. Parnell, M. Harding, T. Lamont, A. Cheung, H. Whelton, and P. Riley, Chlorhexidine mouthrinse as an adjunctive treatment for gingival health, *Cochrane Database Systematic Review*, 31(3), 2017, CD008676.
- [28]. B.R. Charugundla, S. Anjum, and M. Mocherla, Comparative effect of fluoride, essential oil and chlorhexidine mouth rinses on dental plaque and gingivitis in patients with and without dental caries: a randomized controlled trial, *International Journal of Dental Hygiene*, 13(2), 2015, 104-109.

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