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Optimal Oral Health for Children: An Interdisciplinary Approach between Paediatricians and Paedodontists

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Abstract

This manuscript focuses on relevant and fundamental aspects of oral healthcare of the newborn, infant, children and adolescent for the paediatrician and other health care personnel. In almost all cases, these medical providers have first contact with infants during the first year of life and rarely does a medical curriculum include time or opportunity to provide exposure to fundamentals of oral health care. It is important that they be aware of the prevention of oral disease that begins early in life. As such it becomes imperative to provide paediatricians and other health care personnel with what will enable optimal oral health and early recognition of oro-facial abnormalities, relevant risk assessment and needful referral to paediatric Dentist (paedodontists) for early intervention and disease limitation. The aim of this article is to diminish the existing ambiguity among paediatricians and medical practitioners regarding oral disease and its prevention.

Keywords: Optimal; Paediatricians; Paedodontists

Introduction

Good oral and Dental health is important aspects of overall health of children [1]. The youngest of the paediatric patient population visit the paediatricians more than a Dentist [2]. Thus, paediatricians are considered to be in a unique position to provide preventive oral information and to diagnose oral diseases in their patients early on, because of the early age at which children are brought to their offices.

According to American Academy of Paediatrics (AAP), number of children (infants and 1-year-old) seen by Paediatricians is the around 89% as compared to only 1.5% who had dental visits for annually [3].

Consequently, ratio of visits to physicians versus visits to Dentists is around 250:1. Data also reported that the prevalence of Early Childhood Caries (ECC) is around 36%-85% worldwide 2-6 while in India it is 44% [4].

Literature Review

The role of primary medical clinicians in promoting oral health

Paediatricians, family physicians and other primary care clinicians are well positioned to improve the oral health of children [5]. By working together, paediatricians and dentists can reinforce each other's' efforts to provide excellent preventive oral care [6]. Paediatricians are advised to refer children to a paediatric dentist (aedodontist) by 1 year of age or, when faced with a limited dental workforce, continue providing preventive oral health services in the medical home until a referral is possible [7]. Also are needed to enhance collaborations, daily interactions, joint research projects, mutual educational programs, and shared advocacy between the paediatric and the oral health communities especially paedodontists [8]. The historic separation of medicine and dentistry works against these collaborations, and we must be proactive in making them happen [9].

Defining paediatric dentistry

Paediatric dentistry is an age-defined specialty that provides both primary and comprehensive preventive and therapeutic oral health care for infants and children through adolescence, including those with special health care needs [10].

Paediatric dentistry encompasses a variety of disciplines, techniques, procedures, and skills that share a common basis with other specialties, but are modified and adapted to the unique requirements of infants, children, adolescents, and those with special health care needs [11]. A must know guidelines for paediatricians.

If appropriate measures are applied early enough, it may be possible to totally prevent dental caries [12]. Preventive measures can be divided into various groups.

Recommendations for parental oral health

Oral health education: All primary health care professionals who serve parents and infants should provide education on the

etiology and prevention of Early Childhood Caries (ECC) [13]. Educating the parent on avoiding saliva-sharing behaviors (eg, sharing spoons and other utensils, sharing cups, cleaning a dropped pacifier or toy with their mouth) can help prevent early colonization of Mutan Sreptococci (MS) in infants [14].

Comprehensive oral examination: Referral for a comprehensive oral examination and treatment during pregnancy is especially important for the mother [15]. This helps prevent Pregnancy Gingivitis and Periodontitis [16].

Professional oral health care: Routine professional dental care for the parent can help optimize oral health [17]. Removal of active caries, with subsequent restoration of remaining tooth structure, in the parents suppresses the MS reservoir and minimizes the transfer of MS to the infant, thereby decreasing the infant's risk of developing ECC [18].

Oral hygiene: Brushing with fluoridated toothpaste and flossing by the parent are important to help dislodge food and reduce bacterial plaque levels [19].

Diet: Dietary education for the parents includes the determining cariogenicity of certain foods and beverages, frequency of consumption of these substances, and their role in the demineralization/remineralization process.

Fluoride: Using a fluoridated toothpaste and rinsing with an alcohol-free, over-the-counter mouth rinse containing 0.05 percent sodium fluoride once a day or 0.02% sodium fluoride rinse twice a day have been suggested to help reduce plaque levels and promote enamel remineralization.

Recommendations for the infant's oral health

Oral health risk assessment: Every infant should receive an oral health risk assessment from his/her primary health care provider or qualified health care professional by six months of age. This initial assessment should evaluate the patient's risk of developing oral diseases of soft and hard tissues, including caries-risk assessment, provide education on infant oral health, and evaluate and optimize fluoride exposure.

Natal and neonatal teeth: While eruption patterns for most infants suggest the first tooth emerges at approximately 4-6 months of age, a very small percentage of infants have manifested the presence of what appears to be an early emerging primary lower central incisor. Clinical concerns exist when this tooth manifests significant mobility to the extent that exfoliation may occur, poses a problem for potential aspiration and airway obstruction. If an extra tooth, extraction is recommended; if an actual incisor, airway concerns override retention concerns.

Establishment of a dental home

Parents should establish a dental home for infants by 12 months of age. The initial visit should include thorough medical and dental histories, a thorough oral examination, and performance of an age-appropriate tooth brushing demonstration and prophylaxis and fluoride varnish treatment if indicated.

Teething: Teething can lead to intermittent localized discomfort in the area of erupting primary teeth, irritability, and excessive salivation; however, many children have no apparent difficulties. Treatment of symptoms includes oral analgesics and chilled rings for the child to gum. Use of topical anesthetics, including over-the-counter teething gels, to relieve discomfort are discouraged due to potential toxicity of these products in infants.

Oral hygiene: Oral hygiene measures should be implemented no later than the time of eruption of the first primary tooth. Tooth-brushing should be performed for children by a parent twice daily, using a soft toothbrush of age-appropriate size and the correct amount of fluoridated toothpaste.

Diet: Epidemiological research shows that human milk and breast-feeding of infants provide general health, nutritional, developmental, psychological, social, economic, and environmental advantages while significantly decreasing risk for a large number of acute and chronic diseases. Breastfeeding greater than seven times daily after 12 months of age is associated with increased risk for ECC. Night time bottle feeding with juice, repeated use of a sippy or no-spill cup, and frequent in between meal consumption of sugar-containing snacks or drinks (eg, juice, formula, soda) increase the risk of caries.

Fluoride: Optimal exposure to fluoride is important to all children. The use of fluoride for the prevention and control of caries is documented to be both safe and effective. When determining the risk-benefit of fluoride, the key issue is mild fluorosis versus preventing devastating dental disease. The correct amount of fluoridated toothpaste should be used twice daily. No more than a smear or rice-sized amount of fluoridate toothpaste should be used for children under age three; no more than a pea-sized amount should be used for children ages three to six. Professionally-applied topical fluoride, such as fluoride varnish, should be considered for children at risk for caries. Systemically-administered fluoride should be considered for all children at caries risk who drink fluoride deficient water (less than 0.6 ppm) after deter-mining all other dietary sources of fluoride exposure. Careful monitoring of fluoride is indicated in the use of fluoride-containing products.

Injury prevention: Practitioners should provide age-appropriate injury prevention counselling for orofacial trauma. Initially, discussions would include play objects, pacifiers, car seats, and electric cords.

Non-nutritive habits: Non-nutritive oral habits (eg, digit or pacifier sucking, bruxism, abnormal tongue thrust) may apply forces to teeth and dentoalveolar structures. It is important to discuss the need for early sucking and the need to wean infants from these habits before malocclusion or skeletal dysplasias occur. Habit breaking intra oral appliances fabricated by Paedodontists plays important role in intervening such habits.

Recommendations for adolescent oral health: Treatment of the adolescent patient can be multi-faceted and complex. This guideline addresses some of the special needs within the adolescent population and proposes general recommendations for their management.

Caries: Adolescence marks a period of significant caries activity for many individuals. Research suggests that the overall caries rate is declining, yet remains highest during adolescence.

Management of caries of primary prevention

Fluoride: Fluoridation has proven to be the most economical and effective caries prevention measure. The adolescent can benefit from fluoride throughout the teenage years and into early adulthood. Although the systemic benefit of fluoride incorporation into developing enamel is not considered necessary past 16 years of age, topical benefits can be obtained through optimally-fluoridated water, professionally-applied and prescribed compounds, and fluoridated dentifrices.

Oral hygiene: Adolescence can be a time of heightened caries activity and periodontal disease due to an increased intake of cariogenic substances and negligence to oral hygiene procedures. Tooth brushing with a fluoridated dentifrice, Professional removal of plaque and calculus and flossing can provide benefit through the topical effect of the fluoride and plaque removal from tooth surfaces.

Diet management: Many adolescents are exposed to and consume high quantities of refined carbohydrates and acid-containing beverages. The adolescent can benefit from diet analysis and modification.

Sealants: Sealant placement is an effective caries-preventive technique that should be considered on an individual basis. Sealants have been recommended for any tooth, primary or permanent, that is judged to be at risk for pit and fissure caries.

Discussion

Secondary prevention

Professional preventive care: Professional preventive dental care, on a routine basis, may prevent oral disease or disclose existing disease in its early stages. The adolescent patient whose oral health has not been monitored routinely by a dentist may have advanced caries, periodontal disease, or other oral involvement urgently in need of professional evaluation and extensive treatment.

Restorative dentistry: In cases where remineralization of non-cavitated, demineralized tooth surfaces is not successful, as demonstrated by progression of carious lesions, dental restorations are necessary.

Periodontal diseases: Adolescence can be a critical period in the human being's periodontal status. Epidemiologic and immunologic data suggest that irreversible tissue damage from periodontal disease begins in late adolescence and early adulthood. Adolescents have a higher prevalence of gingivitis than pre pubertal children or adults. The rise of gender hormones during adolescence is suspected to be a cause of the increased prevalence. Studies suggest that the increase in gender hormones during puberty affects the composition of the subgingival microflora. This inflammatory gingivitis is believed to be transient as the body accommodates to the ongoing presence of the gender hormones. Conditions affecting the adolescent include, (but are not limited to), gingivitis, puberty gingivitis, hyperplastic gingivitis related to orthodontic therapy, gingival recession that may or may not be related to orthodontic therapy, drug-related gingivitis, pregnancy gingivitis, necrotizing ulcerative gingivitis, localized aggressive periodontitis, and periodontitis. Personal oral hygiene and regular professional intervention can minimize occurrence of these conditions and prevent irreversible damage.

Malocclusion: Any tooth/jaw positional problems that present significant esthetic, functional, physiologic, or emotional dysfunction are potential difficulties for the adolescent. These can include single or multiple tooth malpositions, tooth/jaw size discrepancies, and craniofacial disfigurements, Temporo Mandibular Joint (TMJ) problems. These presents functional, aesthetic, physiologic, or emotional problems for the adolescent should be referred for evaluation by a Paedodontist or an Orthodontist.

Third molars: Third molars can present acute and chronic problems for the adolescent. Impaction or malposition leading to such problems as pericoronitis, caries, cysts, or periodontal problems merits evaluation for removal.

Ectopic eruption: Abnormal eruption patterns of the adolescent's permanent teeth can contribute to root resorption, bone loss, gingival defects, space loss, and aesthetic concerns. Early diagnosis and treatment of ectopically erupting teeth can result in a healthier and more aesthetic dentition.

Traumatic injuries: The most common injuries to permanent teeth occur secondary to falls, followed by traffic accidents, violence, and sports. The administrators of youth, high school, and college organized sports have demonstrated that dental and facial injuries can be reduced significantly by introducing mandatory protective equipment such as face guards and mouth guards. Fabrication of an age-appropriate, sport-specific, and properly-fitted mouth guard/faceguard is recommended.

Conclusion

Many of the dental diseases of childhood can be prevented by proper education and guidance of the parents. To achieve this objective, a greater interaction between paediatricians and paedodontists are must. Early recognition of dental abnormalities, detection of onset of caries, traumatic injuries followed by referral to a paedodontist and implementations of preventive strategies can set stage for optimal oral health for children.

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