WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 8, Issue 5, 356-363. Research Article ISSN 2277– 7105

PREVALENCE OF DENTAL CARIES AND ITS ASSOCIATION WITH SOCIODEMOGRAPHIC CHARACTERISTICS IN IRAQ SCHOOL-AGED CHILDREN: A CROSS-SECTIONAL STUDY

***Ahmed B. AL-Rawe**

Ministry of Health, Baghdad, Iraq.

Article Received on
06 Feb. 2019,
Revised on 26 Feb. 2019,
Accepted on 20 March 2019
DOI: 10.20959/wjpr20195-14610

***Corresponding Author**
Ahmed B. AL-Rawe
Ministry of Health, Baghdad, Iraq.

ABSTRACT

Background: Dental problems are still common during childhood despite the general improvement in children's oral health over the past 50 years. The prevalence rate of dental caries in school-age children needs to be assessed in Baghdad province and risk factors associated with poor oral health needs to be identified. **The aim of the study:** To study the prevalence rate of dental caries in a sample of Iraqi school-age children and to study its association with oral health habits and sociodemographic characteristics. **Patients and method:** cross-sectional studies involved 243 school age (7-10 years) children. The study lasted for approximately 2 years and accomplished in several primary schools in Bagdad province. Dental status was assessed using the DMFT scoring system. **Results: Conclusion:** the prevalence rate of dental caries is relatively high and it is significantly associated with poor maternal education and irregular teeth brushing.

KEYWORDS: Dental carries, school-age children, Iraq.

INTRODUCTION

Dental problems are still common during childhood despite the general improvement in children's oral health over the past 50 years.[1] The prevalence rate of dental caries among children was estimated to be about 42% in the USA during the period from 1999 to 2004[2], while the prevalence rate of dental caries in primary teeth of USA children aged 2 to 4 years during the period of 1988 to 1994 was 18%; however, the incidence increased to 24% by the year 2004.[3] In addition, the prevalence rate of permanent teeth in school-age children reached 42% in the USA.[4]

In Arab countries, the prevalence of dental carries is variable however; reports from different Arab regions indicated a high prevalence rate. For instance, in Saudi Arabia, the prevalence rate of dental caries among boys was (88.9%) and in girls was (69.0%).[5] In the state of Qatar, the prevalence rate of dental caries among children was estimated to be about 85%.[6] In Kuwait, the prevalence rate of dental caries has been reported to reach 86%.[7] Data about the prevalence rate of dental caries in Iraqi children are somewhat old. For instance, a study in Baghdad in 1213 Iraqi primary schoolchildren aged 6-12 years was carried out during the early eighties of the last century and the prevalence rate of dental caries according to this old study was 67%.[8] For that reason, we planned and conducted this study in order to get an idea about the current prevalence rate of dental caries among school-aged children in several regions of Baghdad province.

There is growing evidence that the general health of children is linked to their oral health status.[9] It has been shown that child overall activity, as well as his quality of life, is related to dental health status.[10] Periodontal disorders and dental caries and are the most common oral health problems in children.[11]

Effective oral hygiene has been shown to reduce the incidence of early dental carries significantly and to promote oral health[12], and that high incidence of dental carries commonly associates poor oral hygiene practice.[13] Sociodemographic characteristics have been shown by several authors to have an important role in determining the oral health status of school-age children.[14-16]

Subjects and methods

Study design

The study was designed to be a cross-sectional study involving at least 500 school age children. Among the relatively large number of primary schools available in Baghdad, we select 10 schools randomly, 5 schools from Al-Risafa region and 5 schools from Al-Karkh region. We tried to include the largest available sample of children aged 7-10 years in those selected schools. At the end of the study, we were able to include 243 children.

Ethical issues

The study was approved by the ethical approval committee of Baghdad College of dentistry. Proper certificates for the conduction of the study were retrieved form targeted directorates of

the Ministry of Education in Iraq. Children were informed and educated about the aim and the way of oral examination.

Methods

Dental status evaluation of enrolled children was carried out according to the DMFT scoring system by a team of two dentists. The period of study extended from January 2015 to October 2018. Data concerning, mother education level, economic status, residency, and child school performance were included in the questionnaire form in addition to data regarding tooth brushing.

Mother education was categorized into primary, secondary, higher education and illiterate. Economic status was evaluated as income per family number so that good income was considered when average individual income is more than 150 000 ID, intermediate income was considered when average individual income is 50000 to < 150 000 ID and poor income was considered when average individual income is <50000 ID. Oral hygiene was categorized into regular and irregular teeth brushing.

Statistical analysis

Data were analyzed using statistical package for social science (SPSS) version 23 and Microsoft Office Excel 2010. Categorical variables were expressed as number and percentage whereas quantitative variables were expressed as mean and standard deviation. Association between variables was assessed using student t-test and one-way ANOVA. Correlations were assessed using Spearman correlation. The level of significance was considered at $P \leq 0.05$.

RESULTS

Children having dental carries accounted for 211 out of 243, thus the prevalence rate was 86.8% as shown in figure 1. Sociodemographic characteristics are shown in table 1. The study group included 110 boys and 133 girls, 45.3% versus 54.7%, respectively. The age range was 7 to 10 years and the mean age of the entire sample was 8.31 ±1.95 years. According to the level of mother education children were categorized into 50 (20.6%), 95 (39.1%), 78 (32.1%) and 20 (8.2%), as illiterate, primary, secondary and higher education. According to economic status the sample included 34 (14.0%), 134 (55.1%) and 75 (30.9%) as poor, intermediate and good status. 75 (30.9%) children experienced regular teeth brushing while 168 (69.1%) had irregular teeth brushing, as shown in table 1.

There was no significant association between gender of children and DMFT mean score, 2.01 ± 0.04 versus 1.99 ± 0.03, for boys and girls respectively ($P > 0.05$). Children of a mother with a higher level of education had significantly better dental care status and less mean DMFT score ($P < 0.05$). There was no significant association between economic status and mean DMFT score ($P > 0.05$). Children with regular teeth brushing had significantly less DMFT mean score compared to children with irregular teeth brushing, 1.87 ± 0.03 versus 2.01 ± 0.07 ($P < 0.05$).

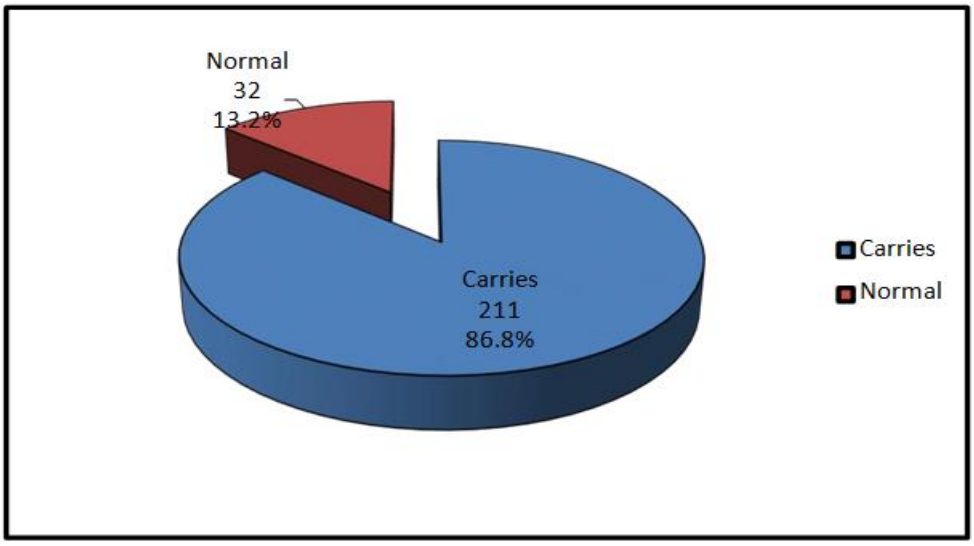

Figure 1: Prevalence rate of dental carries.

Table: Sociodemographic characteristics.

Characteristics	Value
Number of children	243
Boys, n (%)	110 (45.3 %)
Girls, n (%)	133 (54.7 %)
Mean age ±SD (years)	8.31 ±1.95
Age range (years)	7-10"
Mother education	
Illiterate	50 (20.6 %)
Primary	95 (39.1 %)
Secondary	78 (32.1 %)
Higher education	20 (8.2 %)
Economic status	
Poor	34 (14.0 %)
Intermediate	134 (55.1 %)
Good	75 (30.9 %)
Teeth brushing	
Regular	75 (30.9 %)
Irregular	168 (69.1 %)

Table 2: Association between dental caries and sociodemographic characteristics.

Characteristic		mean DMFT ±SD	*P*
Gender	Boys	2.01 ± 0.04	>0.05 NS
	Girls	1.99 ± 0.03	
Mother education	Illiterate	2.01 ± 0.11	<0.05 S
	Primary	1.99 ± 0.09	
	Secondary	1.43 ± 0.02	
	Higher education	1.34 ± 0.08	
Economic status	Poor	1.87 ± 0.04	>0.05 NS
	Intermediate	1.99 ± 0.08	
	Good	1.96 ± 0.01	
Teeth brushing	Regular	1.87 ± 0.03	<0.05 S
	Irregular	2.01 ± 0.07	

DISCUSSION

The present study included a representative sample of 243 Iraqi children in whom the prevalence rate of dental caries was 86.6%. This rate is comparable to that seen in nearby countries. In Arab countries, the prevalence of dental carries is variable however; reports from different Arab regions indicated a high prevalence rate. For instance, in Saudi Arabia, the prevalence rate of dental caries among boys was (88.9%) and in girls was (69.0%).[5] In the state of Qatar, the prevalence rate of dental caries among children was estimated to be about 85%.[6] In Kuwait, the prevalence rate of dental caries has been reported to reach 86%.[7]

We found that the state of dental health is significantly affected by mother education level, in such a way that the higher the level of mother education the better is the dental situation. Parents practice an important role in encouraging positive attitudes and habits toward oral health behaviors.[14,15] Mothers are the intimate and reliable caregivers of children in most regions of the world, and they have a critical role in providing effective guidance and positive ideas toward health oral status.[16,17] In our country, we should encourage health campaigns that are centered around improving dental care and especially focusing on the mother role in improving the regularity and effectiveness of children teeth brushing.

We also found that economic status has no significant effect on dental health status. Poverty status, measured by an income-to-needs ratio, is strongly related to poor oral health status, with the low income-to-needs ratio being an important global social determinant of oral and physical health.[18] Black children from poor or low- income families age two to eleven years experienced 60% untreated teeth cavities in comparison to high-income families at 46%.[19]

However, we found that mother education, rather than economic status is the principal determinant of child dental care.

We found, also those regular teeth brushing is associated with less dental caries. Accumulation of the complex-structured microbial plaque on dental surfaces and its ineffective removal lead to deterioration of oral-dental health caused by the toxins of the plaque microorganisms.[20-23] The aims of WHO related to oral- dental health for the 21st century is a rate of 80% without caries in children aged 6 and a DMT value of 1.5 in children aged 12.[24] Tooth brushing is a simple, effective, and the most preferred method for removal of microbial dental plaque.[25,26]

Therefore, we are in need to improve mother education regarding the importance of teeth brushing in children to keep good oral health and to highlight the link between oral health and general wellbeing on child age group.

REFERENCES

1. Guarnizo-Herreño CC, Wehby GL. Children's dental health, school performance, and psychosocial well-being. *J Pediatr*, 2012; 161(6): 1153-9.
2. Edelstein BL, Chinn CH. Update on Disparities in Oral Health and Access to Dental Care for America's Children. Academic Pediatrics, 2009; 9: 415–9.
3. Tomar SL, Reeves AF. Changes in the Oral Health of US Children and Adolescents and Dental Public Health Infrastructure Since the Release of the Healthy People 2010 Objectives. Academic Pediatrics, 2009; 9: 388–95.
4. Beltran-Aguilar ED, Barker LK, Canto MT, Dye BA, Gooch BF, Griffin SO, et al. Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis-United States, 1988–1994 and 1999–2002. MMWR Surveill Summ, 2005; 54: 1–43.
5. Bohannan SA, Eltelety SM, Hassan MH, et al. Oral and Dental Health Status among Adolescents with Limited Access to Dental Care Services in Jeddah. *Dent J (Basel).*, 2018; 6(2): 15.
6. Al-Darwish M, El Ansari W, Benner A. Prevalence of dental caries among 12-14-year-old children in Qatar. *Saudi Dent J.*, 2014; 26(3): 115-25.
7. Al-Mutawa S. A., Shyama M., Al-Duwairi Y., Soparkar P. Dental caries experience of Kuwaiti schoolchildren. *Community Dental Health*, 2006; 23(1): 31–36.

8. Baghdad VS, Ghose LJ. Dental caries prevalence in schoolchildren of Baghdad province, Iraq. Community Dent Oral Epidemiol, 1982 Jun; 10(3): 148-51.
9. WHO. *The World Health Report 2003-Shaping the Future*. Geneva, Switzerland: World Health Organization; 2016. http://www.who.int/whr/2003/en/
10. Ashley F. Role of dental health education in preventive dentistry. In: Murray J. J., editor. *Prevention of Dental Disease*. Oxford, UK: Oxford University Press, 1996; 406–414.
11. Bodur H. B. A., Yücesoy V., Baloş K. The evaluation of dental caries prevalence and periodontal status in two different age groups. *GÜ Dişhek Fak Derg*., 2004; 21(1): 35–39.
12. Blinkhorn A., Gratrix D., Holloway P., Wainwright-Stringer Y., Ward S., Worthington H. A cluster randomized, controlled trial of the value of dental health educators in general dental practice. *British Dental Journal,* 2003; 195(7): 395–400.
13. Oliveira L., Sheiham A., Bonecker M. Exploring the association of dental caries with social factors and nutritional status in Brazilian preschool children. *European Journal of Oral Sciences*, 2008; 116(1): 37–43.
14. Poutanen R, Lahti S, Tolvanen M, Hausen H. Parental influence on children's oral-health-related behavior. Acta Odontol Scan, 2006; 64: 286–292.
15. Perper K, Dressler S, Heinzel-Gutenbrunner M, Neuhauser A, Krecker M, Wunderlich K, Jablonski-Momeni A. The influence of social status on pre-school children's eating habits, caries experience, and caries prevention behavior. Int J Public Health, 2012; 57: 207–215.
16. 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: 720–724.
17. Chen CC, Chiou SJ, Ting CC, Lin YC, Hsu CC, Chen FL, Lee CH, Chen T, Chang CS, Lin YY, Huang HL. Immigrant- native differences in caries-related knowledge, attitude, and oral health behaviors: a cross-sectional study in Taiwan. BMC Oral Health, 2014; 14: 3. doi: 10.1186/1472-6831-14-3.
18. Sgan-Cohen H.D., Mann J. Health, oral health, and poverty. J. Am. Dent. Assoc., 2007; 138: 1437–1442.
19. Edelstein B.L., Chinn C.H. Update on disparities in oral health and access to dental care for America's children. Acad. Pediatr, 2009; 9: 415–419.
20. Güngor K, Tüter G, Bal B. Eğitim düzeyi ile ağız sağlığı arasındaki ilişkinin değerlendirilmesi. Gazi Üniv Diş Hekim Fak Derg, 1999; 16(1): 21–25.

21. Kallestal C, Matsson L. Periodontal conditions in a group of Swedish adolescents. (II) Analysis of data. J Clin Periodontol, 1990; 17(9): 609–612.
22. Özmeriç N, Göfteci B, Kutiş B, Bal B. Arayüz bakımı ve periodontal sağlık. Gazi Üniv Diş Hekim Fak Derg, 1994; 11(2): 33–38.
23. Öztunç H, Haytaç MC, Özmeriç N, Uzel I. Adana ilinde 6-11 yaş grubu çocukların ağız ve diş sağlığı durumlarının değerlendirilmesi. Gazi Üniv Diş Hekim Fak Derg, 2000; 17(2): 1–6.
24. Mann ML. In: Planning for community dental programs Jong's community dental health. Gluck GM, Morganstein WM, editors. St. Louis: Mosby Year Book Inc., 1990; 3–24.
25. Fischman SL. The history of oral hygiene products: how far have we come in 6000 years? Periodontol 2000., 1997; 15: 7–14.
26. Koivusilta L, Honkala S, Honkala E, Rimpela A. Toothbrushing as part of the adolescent lifestyle predicts education level. J Dent Res., 2003; 82(5): 361–366.