Early Childhood Caries
A Continuing Epidemic Oral Health Problem in the United Arab Emirates

By Dr Mawlood Kowash, UAE

Early Childhood Caries (ECC) is a chronic, transmissible infectious disease affecting the primary (milk) teeth. The etiology of the condition is a combination of factors including frequent consumption of fermentable carbohydrates as liquids, especially when the baby is sleeping, with on-demand breast- or bottle-feeding. Other factors include oral colonization by cariogenic bacteria (especially mutans streptococci), poor oral hygiene and poor parent-ing. It is the most common chronic disease among children. The prevalence of ECC in infants and preschool children has been reported to vary between 3% and 94% worldwide. In United Arab Emirates (UAE), the prevalence is one of the highest in children.

Introduction
Caries or dental decay in children has been known to exist for many centuries [1]. Early Childhood Caries (ECC) is a chronic, transmissible infectious disease affecting the primary (milk) teeth. It is defined as the presence of one or more decayed, filled or missing tooth surfaces in any primary tooth in a child 71 months of age or younger [2,3]. In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC). From ages three through five, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a de-

Prevention of ECC can be achieved by the education of prospective and new parents, as well as by the identification of ‘high risk’ children [7]. Strategies have focused on the individual mother and child by preventing transfer of cariogenic bacteria from mother to her infant, using preventative agents such as fluoride and teaching good oral hygiene practices [8]. Community-based approaches have been attempted. An example of a successful program was reported by Kowash et al. [9] which investigated the effect of dental health education provided by trained, non professionals (not dentists) carrying out regular home visits in a low socio-economic high-caries area in Leeds, UK. The study was able to demonstrate a significantly reduced occurrence of ECC after three years.

The treatment of ECC is very costly, time consuming and in most cases, requires full dental rehabilitation under general anesthesia by a pediatric dentist. Unfortunately, in many countries, even in the developed world, these carious teeth end up being extracted.

This paper provides an updated evidence-based review of ECC. The literature in regards to ECC definition and terminology, aetiology, prevalence, clinical picture and management is discussed. A solution to the continuing problem of ECC is suggested.

Definition and Terminology of ECC
ECC has been defined as “the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces” in any primary tooth in a child 71 months of age or younger [2]. In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC). From ages three through five, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a de-
cayed, missing, or filled score of 0.84 (age three), 4.35 (age four), or 6.16 (age five) surfaces constitutes S-ECC [10].

Moreover, the following risk factors are usually seen in populations: i) genetic factors, ii) early childhood caries (ECC), iii) economic status, iv) oral hygiene, v) dietary habits, vi) immune system, vii) fluoride exposure, viii) parental attitudes and knowledge of oral health, and ix) for younger children: pacifier use and nursing bottle syndrome. In addition, patients with learning disabilities must be included.

The prevalence of ECC varies greatly in different geographic areas. The prevalence worldwide has been reported to vary between 5% and 50% [2]. This wide range may be due to several factors such as: i) children studied, their age and sex, ii) methodology of study and ascertainment, iii) socio-economic status, iv) ethnic and cultural factors and v) criteria used for diagnosis.

The prevalence of ECC in one country usually cannot be compared with another country’s figures. This is because each country has its own socio-economic factors, immigration patterns, and population characteristics. In addition, the prevalence of ECC is influenced by many factors such as: i) socioeconomic status, ii) oral hygiene, iii) dietary habits, iv) immune system, v) fluoride exposure, vi) parental attitudes and knowledge of oral health, and vii) for younger children: pacifier use and nursing bottle syndrome.

Socio-economic factors: Patients with lower socio-economic status are at higher risk of developing ECC. Children from low-income families are more likely to suffer from ECC due to lack of proper nutrition and dental care. Studies have shown that children from low-income families are more likely to have ECC than children from high-income families.

Oral hygiene: Poor oral hygiene is a major risk factor for the development of ECC. Children who do not brush their teeth regularly are more likely to develop ECC than children who brush their teeth regularly.

Dietary habits: High consumption of sugar-rich foods and drinks is a major risk factor for ECC. Children who consume a lot of sugar-rich foods and drinks are more likely to develop ECC than children who consume less sugar.

Immune system: Children with immune system disorders are at higher risk of developing ECC. Children with immunodeficiency disorders are more likely to develop ECC than children with normal immune system.

Fluoride exposure: Fluoride is an important factor in preventing ECC. Children who are exposed to fluoride from water, toothpaste, and dietary sources are less likely to develop ECC than children who are not exposed to fluoride.

Parental attitudes and knowledge of oral health: Parents who are knowledgeable about oral health and who encourage their children to maintain good oral hygiene are less likely to have ECC than parents who are not knowledgeable about oral health.

For younger children: Pacifier use and nursing bottle syndrome are risk factors for ECC. Children who use pacifiers and drink from a bottle are more likely to develop ECC than children who do not use pacifiers and drink from a cup.

The problem of ECC is multifaceted and requires a multi-faceted approach for its prevention and management. This includes: i) education of parents and caregivers on the importance of good oral hygiene and proper diet, ii) community-based programmes for promoting healthy eating habits and oral hygiene, iii) the use of fluoride in water, toothpaste, and dietary sources, iv) the use of fluoride varnish for high-risk children, v) the use of dietary supplements such as vitamins and minerals, and vi) the use of anticaries agents such as fluoride toothpaste and mouth rinses.

Prevention of ECC: Prevention of ECC is an important aspect of community-based programmes. This includes: i) education of parents and caregivers on the importance of good oral hygiene and proper diet, ii) community-based programmes for promoting healthy eating habits and oral hygiene, iii) the use of fluoride in water, toothpaste, and dietary sources, iv) the use of fluoride varnish for high-risk children, v) the use of dietary supplements such as vitamins and minerals, and vi) the use of anticaries agents such as fluoride toothpaste and mouth rinses.

Management of ECC: Management of ECC includes treatment of existing lesions and prevention of new lesions. This includes: i) restoration of decayed teeth, ii) use of anticaries agents such as fluoride toothpaste and mouth rinses, iii) use of dietary supplements such as vitamins and minerals, and iv) education of parents and caregivers on the importance of good oral hygiene and proper diet.

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Establishment of a dental home: A dental consultation visit no later than one year of age is recommended to educate parents and caregivers on the importance of good oral hygiene and proper diet. This includes: i) education of parents and caregivers on the importance of good oral hygiene and proper diet, ii) community-based programmes for promoting healthy eating habits and oral hygiene, iii) the use of fluoride in water, toothpaste, and dietary sources, iv) the use of fluoride varnish for high-risk children, v) the use of dietary supplements such as vitamins and minerals, and vi) the use of anticaries agents such as fluoride toothpaste and mouth rinses.

Oral hygiene: Oral hygiene measures should be implemented no later than one year of age. This includes: i) education of parents and caregivers on the importance of good oral hygiene and proper diet, ii) community-based programmes for promoting healthy eating habits and oral hygiene, iii) the use of fluoride in water, toothpaste, and dietary sources, iv) the use of fluoride varnish for high-risk children, v) the use of dietary supplements such as vitamins and minerals, and vi) the use of anticaries agents such as fluoride toothpaste and mouth rinses.

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Page 24
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References

The full list of references is available from the publisher.

Conclusion
Early childhood caries is a preventable disease and the solution for this continuing problem can be achieved by educating parents of young children and pregnant mothers. It is important that the dental health messages should focus on educating and changing the behaviour of parents or caregivers. Moreover, the dental health messages should be practical, consider the socioeconomic status of the parents and be culturally sensitive. The management of ECC should take into consideration the biology of the caries process and protective mechanisms and to be effective, the restoration of active lesions should be monitored regularly following up and long-term preventive strategy.

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