

Knowledge and attitudes towards oral and dental health among seventh and eighth grade students compared with their teeth examination



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Abstract

Aim Oral and dental health are important aspects of general health and impact the quality of life and well-being. In this study, we aimed to assess the level of knowledge and attitudes towards oral and dental health and to examine the relative effect of social-behavioural risk factors on caries and other teeth problems among seventh and eighth grade students.

Methods Study Design: The study population consisted of all seventh and eighth graders who started the 2011 school year in Sarigol village of the Manisa city, Turkey (n = 377). Data were gathered by questionnaires which were carried out before tooth examination. Associations between sociodemographic characteristics, knowledge items, attitudinal factors and number of dental caries, dental fillings and teeth loss were studied.

Results Oral health was worse among females (p=0.002). As the number of children under care increased in the house, the number of dental filling and teeth loss increased in the students (p=0.001 and p=0.021). Education of mothers of students who had worse dental health was significantly lower compared to the others (p=0.029). Among students who had four and more dental caries and dental fillings, frequency of dentist visit was lower (p=0.034 and p=0.005). Among students who had more dental caries, the knowledge that consumption of acidic beverages is not good for oral health was less prevalent (p=0.011). Statistics: Associations between sociodemographic characteristics, knowledge items, attitudinal factors and number of dental caries, dental fillings and teeth loss were studied using chi-square test.

Conclusions Health authorities should strengthen the implementation of oral disease prevention and oral health promotion programs rather than traditional curative care. Community-oriented education programs for students and their families are crucial for this purpose

KEYWORDS Oral health, dental health, attitudes and knowledge

Basic Methods. 5th Edition 2013]. Therefore, oral and dental health examination should be considered as an important part of general health examination. As the entrance point of our digestive system, the maintenance of oral and dental health will result in preservation of the good general health of the body. Dental caries and periodontal diseases are the primary causes for poor oral health, though these diseases are preventable.

The factors associated with poor oral and dental health include low income families, cultural differences, child's attitude, fewer dental visits, lower educational levels of parents, low levels of oral health knowledge among parents and their children, inadequate oral hygiene and consumption of high-calorie diet in these children [Mani et al., 2010; Daly et al., 2010; Vermaire et al., 2010; Tolvanen et al., 2010]. There is evidence that oral health attitudes and behaviour of parents can influence children's oral hygiene behaviours and eating habits [Vermaire et al., 2010; World Health Organization. Oral Health Surveys: Basic Methods. 5th Edition 2013; World Health Organization. Guideline: Sugars intake for adults and children 2015]. Parents and their children may have poor knowledge of effective preventive measures, may not understand the relationship between diet and oral health and may accord low value to relation between access to dental professionals and dental health [Tolvanen et al., 2010]. Therefore, more attention needs to be focused on knowledge and attitude in solving the problem of dental caries. Interventions attempting to change lifestyle practices and behaviour through education and awareness programs are crucial for this purpose. Systematic data on oral health behaviour will be needed for the planning and evaluation of oral health education [World Health Organization. Oral Health Surveys: Basic Methods. 5th Edition 2013; World Health Organization. Guideline: Sugars intake for adults and children 2015].

Unfortunately, there are increasing levels of dental caries and other dental health problems in some developing countries where preventive education programs have not been established

Introduction

Oral and dental health are important aspects of general health and impact the quality of life and well-being [Ferrazzano et al., 2020; Ferrazzano et al., 2019; Martins et al., 2018; Mani et al., 2010; Daly et al., 2010; Vermaire et al., 2010; Tolvanen et al., 2010; World Health Organization. Oral Health Surveys:

[World Health Organization. Oral Health Surveys: Basic Methods. 5th Edition 2013; World Health Organization. Guideline: Sugars intake for adults and children 2015; Olmez

et al., 2003; Peker and Bermek 2011]. From the healthcare point of view, it is desirable to alter attitudes that cause the bad health outcome, but before attitudes can be changed,

	Status									
	Number of dental caries				Number of dental fillings			Number of teeth extracted		
N= 377	None n=182	1-3 n=163	4 and >4 n=32	P value	None n=299	Some Tooth Fillings n=78	P value	None n= 339	Some teeth extracted n=38	P value
Age of the Respondent (months) Mean (SD)	169.18 (7.71)	169.68 (8.03)	171.35 (8.27)	0.346	169.53 (7.99)	169.77 (7.62)	0.811	169.80 (7.98)	167.65 (6.97)	0.113
Weight of the Respondent (Kg) Mean (SD)	51.69 (11.56)	50.84 (10.34)	51.75 (10.34)	0.754	50.94 (11.04)	52.82 (10.40)	0.176	51.57 (11.15)	49.16 (8.43)	0.197
Height of the Respondent (cm) Mean (SD)	155.96 (8.28)	155.92 (7.38)	156.41 (7.51)	0.949	155.51 (7.73)	157.78 (7.94)	0.022*	156.12 (7.77)	154.71 (8.26)	0.291

*p<0.05, **p<0.01

TABLE 1 Sociodemographic characteristics of the respondents by their oral health status.

n= 377	Number of dental caries				Number of dental fillings			Number of teeth extracted		
	None n (%)	1 - 3 n (%)	4 and >4 n (%)	P value	None n (%)	Some Tooth Fillings n (%)	P value	None n (%)	Some teeth extracted n (%)	P value
Gender of the Respondent Girl (n= 189) Boy (n=188)	95 (50.3) 87 (46.3)	81 (42.9) 82 (43.6)	13 (6.9) 19 (10.1)	0.477	138 (73) 161 (86.6)	51 (27) 27 (14.4)	0.002*	170 (89.9) 169 (89.9)	19 (10.1) 19 (10.1)	0.986
Number of Children Under Care 1 (n=85) 2 (n=197) 3 (n=60) >4 (n=36)	35 (41.2) 99 (50.3) 32 (53.3) 16 (45.7)	38 (44.7) 87 (44.2) 22 (36.7) 16 (45.7)	12 (14.1) 11 (5.6) 6 (10) 3 (8.6)	0.282	73 (85.9) 140 (71.1) 54 (90) 32 (91.4)	12 (14.1) 57 (28.9) 6 (10) 3 (8.6)	0.001**	84 (98.8) - 172 (87.3) 52 (86.7)	1 (1.2) - 25 (12.7) 8 (13.3)	0.021*
Education Level of the Respondent 7th grade (n= 198) 8th grade (n=179)	100 (50.5) 82 (45.8)	85 (42.9) 78 (43.6)	13 (6.6) 19 (10.6)	0.324	164 (82.8) 135 (75.4)	34 (17.2) 44 (24.6)	0.076	178 (89.9) 161 (89.9)	20 (10.1) 18 (10.1)	0.988
Mother's education 1-5 years (n= 249) 6-8 years (n= 65) >8 years (n=72)	105 (43.8) 35 (53.8) 42 (58.3)	112 (46.7) 22 (33.8) 29 (40.3)	23 (9.6) 8 (12.3) 1 (1.4)	0.029*	191 (79.6) 56 (86.2) 52 (72.2)	49 (20.4) 9 (13.8) 20 (27.8)	0.131	215 (89.6) 60 (92.3) 64 (88.9)	25 (10.4) 5 (7.7) 8 (11.1)	0.77
Father's education 1-5 years (n=149) 5-8 years (n=93) >8 years (n=135)	65 (43.6) 52 (55.9) 65 (48.1)	75 (50.3) 33 (35.5) 55 (40.7)	9 (6.0) 8 (8.6) 15 (11.1)	0.127	122 (81.9) 75 (80.6) 102 (75.6)	27 (18.1) 18 (19.4) 33 (24.4)	0.395	131 (87.9) 85 (91.4) 123 (91.1)	18 (12.1) 8 (8.6) 12 (8.9)	0.579

TABLE 2 Sociodemographic characteristics of the respondents' families by their oral health status.

n=377	Number of dental caries				Number of dental fillings			Number of teeth extracted		
	None n (%)	1 - 3 n(%)	4 and >4 n(%)	P value	None n(%)	Some Tooth Fillings n(%)	P value	None n (%)	Some teeth extracted (n=)	P value
How often do you brush your teeth?				0.101			0.689			0.135
Once a day (n=114)	43 (37.7)	61 (53.5)	10 (8.8)		87 (76.3)	27 (23.7)		102 (89.5)	12 (10.5)	
Twice a day (n=126)	66 (52.4)	47 (37.3)	13 (10.3)		100(79.4)	26 (20.6)		119 (94.4)	7 (5.6)	
Every other day (n=37)	23 (62.2)	12 (32.4)	2 (5.4)		29 (78.4)	8 (21.6)		33 (89.2)	4 (10.8)	
Sometimes (n= 100)	50 (50)	43 (43.0)	7 (7)		83 (83)	17 (17)		85 (85)	15 (15)	
How often do you change your tooth brush?				0.573			0.405			0.793
Every 3 months (n=200)	99 (49.5)	82 (41)	19 (9.5)		152 (76)	48 (24)		178 (89)	22(11)	
Every 6 months (n=106)	50 (47.2)	47 (44.3)	9 (8.5)		88 (83)	18 (17)		95 (89.6)	11(10.4)	
Every year (n=61)	29 (47.5)	30 (49.2)	2 (3.3)		51 (83.6)	10 (16.4)		57 (93.4)	4(6.6)	
Every other year (n=10)	4 (40)	4 (40)	2 (20)		8 (80)	2 (20)		9 (90)	1 (10)	
How often do you go to your dentist?				0.034*			0.005**			0.65
Every 6 months (n=467)	36 (63.2)	17 (29.8)	4 (7.0)		38 (66.7)	19 (33.3)		50 (87.7)	7 (12.3)	
Every year (n=42)	23 (54.8)	14 (33.3)	5 (11.9)		33 (78.6)	9 (21.4)		36 (85.7)	6 (14.3)	
Every other year (n=17)	5 (29.4)	12 (70.6)	-		10 (58.8)	7 (41.2)		15 (88.2)	2(11.8)	
Upon a complain (n=261)	118 (45.2)	120 (46)	23 (8.8)		218 (83)	43 (16.5)		238 (91.2)	23 (8.8)	

* $p<0.05$, ** $p<0.01$

TABLE 3 Knowledge and attitudes towards oral and dental health among 7th and 8th grade students who have dental fillings, dental caries, and teeth extracted.

they need to be determined. As Turkey is one of those countries where a national oral health education programme has not been started yet, we desired to begin with a pilot study which aims to determine the causative oral health attitudes and lack of knowledge [Olmez et al., 2003; Peker and Bermek 2011].

In this cross-sectional study, we aimed to assess the level of knowledge and attitudes towards oral and dental health among 7th and 8th grade students, to evaluate the pattern of oral health behaviour among these students in relation to age, gender and social characteristics and to evaluate the relative effect of social-behavioural risk factors on caries and other teeth problems. We desire to share the information retrieved from this study with dentists, family physicians and paediatricians in order to arouse their awareness and to provide their collaboration.

Materials and methods

The study population consisted of all 7th and 8th grade students who had started the 2011 school year in Sarigol village of the Manisa city, Turkey (n = 377); of these, 189 were females and 188 were males. The population of Sarigol is estimated at 36,234 according to the year 2010 records. There is a total of 3,895 students studying in primary and secondary schools of Sarigol.

A written consent was obtained from the parents of each student after explaining the nature of the research both to parents and their children. The experiment was performed in compliance with the relevant laws and institutional guidelines. The ethical clearance was obtained from the Scientific Committee of Zeynep Kamil Education and Research Hospital.

The students and their parents were required to answer a close-ended, self-administered questionnaire before tooth examination. Sociodemographic details taken from the students and their parents included: (1) age, weight and height of the student; (2) number of children under care at home; (3) mother's education level; (4) father's education level and; (5) economic status of the family. The questionnaire addressed

the knowledge, attitude and practice of oral health promoting factors among seventh and eighth graders, designed jointly by the research group with the expert opinion of paediatricians and a dentist.

The questionnaire consisted of 28 items, the first 8 items were related to sociodemographic features, 10 items were related to attitude component and 10 items to knowledge and practice component. The questionnaire took about 20 minutes to complete. The scoring for attitude and practice was based on 5- and 4-point Likert scales and the scoring for knowledge included I agree/ I don't agree responses.

The dental examination of the students was always done by the same investigator (EAO). The dental examination was focused on: (1) number of dental caries; (2) number of dental fillings and; (3) number of teeth extracted. The clinical examinations were performed under natural daylight using standard explorers, mirrors and CPI periodontal probes.

Results

Table 1 and 2 show the sociodemographic features compared to dental health problems of the seventh and eighth graders who started the 2011 school year in Sarigol village of the Manisa city, Turkey (n = 377). Out of the 377 students, number of dental fillings was higher among females (n= 189) compared to males (n= 188) ($p=0.002$). As the number of children under care in the house increased, number of dental fillings and teeth loss increased ($p= 0.001$ and $p=0.021$). Education of mothers of students who had worse dental health was significantly lower compared to the others ($p=0.029$) (Table 2). Fathers' education did not show any remarkable difference between groups (Table 2).

Table 3 shows the oral health attitudes and behaviours of the students compared to the number of dental caries, number of dental fillings and number of teeth extracted. As the answer of the question "How often do you brush your teeth?", generally "once a day" and "twice a day" were the most frequent answers in all groups but surprisingly "sometimes"

n=377	Number of dental caries				Number of dental fillings			Number of teeth extracted		
	None n (%)	1 - 3 n (%)	4and>4 n (%)	P value	None n (%)	SomeTooth Fillings n(%)	P value	None n (%)	Some teeth extracted n (%)	P value
Tooth brushing can impede caries										
I agree	170 (48.4)	151 (43)	30 (8.5)	0.95	279 (79.5)	72 (20.5)	0.755	317 (90.3)	34 (9.7)	0.37
I don't agree	12 (46.2)	12 (46.2)	2 (7.7)		20 (76.9)	6 (23.1)		22 (84.6)	4 (15.4)	
Frequent consumption of fruit juices is not good for oral health										
I agree	120 (50)	100(41.7)	20(8.5)	0.67	200(83.3)	40 (16.7)	0.011*	215(89.6)	25 (10.4)	0.774
I don't agree	62 (45.3)	63 (46)	12 (8.8)		99(72.3)	38 (27.7)		124(90.5)	13 (9.5)	
Acidic beverages are not good for oral health										
I agree	170 (49)	150 (43.2)	27 (7.8)	0.22	272 (78.4)	75 (21.6)	0.132	313 (90.2)	34 (9.8)	0.526
I don't agree	12 (40)	13 (43.3)	5 (16.7)		27 (90)	3 (10)		26 (86.7)	4 (13.3)	

* $p < 0.05$, ** $p < 0.01$

TABLE 4 Knowledge of respondents on oral health.

was also an equally widespread answer among the groups (Table 3). As the answer of the question "How often do you change your brush?" most of the students in either group answered, "Every 3 months". Again, most of the students in either group were never flossing their teeth. None of these comparisons were statistically significant (Table 3). On the other hand, the frequency of dentist visit was lower among students who had four and more dental caries and dental fillings, and these results were statistically significant ($p = 0.034$ and $p = 0.005$ respectively) (Table 3).

Table 4 shows the knowledge of students on oral and dental health compared to the number of dental caries, number of dental fillings and number of teeth extracted. Although the number of students who did not agree that tooth brushing can impede dental caries was remarkable, the statistical analyses did not reveal any significant association between this unawareness and the number of dental caries, number of dental fillings and number of teeth extracted. The knowledge that consumption of fruit juices is not good for oral health was less prevalent among students who had more dental fillings ($p = 0.011$) but there wasn't any statistical significance in the dental caries and teeth extracted groups (Table 4). The knowledge that consumption of acidic beverages is not good for oral health was more prevalent in all the groups and there wasn't any statistical significance for this knowledge.

Statistical analysis

Kruskal-Wallis test was used for the parametric variables in Table 1. Associations between nonparametric categorical data such as gender, education levels, number of children under care at home and the number of dental caries, dental fillings and teeth lost were evaluated using mean values and Chi-squared test (Table 2). Associations between the knowledge items, attitudinal factors and the number of dental caries, dental fillings and teeth loss were evaluated using mean values and Chi-squared test in Tables 3 and 4.

P-values less than 0.05 were considered statistically significant. Data were entered and analysed using SPSS for Windows version 16.0 (SPSS Inc; Chicago, IL, USA).

Discussion

In rural cities of Turkey, socio-epidemiological data on knowledge and attitudes on oral and dental health are scarce. The present study was undertaken in order to provide such

information and the results would thereby provide a source for the planning and evaluation of national oral health programmes. The survey was not conducted on a national scale and therefore the data are not representative of the country in pure statistical terms. However, the population group examined is assumed to represent children in most rural cities of Turkey.

The population subgroups included into the study are likely to be the most important population subgroups representing children's knowledge and attitudes on oral and dental health in Sarigol village, since the 7th and 8th grade students who are 13–14 years of age, are at the ages of understanding and accepting the importance of dental and oral hygiene. The distributions of participants by gender, age and education indicate that the study population is highly acceptable.

The data collection technique for the oral and dental health attitudes of the children was by means of a questionnaire that was first addressed to the child and then verified by his/her parent. However, there might be certain limitations on data collection method, since the oral hygiene habits might be over-reported and the knowledge on consumption of fruit juices and acidic beverages might be under-reported.

The examinations of oral health status were carried out always by the same investigator who was a dentist, which means that the dental examinations were standard. Meanwhile, the use of daylight during examinations could have resulted in an underestimation of dental caries.

Generally, caries rates vary between countries according to the level of development, but may also vary according to ethnicity, family education and income [Skeie et al., 2006]. The rate of caries was reported to be 43.1% in Italy, 39.3% in Germany and 52.9% in Portugal [Campus et al., 2007; Schulte et al., 2006; De Almeida et al., 2003]. It is stated that these relatively lower rates may be related to some preventive health measures, increased use of fluoride toothpaste, increased informative activities of mass media, improved awareness of the harm of sugary foods in the last two decades [Marthaler, 2004; Moynihan and Petersen, 2004; Chen et al., 1997]. In our study, the rate of children with one or more caries was found to be around 50%. Although this rate appears to be high, the prevalence of caries was found to be 61% for children aged 12 and 61.2% for 15 years of age in a study conducted in Turkey in 2004 [Dogan et al., 2004]. In our study, the rate of caries in the same age group is found to be lower than the later study because similarly, water fluoridation, fluoridation of toothpastes, an increase in the level of consciousness as

well as the improvement of preventive health services have been probably more effective over time.

In the study of Campus et al. [2007], which was conducted in the same age group as our study in Italy, the rate of caries was significantly higher in girls. In our study and in the study of Dogan and Gokalp conducted in 2004 in Turkey, there was not a significant difference of the number of tooth caries between genders. On the other hand, our study revealed more dental fillings in girls compared to boys and this result was statistically significant [$p=0.002$]. The study of Dogan and Gokalp could not find any significant difference between genders in terms of dental fillings but revealed a decrease in the rate of dental fillings over time in both genders.

There are numerous studies revealing the relationship between child's oral health and mother's education [Smyth and Caamano, 2005; Ahmed et al., 2007; Ferrazzano et al., 2006; Ferrazzano et al., 2019; Casanova-Rosado et al., 2008]. Accordingly, there is a statistically significant relationship between mother's education and the number of caries of children in our study too [$p=0.029$].

In a school screening study conducted by Lonim Prasai Dixit et al. in 2013, 361 children were screened for oral health and 45% were found to have dental caries, 93% of all these children had never been examined by a dentist, the rate of two times a day tooth brushing habit of these children was found to be 24%. Similarly, routine dentist visit rate of children who had 4 and more caries was found to be significantly lower in our study ($p=0.034$). But we couldn't reveal any significant relationship between tooth brushing habit and oral health. This may be the result of small study population and limited study center.

In our study, the knowledge that consumption of fruit juices is not good for oral health was less prevalent among students who had more dental fillings ($p=0.011$). World Health Organization Guideline on Sugars Intake For Adults And Children and British Scientific Advisory Committee on Nutrition Carbohydrates and Health Report propose that free sugars should not contain more than 5% of the total energy intake [World Health Organization. Guideline: Sugars intake for adults and children 2015; Scientific Advisory Committee on Nutrition Carbohydrates and Health Report 2015]. We believe that these rates have been exceeded because of the increasing popularity of sugar drinks among young people. Therefore, we think that the recommendations of the World Health Organization should be taken into consideration and it is important to make school canteens and their environment suitable for children by health professionals and local administrators.

Conclusion

As a conclusion, although Turkey is in a better position compared to previous years in terms of dental health, there are still many measures to be taken. We think that school-based dental screening programmes will be beneficial for the socioeconomically different and disadvantaged groups in order to have an efficient dental examination and to eliminate the lack of information. In addition to all these, it is believed that evaluating children who are unable to attend school for various reasons, as a component of these screening programmes will create a significant value as the requirement of providing equal and qualified health care to all.

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