Selcuk Dental Journal 11/3 (Aralık 2024): 337-340

Research / Araştırma Makalesi

Evaluation of Dental Students' Knowledge and Attitudes About Early Childhood Caries

Diş Hekimliği Öğrencilerinin Erken Çocukluk Çağı Çürükleri Hakkında Bilgi ve Tutumlarının Değerlendirilmesi

İrem İPEK[α], **Kevser TUNCER**[β]

[α]Fırat University, Faculty of Dentistry, Department of Pedodontics, Elazığ, Türkiye
[α]Fırat Üniversitesi, Diş Hekimliği Fakültesi, Pedodonti AD, Elazığ, Türkiye
[β]Fırat University, Faculty of Medicine, Department of Public Health, Elazığ, Türkiye
[β]Fırat Üniversitesi Tıp Fakültesi Halk Sağlığı AD, Elazığ, Türkiye

ABSTRACT

Background: Early childhood caries (ECC) causes serious and widespread oral health problems in children. This study aimed to evaluate the knowledge, attitudes and clinical practices of undergraduate dental students about ECC. Method: The study included 4th and 5th year dental intern students who were treating patients. A 16-question survey form was prepared using the literature and the questionnaire prepared with the online survey program was sent via Google Forms. Distributions were compared using Pearson Chi-square test. A significant difference was defined as 0.05. Results: When the awareness and knowledge levels about ECC were examined, 4th grade students had lower knowledge levels than 5th grade students. 5th grade students reported that they examined and diagnosed a higher rate of ECC cases. Conclusion: It is important to make clinical trainings more comprehensive and systematic for the prevention and treatment of ECC.

Keywords: Early childhood caries, Education, Oral health, Dental students

ÖZ

Amaç: Erken çocukluk çağı çürükleri (EÇÇ) çocuklarda ciddi ve yaygın ağız sağlığı sorunlarına neden olmaktadır. Bu çalışma, diş hekimliği öğrencilerinin EÇÇ hakkındaki bilgi, tutum ve klinik uygulamaları değerlendirmeyi amaçlamıştır. Metot: Çalışmaya hasta tedavisi yapan 4. ve 5. sınıf stajyer öğrenciler dahil edildi. Literatürden faydalanılarak 16 soruluk anket formu hazırlanmış ve Google Forms üzerinden çevrimiçi anket programıyla hazırlanan anket gönderilmiştir. Dağılımlar Pearson Ki-kare testi kullanılarak karşılaştırıldı. Anlamlı fark 0,05 olarak tanımlandı. Bulgular: EÇÇ hakkındaki farkındalık ve bilgi düzeyleri incelendiğinde, 4. sınıf öğrencilerinin 5. sınıf öğrencilerine göre daha düşük bilgi düzeyine sahip oldukları görülmüştür. 5. sınıf öğrencileri daha yüksek oranda EÇÇ vakası muayene ettiklerini ve tanı koyduklarını bildirmişlerdir. Sonuç: EÇÇ'nin önlenmesi ve tedavisi için klinik eğitimlerin daha kapsamlı ve sistematik hale getirilmesi önem taşımaktadır.

Anahtar Kelimeler: Erken çocukluk çağı çürükleri, Eğitim, Ağız sağlığı, Diş hekimliği öğrencileri

Introduction

Early childhood caries (ECC) is defined as the presence of one or more decayed, missing or filled tooth surfaces on primary teeth in children under 6 years of age, according to the American Academy of Pediatric Dentistry. [1] ECC has a complex and multifactorial etiology, and factors such as bottle-feeding of young children during the night, low oral hygiene levels of parents and children, low socioeconomic status of parents, inadequate fluoride intake, and genetics are effective in its formation. [2]

ECC, especially initiation in the early stages of life, is important for children's physical, psychological and social well-being. [3] In cases where dental treatment cannot be performed in the chair with basic behavior management techniques due to the young age of children and their dental anxiety, the treatment must be performed under general anesthesia, which can become a significant public health problem, especially in underdeveloped or developing countries, where these opportunities are not available. [4] To overcome these problems, ECC treatment is important and early dental visits are essential to prevent ECC and control the existing condition. ECC can also be prevented by improving parents' health literacy and oral health habits such as tooth brushing, as well as by adjusting their diet and food choices. [5] Additionally, children who have had ECC are at higher risk of developing subsequent caries than children who have not had ECC. In such cases, preventive measures such as more frequent professional visits for dental checkups and restorative care, reinforcement of tooth brushing with fluoride toothpaste, and dietary counseling are necessary. [6] By assessing parents' level of knowledge on a broader scale, dentists or pedodontists can help them improve their knowledge and thus direct them to promote the use of available dental services to prevent ECC and avoid related complications. [7]

It is critical that dentists understand the clinical signs and symptoms of ECC, perform caries risk assessments, and provide preventive guidance to parents. Their cognitions and behaviors reflect a professional understanding of the importance of promoting children's oral health. As a result, dentistry students are considered to have good oral health awareness as they will be responsible for public oral health promotion as primary providers in the future. Their increased awareness contributes significantly to the prevention of ECC and the protection of children's oral health. Therefore, this study aims to evaluate the knowledge, attitude and clinical practice of undergraduate dental students about ECC and provide data for the improvement of future dental education.

The aim of this study is to evaluate the awareness, knowledge and attitudes of dentistry students about ECC.

Material method

The study received approval from the ethics committee of the Firat University Faculty of Medicine, Scientific Research Non-Interventional Ethics Committee (2024/12-02). The current survey study was conducted at the Firat University Faculty of Dentistry. 4th and 5th year intern students who treated patients were included in the study. The minimum number of participants was determined as 120 people with a 5% margin of error and 95% confidence level, and the power of the test was p=0.86532. A 16-question survey form was prepared using the literature and the questionnaire prepared with the online survey program was sent via Google Forms. In the first part of the questionnaire, demographic characteristics of the students (age, gender, grade) were questioned. In the second part, students' awareness and learning about ECC was assessed using questions such as "Have you ever heard of ECC?" and "Have you received any education about ECC?". In the third section, students' knowledge about ECC was assessed using questions such as "ECC is only seen in bottle-fed infants and children". In the fourth section, participants' attitudes about ECC were assessed using questions such as "Can fluoride toothpaste be used to prevent ECC? and Is ECC a difficult disease to treat?" (**shown in Table 1**).

Gönderilme Tarihi/Received: 4 Kasım, 2024
Kabul Tarihi/Accepted: 27 Kasım, 2024
Yayınlanma Tarihi/Published: 23 Aralık, 2024
Atıf Bilgisi/Cite this article as: İpek İ, Tuncer K. Evaluation of Dental Students' Knowledge and Attitudes About Early Childhood Caries. Selcuk Dent J 2024;11(3): 337-340 Doi: 10.15311/ selcukdentj.1579426

Sorumlu yazar/Corresponding Author: İrem İPEK
E-mail: iremipek4493@gmail.com
Doi: 10.15311/ selcukdentj.1579426

Table 1. Distribution of undergraduate dentistry students' awareness, learning, and attitudes among ECC.

	4th grade student		5th grade student		
Survey questions	**Yes n(%)**	**No n(%)**	**Yes n(%)**	**No n(%)**	**p Value**
Have you ever heard of ECC?	42 (% 84)	8 (% 16)	80 (%9 1.9)	7 (% 8.1)	
Do you know what the definition of ECC is?	30 (% 60)	20 (% 40)	70 (%80.4)	17 (% 19.6)	<0.05*
Have you heard of the window of infectivity?	38 (% 76)	12 (% 24)	65 (% 74.7)	22 (% 25.3)	
Have you received any education of ECC?	34 (% 68)	16 (% 32)	78 (% 89.6)	9 (% 10.4)	<0.05*
Do you want to learn about ECC more systematically?	41(% 82)	9 (% 18)	65 (% 74.7)	22 (% 25.3)	
Have you ever examined and diagnosed an ECC case?	28 (% 56)	22 (% 44)	75 (% 86.2)	12 (% 13.8)	<0.05*
Does ECC only occur in bottle-fed infants and children?	45 (% 90)	5 (% 10)	45 (% 51.7)	42 (% 48.3)	<0.05*
Should teeth be brushed from the moment they first erupt?	40 (% 80)	10 (% 20)	80 (% 91.9)	7 (% 8.1)	
Can ECC be prevented by providing oral hygiene education?	47 (% 94)	3 (% 6)	81 (% 93.1)	6 (% 6.9)	
Can ECC be prevented by using fluoride toothpaste?	42 (% 84)	8 (%16)	77 (%88.5)	10 (%11.5)	
Can ECC be prevented by changing diet?	41 (% 82)	9 (% 18)	72 (% 82.7)	15 (%17.3)	
When you see ECC in a patient, does it affect your choice of restorative material?	45 (% 90)	5 (% 10)	67 (% 77.1)	20 (%22.9)	
choice of restorative material?					
If your answer is yes; What materials do you use most when treating patients with ECC? Stainless steel crown Composite resin Glass ionomoer cement Compomer	20 (% 44.4) 9 (% 20.0) 13 (% 28.9) 3 (% 6.7)		34 (% 50.8) 8 (% 11.9) 17 (% 25.4) 8 (% 11.9)		

Statistical analysis

Data were analyzed with IBM SPSS 23.0 statistical program. Categorical data were expressed as percentages and then analyzed. Distributions were compared using Pearson Chi-square test. A significant difference was defined as 0.05.

Results

A total of 137 students participated in the study and their ages ranged between 21 and 35 years with a mean of 23.92±2.1. 59.9% (n=78) of the participants were female and 43.1% (n=59) were male. The study group consisted of 36.5% 4th grade students (N=50) and 63.5% 5th grade students (N=87). The distribution of awareness, learning and attitudes of undergraduate dentistry students in ECC is shown in **Table 1**. When the awareness and knowledge levels about ECC were examined, 4th grade students had lower knowledge levels than 5th grade students. 5th grade students reported that they examined and diagnosed a higher rate of ECC cases. Both 4th and 5th grade students reported that oral hygiene education, use of fluoride toothpaste, and dietary changes were effective in preventing ECC. SSC was the most preferred material in the treatment option for both 4th and 5th grade students.

Discussion

ECC is a highly prevalent disease that affects preschool children and, when left untreated, has a significant impact on quality of life and well-being. Due to its high prevalence rate and low treatment rate, ECC has become a public concern worldwide and is a major public health issue. According to the guidelines of the American Academy of Pediatric Dentistry (AAPD), it is recommended that all primary health care professionals serving parents and infants should provide education on the etiology and prevention of ECC. According to the results of our study, both 4th and 5th grade dental students' knowledge about the general knowledge of ECC was partially adequate. The process of Streptococcus mutans infection in the newborn's oral environment is triggered during the period when the primary teeth begin to erupt, and reaches the highest level between 19-31 months when the number of primary teeth increases. [8, 9] The period between 19 and 31 months is called the 'window of infectivity' when infants are thought to acquire these organisms from infected individuals, especially their mothers. Eliminating the sharing of utensils such as cups, spoons and pacifiers can help reduce the child's caries-causing microorganisms. [10, 11] Regarding oral hygiene practices, both 4th and 5th grade students were partially aware of the infectivity window. The AAPD states that dental cleaning should begin when the first primary tooth appears in the mouth and that parents should brush their children's teeth twice a day with a toothbrush appropriate for the child's age. For children under 3 years of age, a 'thin brushing' or 'rice-sized' fluoride toothpaste should be used and for children aged 3-6 years, a 'pea-sized' fluoride toothpaste should be used. A visit to the dentist is also recommended within 6 months after the first tooth erupts, but before the baby is 1 year old, for caries risk assessment, parent education, oral hygiene and preventive methods and guidance on oral diseases. [12] Accordingly, in our study, 80% of the 4th grade students and 91.9% of the 5th grade students reported that it is necessary to start brushing from the moment the teeth first erupt in the mouth and that they would recommend it to their parents for caries prevention.

ECC is a preventable disease and it is possible to establish appropriate oral hygiene behaviors through community-based practices and education and to inform individuals about oral health and the effects of oral health on general health. [13] The students who participated in our study reported that ECC is a preventable disease with a high rate of oral hygiene education and dietary modification. Danışman et al . [14] was reported that there was an increase in the level of awareness in dentistry students as they progressed to upper grades. Şen et al. [15] in their study evaluating periodontal awareness, attitudes and behaviors towards oral health of dentistry faculty students, reported that the knowledge of students about oral hygiene habits increased with increasing education level in dentistry students.

The AAPD recommends that children under 3 years of age should brush their teeth with a small amount of fluoride toothpaste in the form of a swab, and children between 3 and 6 years of age should brush their teeth with a pea-sized amount of fluoride toothpaste twice a day with soft brushes. [1] In our study, 84% of 4th grade students and 88.5% of 5th grade students stated that they would recommend fluoride toothpaste to prevent ECC. Muralidharan et al. [16] in their study evaluating the knowledge, attitudes and practices of dentistry students regarding topical fluoride use, they reported that dentistry students' knowledge about dental caries and their understanding that topical fluoride is used in its prevention may have resulted in "good oral care behavior" and "positive attitudes" rather than a comprehensive knowledge and understanding of topical fluoride or a positive attitude towards topical fluoride.

While many restorative materials can be used in the treatment of ECC, AAPD recommends that any posterior primary molar that has undergone pulp therapy be restored with stainless steel crown (SSC) in cases where there is a significant loss of substance. [17] In a study examining the procedures performed on the primary teeth of 296 patients under general anesthesia, it was reported that PSCs required less re-treatment than composite fillings and reduced the need for additional treatment in the future. [18] According to the results of our study, both 4th and 5th grade student groups reported that they would use SSC as the first choice when treating patients with ECC.

Conclusion

In conclusion, it is important to make clinical education more comprehensive and systematic for the prevention and treatment of ECC. Pediatric dentists and educators should work together to make necessary adjustments in dental education to improve children's oral health.

Değerlendirme / Peer-Review

İki Dış Hakem / Çift Taraflı Körleme

Etik Beyan / Ethical statement

Bu makale, sempozyum ya da kongrede sunulan bir tebliğin içeriği geliştirilerek ve kısmen değiştirilerek üretilmemiştir.

Bu çalışma, yüksek lisans ya da doktora tezi esas alınarak hazırlanmamıştır.

Bu çalışmanın hazırlanma sürecinde bilimsel ve etik ilkelere uyulduğu ve yararlanılan tüm çalışmaların kaynakçada belirtildiği beyan olunur.

This article is not the version of a presentation.

This article has not been prepared on the basis of a master's/ doctoral thesis.

It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited are stated in the bibliography.

Benzerlik Taraması / Similarity scan

Yapıldı – ithenticate

Etik Bildirim / Ethical statement

dishekimligidergisi@selcuk.edu.tr

Finansman / Grant Support

Yazarlar bu çalışma için finansal destek almadığını beyan etmiştir. | The authors declared that this study has received no financial support.

Çıkar Çatışması / Conflict of Interest

Yazarlar çıkar çatışması bildirmemiştir. | The authors have no conflict of interest to declare.

Yazar Katkıları / Author Contributions

Çalışmanın Tasarlanması | Design of Study: İİ (%60), KT (%40)
Veri Toplanması | Data Acquisition: İİ (%90), KT (%10)
Veri Analizi | Data Analysis: İİ (%20), KT (%80)
Makalenin Yazımı | Writing up: İİ (%75), KT (%25)
Makale Gönderimi ve Revizyonu | Submission and Revision: İİ (%75), KT (%25)

REFERENCES

1. Dentistry AAoP. Policy on early childhood caries (ECC): Consequences and preventive strategies. AAPD. 2021: 81-84.
2. Saraç F, Baş A, Çelikel P, Yücel R, Derelioğlu S. Erzurum İlinde 2-5 Yaş Arasındaki Çocuklarda Erken Çocukluk Çürükleri ile İlişkili Risk Faktörlerinin ve Ebeveynlerin Bilgi/Tutumlarının Değerlendirilmesi: Kesitsel Bir Çalışma. Turkiye Klinikleri J Dental Sci. 2023; 29 (4).
3. Al-Zahrani AM, Al-Mushayt AS, Otaibi MF, Wyne AH. Knowledge and attitude of Saudi mothers towards their preschool children's oral health. Pak J Med Sci. 2014; 30 (4): 720.
4. Şengül F, Urvasızoğlu G, Derelioğlu S, Seddik T, Çelikel P, Baş A. Early childhood caries in 4-to 5-year-old children in Erzurum, Turkey. Front Public Health. 2021; 9: 725501.
5. Begzati A, Bytyci A, Meqa K, Latifi-Xhemajli B, Berisha M. Mothers' behaviours and knowledge related to caries experience of their children. Oral Health Prev Dent. 2014; 12 (2).
6. Soares RC, da Rosa SV, Moysés ST, Rocha JS, Bettega PVC, Werneck RI, et al. Methods for prevention of early childhood caries: Overview of systematic reviews. Int J Paediatr Dent. 2021; 31 (3): 394-421.
7. Nassar AA, Fatani BA, Almobarak OT, Alotaibi SI, Alhazmi RA, Marghalani AA. Knowledge, attitude, and behavior of parents regarding early childhood caries prevention of preschool children in Western region of Saudi Arabia: a cross-sectional study. Dent J. 2022; 10 (12): 218.
8. Karletto Korber FP, Cornejo LS, Giménez MG. Early acquisition of Streptococcus mutans for children. Acta odontol. latinoam. 2005: 69-74.
9. Caufield P, Cutter G, Dasanayake A. Initial acquisition of mutans streptococci by infants: evidence for a discrete window of infectivity. Journal of dental research. 1993; 72 (1): 37-45.
10. Olatosi OO, Iwuala SO, Ojewola RW, Chukwudifu N, Oredugba FA, Sote EO. Undergraduate medical students' knowledge and attitude on early childhood caries and infant oral health. J Pediatr Dent. 2016; 4 (1): 8-13.
11. Berkowitz RJ. Mutans streptococci: acquisition and transmission. Pediatric dentistry. 2006; 28 (2): 106-109.
12. Colak H, Dülgergil C, Dalli M. American Academy on Pediatric Dentistry. Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies. Pediatr Dent. 2011; 30: 40-43.
13. Karabekiroğlu S, Ünlü N. Toplum bazlı koruyucu ağız diş sağlığı programlarında erken dönem koruyucu uygulamaların yeri ve önemi. 2017.
14. Danışman F. Selçuk Üniversitesi Diş Hekimliği Fakültesinde okuyan öğrencilerde periodontal farkındalık ve bütünlük duygusu ile ilişkili faktörlerin değerlendirilmesi. 2018.
15. Şen DÖ, Irız B, Yarkac FU, Öncü E. Diş Hekimliği Fakültesi Öğrencilerinin Periodontal Farkındalığı, Ağız Sağlığına Yönelik Tutum ve Davranışlarının Değerlendirilmesi. NEU Dent J. 2020; 2 (1): 14-24.
16. Muralidharan D, Pocha S, Paul A. Topical fluoride use: Knowledge, attitudes and practices of undergraduate dental students of three Dental Colleges in South India. Eur J Dent Educ. 2018; 22 (3): e444-e450.
17. Dentistry AAoP. Pulp therapy for primary and immature permanent teeth. AAPD. 2021: 399-407.
18. Patel RV, Thikkurissy S, Schwartz SB, Gosnell ES, Sun Q, Cully JL. Preferential use of stainless steel crowns as a strategy to minimize retreatment of primary molars under general anesthesia. Pediatr Dent. 2021; 43 (1): 24-27.