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Mehmet S. Dogan

Department of Pediatric Dentistry, Faculty of Dentistry, Harran University, Turkey, dtlider@hotmail.com

Ahmet Aras

Department of Pediatric Dentistry, Faculty of Dentistry, Harran University, Turkey

Osman Atas

Department of Pediatric Dentistry, Faculty of Dentistry, Firat University, Turkey

Abdullah E. Karaali

Special Dental Clinical, Turkey

Ayşe Gunay

Department of Pediatric Dentistry, Faculty of Dentistry, Dicle University, Turkey

See next page for additional authors

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Authors

Mehmet S. Dogan, Ahmet Aras, Osman Atas, Abdullah E. Karaali, Ayse Gunay, Haluk M. Akbaba, and Izzet Yavuz

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Mehmet S Dogan^{1*}, Ahmet Aras¹, Osman Atas², Abdullah E Karaali³, Ayse Gunay⁴,
Haluk M Akbaba⁵, Izzet Yavuz⁴

1. Department of Pediatric Dentistry, Faculty of Dentistry, Harran University, Sanliurfa 63510, Turkey
2. Department of Pediatric Dentistry, Faculty of Dentistry, Firat University, Elazig 23119, Turkey
3. Special Dental Clinical, Hatay 35150, Turkey
4. Department of Pediatric Dentistry, Faculty of Dentistry, Dicle University, Diyarbakir 21010, Turkey
5. Special Dental Clinical, Konya 42586, Turkey

*E-mail: dlider@hotmail.com

Abstract

Background: Untreated tooth cavities and the resulting toothaches have significant effects on children's social and psychological development. The aim of this study was to evaluate the impact of toothache on children's educational and social activities. **Methods:** For this retrospective study, we issued a 15-question survey to the parents of 515 children between ages of 5–16 years in Diyarbakir, Turkey. The chi-square test was used to test the strength of the relationship between two variables ($p \leq 0.05$). **Results:** 318 (61.7%) parents reported having difficulty in feeding their children, 94 (18.3%) left a game due to toothache, 173 (33.6%) had school absences, 167 (32.4%) avoided laughing, and 439 (85.2%) parents felt that dental problems influenced their child's success in school. **Conclusions:** Tooth pain has a negative impact on school and the social lives of children. Families need education about this issue, and health policies should be developed to address this problem.

Keywords: education; pain; quality of life; toothache

Introduction

Tooth cavity is an international community health problem due to its important social influences and prevalence. Tooth cavity is one of the most common chronic illnesses throughout the world. Oral disease plays a significant role in the quality of life, and it is an important part of public health.¹ Dental cavities are not only a problem that needs to be clinically addressed, but are also an issue that may influence the child's quality of life. Reports have noted that after removal of pain, there is a recovery in children's eating preferences, food intake amount, and hours of sleep; these are important factors in the quality of life.²

The World Health Organization has reported 60%–90% of school age children have dental cavities.³ It has reported toothache and tooth infection in 25% and 12% of 2–5 year-old children, respectively.⁴ Tooth cavity, the most common chronic childhood disease, is five times more common than asthma and seven times more common than seasonal allergies.⁵ Treatment to remove toothache and pulpitis is important for supporting child welfare and development.⁶ Pain, pulpitis, and dentoalveolar abscess are serious complications caused

by untreated cavities. Such complications negatively impact the child's social status.⁷

Early Childhood Caries (ECC) is a serious public health problem both in developing and developed countries.⁸ Due to moderate or poor hygiene, children with ECC experience more pain in their physical, mental, and social functions compared to children without tooth decay. In parent evaluations of children with ECC after dental treatment, it was reported that the treatments had significant and positive impacts on their children's physical, mental, and social functions.⁹ In addition, the impact of treating baby bottle tooth decay has been shown to affect subjective perceptions of school age children and their families about quality of life.¹⁰

Treating tooth decay in school age children not only enhances their oral health, but also increases their sense of satisfaction about their teeth, smiling, and appetite. This condition has a powerful impact on their general health. Limited studies have been reported on influences of toothache on the daily, social and, psychological functioning of family life. The most common findings are the inability to concentrate in school, frequent absence from school, decreased self-respect, weak social

relations, delayed speech development, and nutritional deficiency.^{11,12} Cavities can decrease mastication activity, leading to the development of parafunctional habits. This, in turn, may result in loss of height. Cases influencing esthetics may generate intense psychological reflections (remaining silent and not smiling as much as they would like). A healthy smile is important in social interactions. It plays a significant role in how children are viewed, how they feel, and how they are perceived. Dentofacial esthetics are important determinants of general physical esthetics. Psychologically, a healthy smile helps a child to establish interpersonal relationships and develop him or herself.¹³

Previous research has demonstrated that problems such as cavities, tooth injuries, toothache, and malocclusion in children can lead to a sense of guilt, anger, financial problems, and loss of time in the workforce for their parents or caretakers.^{14,15} Since oral and dental health might influence not only the quality of life of children but also that of their families, it is vital to raise societal awareness of the problem, enhance the availability of health services, and develop health policies in line with these aims. The aim of this study was to evaluate the impact of toothache on children's education and social lives.

Methods

This retrospective study evaluated the parents of 515 children 5–16 years of age, who presented to the Dicle University, Faculty of Dentistry, Department of Pedodontics for tooth decay between October 2013 and June 2014. The parents answered a survey regarding information about their children's genders, nutrition, desire for playing a game, whether they were absent from the school due to toothache, and whether the toothache influenced their success at school. Informed consent was

obtained from the children's parents or caretakers. The study was carried out in accordance with the ethical standards of the Helsinki Declaration. Statistical analysis was performed with SPSS 18 software program. Along with the descriptive statistics, the chi-square test was used to test the strength of the relationship between two variables ($p \leq 0.05$).

Results

Of the 515 participants in the survey, 280 were female (54.4%) and 235 were male (45.6%). Most of the patients (94.6%) were normally developed children with the desire to play. Of these patients, acute toothache history occurred in 431 (83.7%); 173 (33.6%) were absent from school, and 94 had left a game due to toothache. 32.4% of the children reported that they avoided laughing because of their teeth, and 61.7% reported having difficulty with eating. There were 439 participants who mentioned that dental problems influenced their school success, while 76 stated that it did not.

A significant relationship was found between toothache and eating difficulty, abandonment of a game, absenteeism and falling behind in class ($p < 0.05$) (Table 1). Table 1 shows, by study, no significant relationship was found between toothache and avoiding smiling and school success.

Discussion

Tooth decay is a chronic childhood disease like obesity, asthma, and diabetes. Tooth decay has negative impacts on children's quality of life. Previous studies have demonstrated that chronic illnesses negatively influence socio-cognitive development and, thus, may impact children's success in school.¹⁶

Table 1. Toothache-eating difficulty cross tabulation

Variables	Toothache		Total n (%)	p
	Yes n (%)	No n (%)		
Eating Difficulty	303 (70.3)	128 (29.7)	431 (100.0)	81.9
Yes	15 (17.9)	69 (82.1)	84 (100.0)	
No				
Leave The Game				
Yes	92 (21.3)	2 (2.4)	94 (18.3)	16.9
No	339 (78.7)	82 (97.6)	421 (81.7)	
Absent from School				
Yes	171 (39.7)	2 (2.4)	173 (33.6)	43.8
No	260 (60.3)	82 (97.6)	342 (66.4)	
Fall Behind in The Class				
Yes	132 (30.6)	1 (1.2)	133 (25.8)	31.8
No	299 (69.4)	83 (98.8)	382 (74.2)	
Refrain from Smiling				
Yes	143 (33.2)	24 (28.6)	167 (32.4)	0.7
No	288 (66.8)	60 (71.4)	348 (67.6)	
School Success				
Yes	370 (85.8)	69 (82.1)	439 (85.2)	0.8
No	61 (14.2)	14.8 (14.8)	14.8 (14.8)	

Toothache negatively influences children's ability to concentrate on their lessons, homework, and exams.¹⁷ It has been reported that school success and education are influenced by oral problems.¹⁸ However, the literature is not clear on this issue. While some studies^{19–22} report that oral problems influence school success, others mention that they have no influence.^{21,23} Studies reporting no influence emphasize that social status and general health have a greater impact on school success. Therefore, it is felt that dental problems in developed countries have a greater impact on school success of students compared to those in developing countries.²³ In our study, 85.2% of the participants stated that they thought tooth pain would affect their success in school.

Intraoral tissue illnesses have significant impacts on physical, social, and psychological life.²⁴ Previous study reported that the social communications of children with poor oral health was worse than their siblings and that they were more upset.²¹ This psychosocial aspect negatively influences oral health care and school success of the students. In our study, 32.4% of the children refrained from smiling due to their tooth decay, 18.2% had to stop playing, and 61.7% had difficulty eating due to toothache. Tooth decay, toothache, and other intraoral problems influence people's quality of life. It also influences their need for dental services.²⁵ In our country, particularly in lower socioeconomic regions, the public hospitals that provide services during school hours are considered preferable. This situation leads to student absenteeism and lost work time for parents. It may also lead to postponing dental treatment until school vacation, which exacerbates the problems. Therefore, there is a need to regulate health policies around this issue.

Since school absenteeism negatively influences the learning process, quality of life and academic performance are also negatively influenced.¹⁷ Healthy, well-nourished individuals have fewer problems attending school, and this impacts their school performance positively. We posit that this is related to the school attendance problem. Among our study participants, 33.6% had school attendance difficulties and 25.8% fell behind in class due to toothache. A study reported that 22.5% of their students did not attend school due to dental problems and calculated that a child was absent from school for 1.9 h on average.¹⁷ Although less than two hours a year for an individual, it becomes a serious problem in terms of total school attendance on a national basis. There is a need for further research on this issue.

Dental treatments in children should be used for managing pain or making their teeth functional again. Additionally, the impact of such treatments on children's educational success and psychosocial development should be considered.²⁰ A study examining the parent-child behavior model reported that parents' oral and dental health behaviors affect children's oral and dental

behaviors. Thus, children's dental health and tooth decay can be directly or indirectly influenced.²⁶ For this reason, the awareness levels of parents and individuals caring for children should be increased.

Conclusions

We observed that dental health problems and their resulting symptoms impact the lives of children and their families. Dental disorders affect school education at an approximate rate of 34%. Of the participants in our study, 62% had problems eating and 18% had problems in social activities. In line with these data, it is important to increase the awareness of school management and family members about oral and dental health issues and to provide education about this issue. Moreover, relevant lessons on oral and dental health should be included in children's school curriculum.

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Conflict of Interest Statement

The authors declare that they have no conflict of interest.

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