Early Childhood Caries with the Perspective of Pediatrician

Pediatrist Bakış Açısı ile Erken Süt Çocuğu Diş Çürükleri

Early Childhood Caries

Ibrahim Hakan Bucak[1], Metin Çalışır[2], Habip Almis[3], Agah Bahadır Ozturk[4], Mehmet Turgut[5]
[1]Department of Pediatrics, [2]Department of Periodontology, [3]Department of Pediatrics, [4]Department of Family Medicine, [5]Department of Pediatrics,
Adıyaman University School of Medicine, Adıyaman, Türkiye

Özet

Amaç: Erken süt çocuğu diş çürüğü 24-72 ay çocuklarda en az bir ya da daha fazla diş çürüğü, süt dişlerinde kayıp ya da dolgu olması olarak tanımlanmaktadır. Etyolojik faktörlerin değişim göstermesi nedeniyle erken süt çocuğu diş çürüklerinin prevalansı tüm dünyada farklılık göstermektedir. Bu çalışmanın amacı Türkiye'nin güneydoğu Anadolu bölgesinde erken süt çocuğu diş çürüğü prevalansını ve etyolojik faktörlerini belirlemek ve pediatrist bakışı açısı ile değerlendirmektir. Gereç ve Yöntem: Pediatri polikliniğimize herhangi bir şikayetle başvuran, yaşları 24-72 ay arasında değişen olgular çalışmaya dahil edildi. Diş çürüğü olanlar ve olmayan değerlendirildi ve yetkili kişi tarafından ailelere bir anket doğrultusunda sorular soruldu. Bu anket; anne sütü, vitamin D kullanımı, multivitamin kullanımı, demir desteği, biberon ve emzik kullanımı, yoğurt tüketimi, asitli içekler, aynı doğrultuda diş fırçalama alışkanlıkları, diş hekimi tarafından kontrolü, ebeveynlerin sigara kullanımını içermekte idi. Bulgular: Çalışmaya 553 hasta dahil edildi. Erken süt çocuğu diş çürüğü % 33,1 olarak tespit edildi. Bu çalışmanın sonucunda; emzik kullanımı, multivitamin desteği ve asitli içeceklerin erken süt çocuğu diş çürüğüne anlamlı derecede katkıda bulunmakta olduğu belirlendi. Tartışma: Çocukluk yaş grubunda biz emzik kullanımından, gereksiz multivitamin desteğinden, asidik içeceklerden kaçınılması gerektiğini ya da bu gıdaların verilmesinden sonra dişlerin fırçalanmasını öneriyoruz.

Anahtar Kelimeler

Erken Süt Çocuğu Diş Çürüğü; Multivitamin; Emzik

Abstract

Aim: Early childhood caries are characterized by the presence of at least one or more decayed, missing or filled teeth surfaces in any primary tooth of a child 24-72 months of age. The prevalance of early childhood caries is variable among the world because of wide range of contributing aetiological factors. Aim of this study to determine the prevalance and aetiologic factors of early childhood caries, in South East Anatolia Region of Turkey and evaluated as a pediatrician view. Material and Method: Patients admitted to pediatric polyclinics for any reason, aging between 24 to 72 months, were enrolled in this study. The children who had dental caries and who had not were examined by a dentist. Families were requested to voluntarily answer questions asked by our staff who follow a questionnaire. This questionnaire contains breastfeeding, usage of vitamin D, multivitamin formulations, iron supplements, baby bottle and pacifier, as well as consumpion of yogurt, acidic drinks, in addition to health habits of brushing teeth, check up by the dentist, cigarette usage of parents (mother, father or both). Results: 553 patients were included the study. Early childhood caries was determined to be 33,1 %. As a result of this study, we found that pacifier usage, multiviamin supplements and acidic drinks were significantly contributing to early childhood caries. Discussion: We advise refrainment from pacifier usage and unnecesary consumption of multivitamin supplemantation, acidic drinks or at least brushing of teeth rightafter consumption of these foods in childhood.

Keywords

Early Childhood Caries; Multivitamin; Pacifier

DOI: 10.4328/JCAM.3810 Received: 04.08.2015 Accepted: 31.08.2015 Printed: 01.09.2016 J Clin Anal Med 2016;7(5): 614-7
Corresponding Author: İbrahim Hakan Bucak, Department of Pediatrics, Adıyaman University School of Medicine, Adıyaman, Türkiye.
T.: +90 4162161015 GSM: +905072372752 F.: +90 4162250838 E-Mail: ihbucak@hotmail.com

Introduction

Early childhood caries (ECC; formerly termed "nursing bottle caries", "baby bottle tooth decay"); is the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child under the age of six [1]. ECC is a serious public health problem that affects infants and toddlers worldwide [2]. The contribution of dental caries to the burden of oral diseases is about ten times higher than that of periodontal disease, the other common oral condition [3,4]. Many conditions (otitis media, respiratory tract infections, difficulty in eating, iron deficiency, difficulty sleeping, chronic pain) have been found to be associated with ECC [5]. The prevalance of ECC is variable among many regions of the World because of the wide range of different aetiologic factors like biological (human dental flora e.g.), behavioral (brushing teeth, dietery habits e.g.) and environmental (water fluorid level e.g) causes [6,7]. In this study we aimed to determine the incidence and aetiologic factors of ECC in the city center of Adıyaman and evaluated as a pediatrician view.

Material and Method

The study was conducted in pediatri outpatient clinic of the Adıyaman University School of Medicine, dates between 01 August 2013 to 30 October 2013. Patients admitted to our outpatient clinic for any reason, aging between 24 to 72 months, were enrolled in this study. Patients who had previous chronic disease or any drug usage were excluded. We prepared a questionnaire, and asked questions face-to-face to the parents about breastfeeding, usage of vitamin D, multivitamin formulations, iron supplements, baby bottle and pacifier, as well as consumpion of yogurt, acidic drinks, in addition to health habits of brushing teeth, check up by the dentist, cigarette usage of parents (mother, father or both). Dental examination was made by a dentist. Height and weight were measured with comercial scale of model DR-MOD-85 (Baskul, Istanbul, Turkey). The patients were divided into two groups: Children with ECC is group 1(G1) and children without ECC is group 2 (G2). Findings were analyzed using the SPSS 15.0© pockets programme.

For this study ethics committee approval was taken from Adiyaman University Ethics Committee (Approval no: 2013/09-1.5). Written permission was taken before filling the questionare.

Results

Five hundred fifty three (553) patients agreed to participate in the study. Number of patients in G1 and G2 were 183 and 370, respectively (Table 1). The prevalence of dental caries in patients who participated in the study was 33.1% (183/553). In terms of gender, there was no statistically significant difference between groups (p=0.618). Considering the age distribution of cases; with increasing age, the frequency of dental caries was found to increase (Figure 1). In paralel, groups were found to differ significantly in terms of weight and height since elder the children taller and heavier than their aftercomers.

Breast milk (BM) intake and duration of breastfeeding before weaning were not different between the groups. No differences were found about vitamin D usage, iron supplement, baby bottle usage and yogurt eating habits between the groups, as well. However early childhood caries (ECC) were significantly higher

Table 1. All results obtained in this study.

		G1 (Caries affected) N (%)	G2 (Caries Free) N (%)	p (<0.05)
Gender	Boys	105 (34)	204 (32)	0.618
	Girls	78 (66)	166 (68)	
Age (month)				
(Mean±St deviation)		57.3 ±11.2	45.4 ± 14.7	0.001
Weight (gr)				
(Mean±St deviation)		17.6 ± 3.7	16 ± 5.9	0.001
Height (cm)				
(Mean±St deviation)		107.8 ± 8.9	100.5 ± 9.9	0.001
Breastfeeding	Yes	177 (33.3)	355 (66.7)	0.654
	No	6 (28.6)	15 (71.4)	
Duration of breastfeeding (month)(Mean±St deviation)	17.7 ± 8.2	16.9 ± 7.7	0.234	
Vitamin D	Yes	149 (32.5)	309 (67.5)	0.54
	No	34 (35.8)	61 (64.2)	
Multivitamin	Yes	63 (27.3)	168 (72.7)	0.014
	No	120 (37.3)	202 (62.7)	
Baby bottle	Yes	112 (34)	217 (66)	0.566
	No	71 (31.7)	153 (68.3)	
Pacifier	Yes	93 (39.3)	150 (61.7)	0.022
	No	90 (29)	220 (71)	
Acidic drinks	Yes	153 (36.7)	264 (63.3)	0.002
	No	30 (22.1)	106 (77.9)	
Distrubution of Monthly Income (USD/per month	<500USD	93 (34.6)	176 (65.4)	0.472
	>500USD	90 (31.7)	194 (68.3)	
Type of Drinking Water	Tap water	141 (31.9)	301 (68.1)	0.922
	Bottled water	15 (32.6)	31 (67.4)	
Yogurt	Yes	151 (33.9)	295 (66.1)	0.436
	No	32 (29.9)	75 (70.1)	
Brush teeth	Yes	80 (33.1)	162 (66.9)	0.988
	No	103 (33.1)	208 (66.9)	
Cigarette usage of parents	Yes	132 (35.7)	238 (64.3)	0.067
	No	51 (27.9)	132 (72.1)	
Iron supplement drugs	Yes	96 (31.9)	205 (68.1)	0.514
	No	87 (34.5)	165 (65.5)	

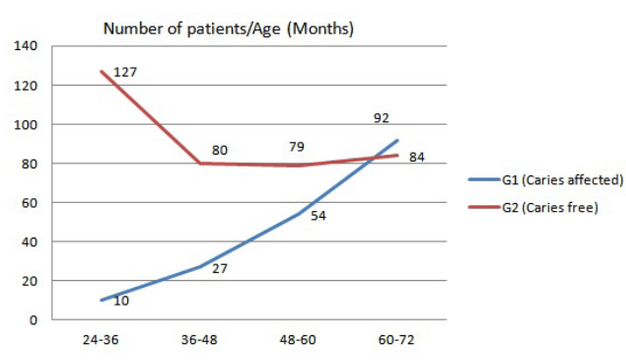


Figure 1. The incidence of ECC with age distribution.

in multivitamin supplement users than non-users (p<0.014). Pacifier usage was also a factor for increased ECC (p=0.022). In addition consumption of acidic drinks (p=0.002) was significantly different between the groups. Posession of any smoking parents was not a factor of difference between groups (p=0.067). All results were explained in Table 1.

Discussion

ECC is a condition characterized by the presence of at least one or more decayed (cavitated or non-cavitated), missing filled teeth (due to caries) or filled tooth surfaces in any primary tooth in a child up to 72 months of age [1,2,4]. Epidemiological studies indicate that prevalence of ECC is quite high in pre-school (2-5 years) children and this tended to increase with age [4,8,9]. Prevalences of ECC were found to be 27-44 % in India, 32-36 % in Brazil, 40 % in Malaysia and 48-94 % in Mexico [2,10-15]. In Turkey, the prevalences were reported to be between 17.3-69.8 % [3,4,16,17]. In our study, which was carried in Adiyaman province, the prevalence was found to be 33,1 % of which was within the above range.

Despite the common sense that dental caries arise from low social status, our study found no diffecence in terms of ECC among low or higher income groups [2]. In addition, while designing the study, we expected that longer breastfeeding would protect dental caries. However there was no statistically significant difference between the groups with respect to whether breast feeding occurred or not (p=0.654) nor its duration (p=0.234).

Another point is, we believe that "baby bottle tooth decay" phrase should be re-questioned among medical communities. We found that baby bottle use did not increase ECC incidence (p=0.56). In addition to our group, Nobile et al. [18] also reported that baby bottle use did not increase ECC prevalance. American Academy of Pediatric Dentistry (AAPD) recommends that baby bottle should be used at an early age from-first twelve month's of age and then children between 12-18 months should be made accustomed to using cup and finally children older than 18 months should only use cup [1].

We found strong relationship between pacifer usage and ECC (p=0.022). In parallel, World Health Organization (WHO) and United Nations Children Fund (UNICEF) are also recommending against the use of pacifiers since pacifier usage shortens breasfeeding duration and reported to be a factor for malocclusion of teeth [19]. In addition, many studies show strong evidence between pacifier usage and disease posession such as otitis media [20].

Dental erosion is the surface loss of tooth structure due to the action of acids without involvement of microorganisms [21]. It is a significant contributor for dental caries. In addition, acidity (pH) value and sugar percentage of a food ordrink are also important factors for the development of dental caries [22-24]. In our study, consumption of acidic beverages were shown to increase dental caries (p=0.002). AAPD uses a vague term 'soft drink' of which -in our point of view- should openly be described and changes as high sugar or acid containing drinks. Therefore, refrainment from acidic beverages' should carefully be stressed or at least brushing of teeth right-after consumption of these food.

We also questioned the routine use of both vitamin D during first six months of life and prescription of multivitamin formulations after 6 months of age. Usage of vitamin D had no statistically significant effect on ECC (p=0.54). However, multivitamin usage after 6 months of age appeared to be responsible from more dental caries than non-users (p=0.014). Multivitamin usage and tooth decay relation is not a widely questioned phenomena in pediatric literature. We encountered only one study, Schroth et al. [25] stated that paediatric multivitamin usage had no effect on dental caries. It seems paradoxal at first, however, logical explanation might be the sugar content in the commonly used multivitamin formulations might be the main factor dental caries. For this reason, we advise brushing teeth of children after multivitamin usage.

Prevalance and etiology of early childhood dental caries in a city located in South East Anatolia Region of Turkey are important findings standpoints for paving the way for a healthier generation in Turkey and countries alike. We advise refrainment from pacifier usage, unnecessary multivitamin supplemantation, acidic drinks of which were found to be hazardous factors for teeth in our study.

Competing interests

The authors declare that they have no competing interests.

References

1. American Acedemy of Pediatric Dentistry. Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies 2011;35(6):50-2.
2. Prakash P, Subramaniam P, Durgesh BH, Konde S. Prevalence of early childhood caries and associated risk factors in preschool children of urban Bangalore, India: A cross-sectional study. Eur J Dent 2012;6(2):141-52.
3. Topaloğlu-Ak A, Eden E, Frencken JE. Managing dental caries in children in Turkey - a discussion paper. BMC Oral Health 2009;9:32.
4. Doğan D, Dülgergil ÇT, Mutluay AT, Yıldırım I, Hamidi MM, Çolak H. Prevalence of caries among preschool-aged children in a central Anatolian population. J Nat Sci Biol Med 2013;4(2):325–9.
5. Schroth RJ, Harrison RL, Moffatt ME. Oral Health of Indigenous Children and the Influence of Early Childhood Caries on Childhood Health and Well-being. Pediatr Clin N Am 2009;56(6):1481–99.
6. Keels MA, Hale KJ, Thomas HF, Davis MJ, Czerepak CS, Weiss PA. American Academy of Pediatrics. Section on Pediatric Dentistry and Oral Health. Preventive Oral Health Intervention for Pediatricians. Pediatrics 2008;122(6):1387–94.
7. Gartner LM, Morton J, Lawrence RA, Naylor AJ, O'Hare D, Schanler RJ et al. American Academy of Pediatrics, Section on Breastfeeding. Breastfeeding and the use of human milk. Pediatrics 2005;115(2):496–506.
8. Livny A, Assali R, Sgan-Cohen HD. Early Childhood Caries among a Bedouin community residing in the eastern outskirts of Jerusalem. BMC Public Health 2007;7:167.
9. Warren JJ, Weber-Gasparoni K, Marshall TA, Drake DR, Dehkordi-Vakil F, Dawson DV, et al. Longitudinal study of dental caries risk among very young low SES children. Community Dent Oral Epidemiol 2009;37(2):116–22.
10. Jose B, King NM. Early childhood caries lesions in preschool children in Kerala, India. Pediatr Dent 2003;25(6):594-600.
11. Constante HM, Souza ML, Bastos JL, Peres MA. Trends in dental caries among Brazilian schoolchildren: 40 years of monitoring (1971-2011). Int Dent J 2014;64(4):181-6.
12. Vargas-Ferreira F, Zeng J, Thomson WM, Peres MA, Demarco FF. Association between developmental defects of enamel and dental caries in schoolchildren. J Dent 2014;42(5):540-6.
13. Masood M, Yusof N, Hassan MI, Jaafar N. Assessment of dental caries predictors in 6-year-old school children-results from 5-year retrospective cohort study. BMC Public Health 2012;12:989.
14. Zuniga-Manriquez AG, Medina-Solis CE, Lara-Carrillo E, Márquez-Corona Mde L, Robles-Bermeo NL, Scougall-Vilchis RJ, et al. Experience, prevalence and severity of dental caries and its association with nutritional status in Mexican infants 17-47 months. Rev Invest Clin 2013;65(3):228-36.
15. Dhar V, Jain A, Van Dyke TE, Kohil A. Prevalence of dental caries and treatment in children of rural areas in udairpur district. JIPD 2007;25(3):119-21.
16. Ozer S, Sen Tunc E, Bayrak S, Egilmez T. Evaluation of certain risk factors for early childhood caries in Samsun, Turkey. Eur J Paediatr Dent 2011;12(2):103-6.
17. Gökalp SG, Doğan BG, Tekçiçek MT, Berberoğlu A, Unlüer S. National survey of oral health status of children and adults in Turkey. Community Dent Health

2010;27(1):12-7.
18. Nobile CGA, Fortunato L, Bianco A, Pileggi C, Pavia M. Pattern and severity of early childhood caries in Southern Italy: a preschool-based cross-sectional study. BMC Public Health 2014;14:206.
19. Yonezu T, Arano-Kojima T, Kumazawa K, Shintani S. Association between Feeding Methods and Sucking Habits: A Cross-sectional Study of Infants in Their First 18 Months of Life. Bull Tokyo Dent Coll 2013;54(4):215-21.
20. Niemela M, Uhari M, Mottonen M. A pacifier increases the risk of recurrent acute otitis media in children in day care centers. Pediatrics 1995;96(5 Pt 1):884–8.
21. Honório HM, Rios D, Júnior ES, de Oliveira DS, Fior FA, Buzalaf MA. Effect of Acidic Challenge Preceded by Food Consumption on Enamel Erosion. Eur J Dent 2010;4(4):412–17.
22. Sardana V, Balappanavar AY, Patil GB, Kulkarni N, Sagari SG, Gupta KD. Impact of a modified carbonated beverage on human dental plaque and salivary pH: an in vivo study. J Indian Soc Pedod Prev Dent 2012;30(1):7-12.
23. Cheng R, Yang H, Shao M, Hu T, Zhou X. Dental erosion and severe tooth decay related to soft drinks: a case report and literature review. J Zhejiang Univ Sci B 2009;10(5):395–9.
24. Moynihan PJ. The role of diet and nutrition in the etiology and prevention of oral diseases. Bull World Health Organ 2005;83(9):694–9.
25. Schroth RJ, Levi JA, Sellers EA, Friel J, Kliewer E, Moffatt ME. Vitamin D status of children with severe early childhood caries: a case-control study. BMC Pediatrics 2013;13:174.

How to cite this article:
Bucak İ.H, Çalışır M, Almis H, Ozturk A.B, Turgut M. Early Childhood Caries with the Perspective of Pediatrician. J Clin Anal Med 2016;7(5): 614-7.