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The Journal of Dental Panacea

Journal homepage: <https://www.jdentalpanacea.org/>



Review Article

A literature review on early childhood caries

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ARTICLE INFO

Article history:

Received 25-09-2022

Accepted 11-10-2022

Available online 24-11-2022

Keywords:

Early childhood caries

ECC

Pain

Malnourished child

ABSTRACT

Early childhood caries is found to be the most common chronic illness in the children as well as in the adolescents. Early childhood caries can be defined as the presence of one or more than one decayed surface in any of the primary tooth. Early childhood caries can lead to malnutrition, as in early childhood caries, progression of the caries can lead to pain and inability to chew the food. In early childhood caries there are disturbed sleeping patterns. Children with severe caries rate also shows reduced weight and retarded growth.

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1. Introduction

Early childhood caries can be defined as the presence of one or more than one decayed tooth surface in any of the primary tooth of the children up to seventy-one months of age or younger than seventy-one month. Early childhood caries is found to be the most common and chronic illness in the children. Early childhood caries might occur due to poor oral hygiene maintenance, might be due to high sucrose intake, due to lack of patient education and some-time genetically.^{1,2}

2. Etiology of Early Childhood Caries

The basic etiology of the early childhood caries is multifactorial origin, not a single origin. The basic etiology of the early childhood caries involves the interaction between the pathogenic organisms and the fermentable substrate, along with the susceptibility of the host and the

most common is the time. The demineralization of tooth structure can occur by the cariogenic microorganisms in the presence of fermentable carbohydrate by taking the sufficient time, which finally leads to cavitation on the tooth surface.^{3,4}

One of the most important roles in the development of the process of cavitation is done by pathogenic microorganisms. The most common pathogenic microorganisms is found to be the streptococcus mutans in the development of the carious lesion. Most commonly streptococcus mutans found to be cultivated from the dental plaque of pre-school going children those are having early childhood caries. Microorganisms that are capable of doing caries has the tendency of vertical transmission from the care takers to children. literature also revealed that children those are having no carious lesion in the oral cavity, in those individual's streptococcus mutans constitute about 1 percent of the micro flora. Apart from streptococcus mutans, other pathogenic microorganisms that are capable for the process of cavitation and are associated with early childhood caries are veillonella and lacto bacilli. literature also revealed that

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Lactobacilli plays a major role in the progression of the carious process rather than the initiation of the carious lesion. It was also stated that *Lactobacilli* count is found to be more on the decayed tooth surface rather than the sound tooth surface. Literature also stated that the infant whose mother is having high levels of *Streptococcus mutans*, are at higher risks of acquiring the microorganisms earlier as compared to the children whose mother is having low levels of *Streptococcus mutans* in the oral cavity.^{5–7}

According to different studies the most cariogenic bacteria i.e. *Streptococcus mutans* has the ability to be transmitted to the infant oral cavity through the mother's mouth. There are some other associated risk factors for the development of caries in infants and adolescents, such as dietary habits, not maintaining oral hygiene, intake of high carbohydrates diet. Dietary practice is found to be at the higher risk for establishing the early caries. Frequent consumption of snacks and beverages in between the meal added the incidence of developing the caries, due to increase in contact of food item containing sugar either in the consumed form or in the liquid form, and the cariogenic bacteria on the susceptible tooth. Sucrose is found to be the major cariogenic form of sugar in developing the carious lesion on the surface of the tooth or teeth. Sucrose is found to be the major cariogenic sugar because sucrose acts as a substrate both for the production of extracellular polysaccharides as well as for acid production for the dental plaque.^{8,9}

It is stated that lactose is present both in bovine milk and in human milk, they can enhance the implantation of cariogenic bacteria over the tooth surface and result in the development of the carious lesion in the laboratory animals. Although it has been stated that bovine milk and human milk can cause dental caries but the prevalence of developing caries with the human milk or with the bovine milk is quite low and is totally associated with the frequent breast feeding or bottle feeding or prolonged breast feeding or bottle feeding to the child, until the child is two years or more than two years old.^{10,11}

Along with this reduced salivary flow also enhances the incidence of developing carious lesion in the oral cavity. Salivation falls minimum during the night sleep, this ultimately affects the cleansing and buffering action which results in fermentation of cariogenic substrate over the surface of the tooth. Along with this, other factors such as age, socioeconomic status, oral hygiene measure and cultural trends, poor parental education, low income source in the family, single earning person, are associated with increase caries rate in the pre-school going children.

2.1. Clinical features of early childhood caries

Early childhood caries follows a specific pattern in the progression of the disease. In early childhood caries, the carious lesion initially starts from the labial surface of the

maxillary anterior teeth, initially the lesion appears as the whitish demineralized area and in progression these lesions start becoming pigmented and start spreading laterally and then in the coronal direction. Caries in the posterior teeth starts in the pit and fissure area along with the gingival area on the buccal surface of the posterior teeth. Upper six anterior teeth are severely affected in the early childhood caries as they are among the first primary teeth to erupt in the oral cavity. Along with these mandibular anterior teeth are found to be the most resistant teeth in the oral cavity to develop early childhood caries, because of the reason that they are present in close proximity to the secretion of the submandibular gland as well as has an advantage of cleansing action of the tongue during the process of the sucking. Tongue helps in preventing the pooling of the liquid around the mandibular incisors area.^{12–14}

2.2. Various consequences of carious lesion

Among the children and the adolescents, caries is found to be the most common chronic illness and it has an effect on oral health of the individual as well as it affects the general health of the individual. It is also stated that children with early childhood caries experienced reduced weight and retarded growth, due to carious lesion, child with early childhood caries experiences pain which leads to inability to chew the food properly, this ultimately results in limitation in the choice of the food and reduced appetite, which affects the health of the individual.¹⁵

Other consequences of the early childhood caries, as the disease progresses it may lead to the pulpal involvement of the tooth and in advance cases it may lead to the development of the abscess which may damage the permanent tooth or teeth in terms of enamel hypoplasia, opacities on the surface of the tooth, hypoplasia of the tooth or the teeth or may lead to incomplete development of the tooth. Premature exfoliation of the primary tooth or teeth can lead to reduced dental arch, may lead to displacement of the tooth, rotation of the tooth, tilting of the tooth. Premature exfoliation may lead to disturbances in the phonetics. It has also been noted that, children suffering from early childhood caries grows at a slower rate as compared to the children those are not having any carious lesion in the oral cavity. It has also been noted that, early childhood caries results in iron deficiency due to malnutrition.

2.3. Management of the early childhood caries

The initial most treatment objective of the early childhood caries is to improve the oral hygiene of the patient and to eliminate or restore the carious tooth or teeth, and most importantly to improve the functional well-being and aesthetic of the children. The most important step in the management of the early childhood caries is the dental education to both the parents as well as to the children,

regarding the methods of brushing, benefits of brushing. According to American academy of pediatric dentistry, the current practice protocol of povidone or chlorhexidine results in restriction in the development of the new carious lesion. Under the restorative phase, restoration of the tooth with the materials like dental amalgam, composite or with the glass ionomer cement. Stainless steel crown can be used to restore the multi surface carious tooth after pulpotomy or pulpectomy procedure. And tooth, having bad prognosis can be extracted to prevent the pain and para-traumatic restorative treatment is good approach in treating the initial lesion of the enamel surface and the carious part is removed from the tooth surface and is restored with the help of the glass ionomer cement.^{9–15}

3. Conclusion

Early childhood caries is the most common disease of the oral cavity affecting the children. Early childhood caries is found to be the infectious as well as transmissible disease. Progression of the early childhood caries leads to pain and difficulty in chewing the food which ultimately leads to malnutrition of the child and retarded growth of the individual. A dentist should have a thorough knowledge regarding the cause of early childhood caries and should be knowing thoroughly about the different treatment modalities for the ECC.

4. Source of Funding

No financial support was received for the work within this manuscript.

5. Conflict of Interest

None declared.

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Cite this article: Kedia S, Purwar P, Acholkar JS, Mishra P, Rekulwad NA, Ambekar BA. A literature review on early childhood caries. *J Dent Panacea* 2022;4(4):151-153.