

Factors Affecting the Duration of Decay of the First Permanent Molar Tooth

¹Elham Niknejad and ²Vahid Alinejad

¹Reproductive Health Research Center, Department of Pediatric Dentistry, Faculty of Dentistry,

²Patient Safety Research Center,
Urmia University of Medical Sciences, Urmia, Iran

Abstract: In this study, we examined only the first permanent molar tooth's decay and the relationship between children's age and gender with the duration of dental decay; we also investigated the effects of visiting dentist in teeth deterioration. In this study, the information such as age and gender were collected by proposed checklist. Finally, we examined children's molar tooth in terms of the interval time between their first visit to dentist and the time of extraction or filling. In this research, a retrospective study of 207 children was examined of whom 97 (46.9%) were male and 110 (53.1%) were female. The average age of the children who visited a dentist was 19.995 ± 70.72 months; this average age for girls was 18.914 ± 69.62 months and for boys was 21.185 ± 71.97 months. Statistically, these differences are not significant. Also, the variables of the time of first visit and last visit before the decay of tooth number 6 were effective in the decay of this tooth. Demographic characteristics in different societies have different effects in the first molar tooth's decay. On the other hand when the aging and oral hygiene increase, the dental caries decreases, so it is recommended that the decay of molar tooth be prevented and treated effectively by different teaching in schools or families.

Key words: Examined, duration, information, gender, characteristics, recommended

INTRODUCTION

Tooth decay is an infectious multifactorial disease and is created because of the imbalance of molecular reactions between the tooth surface and attached microbial biofilms. Although, being preventable, the disease indicates a high incidence and prevalence in the world and is considered as the most common chronic disease in many countries (Herrera *et al.*, 2012; Kopycka-Kedzierawski and Billings, 2013). Due to its extensive features, medical expenses and the impact on quality of life, tooth decay is a public health problem (Tagliaferro *et al.*, 2008). The disease is connected with pain and tooth loss, reduction of weight gain, negative impacts on children's speaking and appearances, low self-esteem and school performance (Chou *et al.*, 2013; Polk *et al.*, 2014). The risk factors for this disease are; effective colonization of bacteria in dental caries, the frequency of tooth brushing and sugary foods, dental enamel defects, lack of salivation, lack of oral hygiene and lack of information about oral hygiene (Caufield and Griffen, 2000; Tinanoff and Reisiine, 2009). However, in another study, age, gender and socio-economic level of families had an important impact on dental caries. Despite, the strategies for controlling the disease it seems that children should be entered into health programs as soon as possible, even before their parents teach them. In Iran, although, the oral health programs start from the early childhood, tooth decay is still common among

children in this country. On the other hand because studies conducted on tooth decay and on different teeth are low in this study we attempt to investigate only the first permanent molar tooth's decay and the relationship between age and gender of the children as well as their families' socio-economic status in their tooth's decay.

MATERIALS AND METHODS

In this longitudinal cross sectional study which was conducted during 2013-2015 included children below 10 years old who visited a dental clinic due to the dental problems in the city of Urmia in Iran. Finally, children's molar tooth was examined in terms of the interval time between their first visit to dentist and the time of extraction or filling. Then, the data was entered into SPSS 18 Software and analyzed the results the Cox regression and the χ^2 -test were used assuming PH.

RESULTS AND DISCUSSION

In this research, a retrospective study of 207 children was conducted of whom 97 (46.9%) were male and 110 (53.1%) were female. The average age of the children who visited a dentist was 19.995 ± 70.72 months; this average age for girls was 18.914 ± 69.62 months and for boys was 21.185 ± 71.97 months. Statistically, these differences are not significant ($p = 0.4$).

Table 1: The mean and median of first visit and last visit before tooth 6's decay and the tooth survival

Variables	Mean	Median
The first visit		
Male	71.969±2.151	72±0.498
Female	69.618±1.803	72±1.696
The last visit before tooth 6's decay		
Male	84.186±1.929	81±3.134
Female	83.082±1.740	82±2.444
Tooth survival		
Male	108.227±2.070	106±3.409
Female	105.545±1.830	101±2.622

Table 2: Basic model of Cox regression PH with all variables in enter mode

Variables	B	SE	Wald	df	Sig.	Exp (B)	95.0% CI for Exp (B)	
							Lower	Upper
Gender	-0.137	0.141	0.947	1	0.331	0.872	0.661	1.150
The first visit	-0.009	0.005	3.265	1	0.071	0.991	0.981	1.001
The last visit before tooth 6's decay	-0.024	0.005	25.182	1	0.000	0.976	0.967	0.986

Table 3: The final model of Cox regression PH in the presence of all the variables in back ward LR mode

Variables	B	SE	Wald	df	Sig.	Exp (B)	95.0% CI for Exp (B)	
							Lower	Upper
The first visit*	-0.009	0.005	3.412	1	0.065	0.991	0.981	1.001
The last visit before tooth 6's decay ***	-0.024	0.005	24.726	1	0.000	0.977	0.968	0.986

*Significant at the 90% level and ***Significant at 99%

The mean and median of first visit and last visit before tooth 6's decay and the tooth survival were examined in 207 children shown in Table 1.

To test the effects of variables (the first visit, the last visit before tooth 6's decay and gender) on the survival of three teeth the model Cox regression was used assuming PH and data is presented in Table 2 and 3, respectively with two modes of enter and back ward.

According to the results of Table 3 and Cox regression model, assuming PH, the two variables of the first visit and the last visit before tooth six's decay influenced the decay of tooth number 6; the amount of this effect has been shown in Table 3 with the help of HR. According to the results of Cox regression model-assuming PH when two variables of the first visit and the last visit before tooth six's decay increase, the time needed for the decay of tooth number 6 also increases. This indicates that the quality of children's teeth and caring for the teeth play an important role in preserving the tooth 6 from decay. The first permanent molar is the first tooth that grows and provides the main force in chewing food in the mouth (Sadeghi, 2007). In a study conducted by Sadeghi (2007) in Iran, 40.9% of the children's first molar teeth were decayed, 0.35% had their teeth pulled and 6.22% of the children had their teeth filled. Finally, it was concluded that there was no significant difference in the rate of decay between boys and girls and also between the molar teeth on both sides.

Ebrahimi *et al.* (2010) in another study indicated that 95.3% of children needed filling treatment for their first molar teeth. Also, it was concluded that in this study, the first molar tooth's decay was significantly higher among girls than boys. In a study conducted by Tut and Milgrom (2010), it was concluded that the use of varnish compounds and topical antiseptics is effective in reducing molar tooth's decay. In the researches of Rossete *et al.* (2013), the existence of visible plaque on the occlusal surface of the first molar teeth was considered as a risk factor. In the studies of Riziwaquli, the first molar tooth's decay was 26.5% among children; the decay was significantly higher among girls than boys and also increased with the increase in age.

CONCLUSION

In a study conducted by Cheng *et al.* (2008), the mandibular first molar teeth were decayed sooner and the first molar tooth's decay was higher in girls than boys. Zouaidi *et al.* (2012) also indicated that the increase in age, results in an increase in the decay of the first molar tooth. According to the latest studies demographic characteristics in different societies have different effects in the first molar tooth's decay. On the other hand when the aging and oral hygiene increase, the dental caries decreases, so it is recommended that the decay of molar tooth be prevented and treated effectively by different teaching in schools or families.

REFERENCES

- Caufield, P.W. and A.L. Griffen, 2000. Dental caries: An infectious and transmissible disease. *Pediatr. Clin. North Am.*, 47: 1001-1019.
- Cheng, R.B., W. Tao, Y. Zhang, M. Cheng and Y. Li, 2008. Analysis of the first permanent molar caries epidemiological investigation in area of northeast China. *West China J. Stomatol.*, 26: 73-76.
- Chou, R., A. Cantor, B. Zakher, J.P. Mitchell and M. Pappas, 2013. Preventing dental caries in children <5 years: Systematic review updating USPSTF recommendation. *Pediatrics* peds, 132: 332-350.
- Ebrahimi, M., B.A. Ajami, A.R. Sarraf Shirazi, M. Afzal Aghaee and S. Rashidi, 2010. Dental treatment needs of permanent first molars in mashhad school children. *J. Dent. Res. Dent. Clin. Dent. Prospects.*, 4: 52-55.
- Herrera, M.S., C.E. Medina-Sollis, M. Minaya-Sanchez, A.P. Pontigo-Loyola and J.J. Villalobos-Rodelo *et al.*, 2012. Dental plaque, preventive care and tooth brushing associated with dental caries in primary teeth in schoolchildren ages 6-9 years of Leon, Nicaragua. *Med. Sci. Monitor Int. Med. J. Exp. Clin. Res.*, 19: 1019-1026.
- Kopycka-Kedzierawski, D.T. and R.J. Billings, 2013. Comparative effectiveness study to assess two examination modalities used to detect dental caries in preschool urban children. *Telemedicine E-Health*, 19: 834-840.
- Polk, D.E., M. Geng, S. Levy, A. Koerber and B.R. Flay, 2014. Frequency of daily tooth brushing: Predictors of change in 9 to 11 year old US children. *Commun. Dent. Health*, 31: 136-140.
- Rossete, M.R., J.S. Rezende, V.E. Gomes, E.F.E. Ferreira and A.C. Oliveira, 2013. Socio demographic, biological and behavioural risk factors associated with incidence of dental caries in schoolchildren's first permanent molars: A 3-year follow-up study. *European J. Paediat. Dentistry*, 14: 8-12.
- Sadeghi, M., 2007. Prevalence and bilateral occurrence of first permanent molar caries in 12-year-old students. *J. Dent. Res. Dent. Clin. Dent. Prospects*, 1: 86-92.
- Tagliaferro, E.P., G.M. Ambrosano and M.C. Meneghim and A.C. Pereira, 2008. Risk indicators and risk predictors of dental caries in school children. *J. Appl. Oral. Sci.*, 16: 408-413.
- Tinanoff, N. and S. Reisine, 2009. Update on early childhood caries since the surgeon general's report. *Acad. Pediatr.*, 9: 396-403.
- Tut, O.K. and P.M. Milgrom, 2010. Topical iodine and fluoride varnish combined is more effective than fluoride varnish alone for protecting erupting first permanent molars: A retrospective cohort study. *J. Public Health Dent.*, 70: 249-252.
- Zouaidi, K., S. Chala, R. Ameziane and H. Chhoul, 2012. First permanent molar caries: A case study of Moroccan children between 6 and 15 year-old. *Odontostomatol Trop*, 35: 5-10.