

**Research Article**

# Caries severity, dental knowledge, and behavior among a group of children attending Preventive Clinic College of Dentistry, University of Basrah

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**ABSTRACT:**

**Background:** Dental caries is a chronic sugar-dependent infectious disease, and is the most frequent oral disease in children. An important requirement for health-related practices and protection from dental caries is knowledge. If persons preserve their oral health, they become free of oral disease that will get a good result. This study was conducted to investigate the severity of dental caries, dental knowledge, and behavior among a group of children attending the Preventive Clinic at the College of Dentistry/ University of Basrah.

**Materials and Methods:** A total of 197 children with an age ranged from 8 to 14 years were involved in this study, those who came to the preventive clinic to join the preventive program. Dental caries was assessed in accordance with criteria designated by the WHO. The dental knowledge of all child was estimated by ten questions structured for this reason.

**Results:** A total of 197 children aged 8-14 years with an average of  $9.62 \pm 1.93$  years participated in the study. The males constituted about 47.7% (94 children), while the females were 103 (53.3%). Most children in this study were found to have good dental knowledge, and use and frequency of dental brush (91%, 62%, and 77%, respectively). There were no significant differences in answers according to age. Regarding gender, there were no significant statistical differences between answers, except for the questions "Do you find that keeping the mouth clean can result in healthy teeth and gum?" and "Could teeth loss change your appearance?"; where females answered more correct than males with statistical significance of ( $p < 0.05$ ). Caries prevalence in all primary teeth dmfs indices were negatively correlated to age with statistical significance ( $p < 0.05$ ), while secondary teeth DMFS indices were positively correlated to age with a high statistical significance ( $p < 0.01$ ).

**Conclusion:** The results of this study have shown that children are orientated toward dental protection or tooth brushing, and this is an essential requirement to prevent dental caries. However, most children who have knowledge about oral care, they do not have the attitude to conduct behavior.

**Keywords:** caries severity, dental knowledge, dental behavior, children

**INTRODUCTION**

Dental knowledge is the most important factor that influences oral health. Children acquire dental knowledge from their family, peers or school. This dental information may stimulate them to preserve well oral health, or maybe kept as information only (1).

Development of knowledge of the population concerning the stimulation of health behavior is one of the methods for caries prevention(2). Oral health behavior involves personal and specialized care including tooth brushing, dental flossing, visiting the dentist frequently, and eating suitable food (3). So oral health behavior is the variety of activities including motor, cognitive and/or physiological response, or, all activities received to preserve and stimulate health(4).

Dental caries is an infectious disease of the teeth in which there is demineralization of hard tissue of the teeth (enamel, dentin, and cementum) eventually leading to cavitation. Bacteria, especially *Streptococcus mutans*, diet, oral hygiene, and time play important roles in the carious lesion(5).

Children are more predisposed to dental caries at the stage of deciduous teeth exfoliated and permanent teeth erupts, when their oral immunity is still in the developing phase and there are alterations of dietary habits as part of the life change from home to school. So, the risk factors for dental decay are more active at this stage. The children at the age of school-going are more dependent on self-selection of diet; their irregularity of unsuitable eating habits and poor

control of oral hygiene raises the threat of dental decay(6)(7).

Dentists act as an essential player in the development of the public oral health. So, acquiring awareness and attitudes concerning the preservation of dental health and avoidance of oral diseases is essential during training of dental students and junior dentists (8).

The prevalence of tooth decay in developed countries is low and this is related to advanced oral hygiene behaviors and the adoption of some prevention systems, unlike the situation in the developing countries where interest is mostly on curative care(9).

The current study was carried out to assess the severity of dental caries among and to determine dental knowledge and behavior of the children attending the Preventive Clinic. The data obtained provide knowledge regarding the oral health status of these children and may assist in developing better dental health promotion procedures.

#### MATERIALS AND METHOD

The study involved 197 children attended the Preventive Clinic/ College of Dentistry/ University of Basrah. The preventive program involves education on oral hygiene and nutritional behavior and complete oral management for the participating children. Data began to be collected from 1/11/2018 to 15/4/2019. Caries was investigated and evaluated in accordance with criteria designated by WHO (10). Dental mirror and an explorer (No.00) were used. Ten questions were structured for dental knowledge of each child. They were as follows:

1. Do you find that it is essential to need a toothbrush?
2. Do you apply toothbrush with toothpaste?
3. Do you think that teeth brushing is necessary to be twice or more daily?
4. Which kinds of diet may result in dental caries?
5. Which kinds of diet may promote teeth resistance against caries?
6. Do you go to the dental clinic frequently?
7. Is caries development cause your teeth to fall out?
8. Are teeth fall early cause disagreement of teeth?
9. Do you find that keeping the mouth clean can result in healthy teeth and gum?
10. Could teeth loss change your appearance?

All questions answers were either (yes) or (no), except for question 4 the answers were either

sweets or others, and in question 5 the answers were either milk group or others. So that (10) was the maximum total score.

Informed consent was obtained from each participant child's parents.

SPSS software (Statistical Package for Social Sciences) by using One Way ANOVA test, Student t-test and Pearson's correlation.

#### RESULTS

In this study, 197 children aged 8-14 years participated with an average of  $9.62 \pm 1.93$  years. The males constituted 47.7% (94 children), while the females 103 (53.3%). Table (1) shows the frequency of answers of the 10 questions about the child's information on dental caries. Most children replied the first three questions with (yes), which is true about the knowledge, use, and frequency of dental brush (91%, 62%, and 77%, respectively). Concerning questions 4 and 5 about the relationship between food (sugars) and dental caries, approximately 74% (151) of children agreed that sweet food can cause dental caries and approximately half of them do not know what kind of food might increase teeth resistance to dental caries. Interestingly, only 24 children (12%) visited the dental clinic regularly. The majority (166, 86%) answered "yes" to questions about the outcomes of dental caries, caries development leads to the loss of teeth over time, leading to dental arrangement disharmony. One hundred eighty two children (92%) believe that good oral hygiene leads to healthy teeth and gum. Approximately 92% of participant children stated that losing their teeth affects their look. Statistically, differences were not significant.

There were no significant differences in answers according to age. Table (2) shows the relation of primary and secondary dental indices to gender. There were no significance in the differences between males and females of all primary teeth indices, while the significance for missing (M) portion of the DMF index was shown in secondary teeth. Table (3) shows the correlation between the measured primary and secondary teeth indices with the age of children under study in which all primary teeth indices display a statistically significant negative correlation with age, except for the filling portion (f) of the dmf index. Whereas, the same indices for secondary teeth correlated positively to age with high statistical significance.

**Table 1: Frequencies of answers**

Questions	Answer	Number
Do you find that it is essential to need a dental brush?	Yes	179 (91%)
	No	18 (9%)
Do you apply a toothbrush with toothpaste?	Yes	122 (62%)
	No	75 (38%)
Do you think that teeth brushing is necessary to be twice or more daily?	Yes	151 (77%)
	No	46 (23%)
Which kinds of diet may cause dental caries?	Sweet	151(77%)
	Others	46 (23%)
Which kinds of diet may promote teeth resistance against caries?	Sweet	98 (49.7%)
	Others	99 (50.3%)
Do you go to the dental clinic regularly?	Yes	24 (12%)
	No	173 (88%)
Is caries development cause your teeth to fall out?	Yes	166 (84%)
	No	31 (16%)
Is early losing teeth lead to disharmony of teeth arrangement?	Yes	165 (83.8%)
	No	32 (16.2%)
Do you find that keeping the mouth clean can result in healthy teeth and gum?	Yes	182 (92%)
	No	15 (8%)
Could teeth loss change your appearance?	Yes	178 (92%)
	No	9 (8%)

**Table 2: association between dental caries indices and gender**

	Index	Gender	N	Median	P-value
Primary teeth	Decay surface(ds)	Male	94	8.00	0.313
		Female	103	9.00	
		Total	197		
	Missing surface (ms)	Male	94	0.00	0.383
		Female	103	0.00	
		Total	197		
	Filing surface (fs)	Male	94	0.00	0.438
		Female	103	0.00	
		Total	197		
	Decay missing filling surface(dmfs)	Male	94	11.00	0.325
		Female	103	11.00	
		Total	197		
Decay missing filling tooth (dmft)	Male	94	5.00	0.195	
	Female	103	6.00		
	Total	197			
Secondary teeth	Decay surface (DS)	Male	94	2.00	0.096
		Female	103	3.00	
		Total	197		

	Missing surface (MS)	Male	94	0.00	0.014
		Female	103	0.00	
		Total	197		
	Filing surface (FS)	Male	94	0.00	0.496
		Female	103	0.00	
		Total	197		
	Decay missing filling surface (DMFS)	Male	94	2.00	0.050
		Female	103	3.00	
		Total	197		
	Decay missing filling tooth (DMFT)	Male	94	2.00	0.118
		Female	103	3.00	
		Total	197		

**Table 3: correlation between age and dental caries indices**

			Age
Primary teeth	Decay surface (ds)	Correlation Coefficient	-0.640- <sup>**</sup>
		Sig. (2-tailed)	0.0001
		N	197
	Missing surface (ms)	Correlation Coefficient	-0.203- <sup>**</sup>
		Sig. (2-tailed)	0.004
		N	197
	Filing surface (fs)	Correlation Coefficient	-0.066-
		Sig. (2-tailed)	0.354
		N	197
	Decay missing filling surface (dmfs)	Correlation Coefficient	-0.607 <sup>**</sup>
		Sig. (2-tailed)	0.0001
		N	197
Decay missing filling tooth (dmft)	Correlation Coefficient	-0.660- <sup>**</sup>	
	Sig. (2-tailed)	0.0001	
	N	197	
Secondary teeth	Decay surface (DS)	Correlation Coefficient	0.569 <sup>**</sup>
		Sig. (2-tailed)	0.0001
		N	197
	Missing surface (MS)	Correlation Coefficient	0.182 <sup>*</sup>
		Sig. (2-tailed)	0.010
		N	197
Filing surface (FS)	Correlation Coefficient	0.297 <sup>**</sup>	

		Sig. (2-tailed)	0.0001
		N	197
	Decay missing filling surface (DMFS)	Correlation Coefficient	0.593**
		Sig. (2-tailed)	0.0001
		N	197
		Decay missing filling tooth (DMFT)	Correlation Coefficient
Sig. (2-tailed)	0.0001		
	N	197	

\* The level of statistical significance is  $< 0.05$

\*\* The level of statistical significance is  $< 0.01$

## DISCUSSION

The development of dental caries among different populations worldwide is obvious and reflects different risk profiles like genetic, behavioral, and environmental factors. It essentially requires to investigate the knowledge/awareness, attitude; and to establish/promote preventive public oral health care programs rather than the traditional therapeutic measures (11).

There are few knowledge and practices that have an important relationship with caries investigated in this research. These include holding an orientation about teeth protection and using a toothbrush with toothpaste and brushing twice a day were the significant knowledge and practice associated with preventing teeth decay. Many investigators have described similar results regarding recurrent tooth brushing (12,13,14).

One preventive care program is regularly visiting the dentist for checking (15). The current study showed that most children had a negative response about visiting the dental clinic. This may be due to accompanying them to the dentist only when there is a complaint (16). Therefore, there should be more efforts exerted to promote early and regular preventive dental care visits by children to change the oral and dental health behavior.

In this study, about 74% of children have awareness about that sweet food causes dental caries, which results from the high rate of sweet consumption that elongates the duration of low pH in the mouth leading to a higher demineralization rate resulting in dental caries. Thus, regulating the consumption of sweets by young children is very necessary to avoid dental problems (17).

A high proportion of the sample gave positive responses for the questions that explored knowledge among these children. The results showed that most of the children had good awareness.

Relationships between age and gender to answer was found to be statistically not significant, this is probably due to the lack of health educational information that is supposed to be given by dentists. This refers to the importance of visiting schools by dentists, as well as giving one-to-one health education about oral and dental health. , except the questions "Do you find that keeping the mouth clean can result in healthy teeth and gum?" and "Could teeth loss change your appearance?", where females' answers were more correct than males' with statistical significance. This result showed that females usually have well oral health knowledge than males and more awareness, probably because of greater community care on female to have attractive smile(18). These findings show that those children had good dental knowledge, but poor attitude, so they need to alter their habits for the application of oral hygiene methods to promote their oral health. The results of some researchers agree to the current results (19).

This study showed (dmfs) score in primary teeth was negatively correlated to age with a high statistical significance. This finding can be explained by the normal exfoliation of deciduous teeth by developing in age. Therefore, it is needed to stress on basic training on methods of protection from tooth decay at an early age. These results agree with Al-Jorrani Sh. (20).

On the other hand, caries situation in secondary teeth (DMFS) was positively correlated to age; this could be due to eruption of secondary teeth and improvement of proximal area (21). Another cause might be the children's non-suitable muscle coordination to brush leads to stagnation of plaque as well as a change in food style which might lead to caries.

The current study showed no significant difference in the prevalence of dental caries between males and females; a result agrees to that documented in Tenerife, Canary Islands (22). Although other studies discovered that the prevalence of dental

caries among girls was significantly higher than boys (23,24,25). Finding a statistically significant difference between gender may be too early, because the dietary and oral health practices, related to tooth decay, are commonly depends on parents or care givers at early ages.

## CONCLUSION

Results of this study have shown that children are orientated regarding dental protection or tooth brushing, and this is an essential requirement to applying preventive dental care measures. This means that most children hold knowledge about oral care, but they do not practice healthy behaviors.

## REFERENCES

1. Marya C. A textbook of Public Health Dentistry. New Delhi: Jaypee Brothers Medical Publishers; 2011.
2. Neamtollahi H, Ebrahimi M. Oral health behavior and its determinants in a group of Iranian students. *Indian J Dent Res* 2010; 21: 84-8.
3. Townsend M. Behavior Therapy: in Psychiatric mental health nursing. 5th ed. F. A. Davis Co.; 2007. pp. 265-79.
4. Muttappillymyalil J, Divakaran B, Sreedhar S. Oral health behavior among adolescents in Kerala, India. *JPH-YEAR* 7 2009; 6(3): 211-8.
5. Roberson TM. Art and Science of Operative dentistry. 4 Ed: Mosby, Inc.; 2002
6. Seow W. Biological mechanisms of early childhood caries. *Community Dent Oral Epidemiol.* 1998; 26(1):8-27.
7. Karjalainen S, Söderling E, Sewón L, Lapinleimu H, Simell O. A prospective study on sucrose consumption, visible plaque, and caries in children from 3 to 6 years of age. *Community Dentistry and Oral Epidemiology.* 2001; 29(2):136-42).
8. Bertolami C. Rationalizing the dental curriculum in light of current disease prevalence and patient demand for treatment: form vs. content. *J Dent Educ* 2001;65:725-735.
9. Sheiham A. changing trends in dental caries. *Int J Epidemiol* 1984; 13:142-7.
10. Ramfjored SP. Indices for prevalence and incidence of periodontal disease. *J Periodontol* 1959; 30: 51-9)
11. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral disease and risks to oral health. *Bull World Health Organ* 2005; 83(9):661-9.
12. Iron N, Koparal E. Dental caries prevalence, dietary habits, tooth-brushing, and mother's education in 500 urban Turkish children.. *J Marmara Univ Dent Fac.* 1997 Sep; 2(4):599-604.
13. Ebrahim SM, Habib OS. Prevalence of dental caries among primary school children in Basrah. *The medical journal of Basrah University.*2005;23(2):26-29.
14. Rajala M, Seläinaho K, Paunio I. Relationship between reported tooth brushing and dental caries in adults. *Community Dentistry and Oral Epidemiology.*2006; 8(3): 128 – 131.
15. Sharda A, Shetty S. A comparative study of oral health knowledge, attitude, and Behavior of first and final year dental students of Udaipur city, Rajasthan. *J Oral Health Comm Dent* 2008; 2(3): 46-54.
16. Schwarz E, Lo ECM: Use of dental services by the middle-aged and the elderly in Hong Kong. *Community Dent Oral Epidemiol* 1994, 22:374–380.
17. Gussy MG, Waters EG, Walsh O, Kilpatrick NM: Early childhood caries: current evidence for etiology and prevention. *J Paediatr Child Health* 2006, 42:37–43.
18. Rakowski W, Assaf AR, Lefebvre RC, Lasater TM, Niknian M, Carleton RA. Information-seeking about health in a community sample of adults: Correlates and  
a. associations with other health-related practices. *Health Educ Q* 1990; 17: 379–393.
19. Selwitz RH, Ismail AI, Pitts NB. Dental caries.(2007) *Lancet* 369: 51-59.
20. Harris R, Nicoll AD, Adair PM, Pine CM: Risk factors for dental caries in young children: a systematic review of the literature. *Community Dent Health* 2004, 21(Suppl):71–85.
21. WHO. Oral health surveys basic methods. 4th ed. World health organization. Geneva, Switzerland,1997.
22. Lukacs JR, Largaepada LL. Explaining sex differences in dental caries prevalence: Saliva, hormones, and "life-history etiologies. *American Journal of Human Biology.*2006; 18(4): 540-555.
23. Eugino D., Baltran-Aguilar DMD., Maria TC., Laurie K., Barker MSPH., and Bruce A. Division of oral health, national center for chronic disease prevention and health promotion. Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel flurosis.2002.
24. Umesi- Koleoso D.C., Ayanbadejo O.P., Ormeosu OA. Dental caries prevalence among adolescents in Lagos Nigeria. *Cariology Research.* 2006.
25. Khan AA, Jain SK, Shrivastav A. Prevalence of dental caries among population of Gwalior (India) in relation of different associated factors. *European Journal of Dentistry.*2008; 2: 81-85.