

Demographic Characteristics Associated with Vulnerability of Oral Diseases among Primary School Students in Southern Iran

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Abstract

Background

Oral diseases are one of the most common diseases in the world, and prevention of them is nowadays one of the health priorities. The aim of this study was to determine the demographic characteristics associated with vulnerability of oral diseases among primary school students in south of Iran.

Materials and Methods

This cross-sectional study, conducted in Shadegan city, the South of Iran, a total of 300 primary school students aged 7 to 12 years old, were randomly selected to participate voluntarily in the study in 2016. Data were gathered by interviewing among participants based on standard questionnaire. Questionnaire including the demographic characteristics and vulnerability of oral diseases scale. Data were analyzed by SPSS version 16.0 using Pearson correlation, t-test, and one-way ANOVA statistical tests at 95% significant level.

Results

Almost 30.6% of the volunteers reported had daily tooth brushing. The mean perceived vulnerability of respondents was 27.20 [95% CI: 26.67, 27.72], ranged from 7 to 35. There was a significant positive correlation between perceived vulnerability with participant's mother education level, mother age, father age, and daily tooth brushing ($P < 0.05$). However, there was no significant difference between gender and perceived vulnerability ($P > 0.05$).

Conclusion

Our findings indicated, mothers education levels had significant role on increasing vulnerability of oral diseases among primary school students, and may be usefulness of the results in order to promotion of oral health care behaviors among children.

Key Words: Behavior Change, Children, Health Education, Oral diseases.

*Please cite this article as: Mirzaei-Alavijeh M, Zolghadr R, Fattahi M, Jalilian F. Demographic Characteristics associated with Vulnerability of Oral Diseases among Primary School Students in Southern of Iran. Int J Pediatr 2017; 5(12): 6555-62. DOI: [10.22038/ijp.2017.27195.2339](https://doi.org/10.22038/ijp.2017.27195.2339)

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1- INTRODUCTION

Oral and dental diseases have been considered really important due to their high prevalence and their effects on people quality of life (1-3). According to a World health organization (WHO) report, roughly half of children and the majority of adults are involved with oral and dental problems (4). Oral health is one of the most important determinants of public health, which has a major impact on economic affairs, and in addition to treatment costs, more than 50 million hours are wasted annually due to problems with oral diseases around the world, which certainly affects the performance and activity of individuals (5). In this regard, statistics show that about 3.9 billion people worldwide are affected by oral and dental problems and the prevalence of untreated tooth decay in permanent teeth is estimated worldwide at 35% (for all ages) (6).

On the other hand, oral and dental diseases are not often life-threatening, but have high prevalence and social and economic consequences; for example, the risk of heart disease is higher in people with dental decay (7); and mothers with periodontal disease are more likely to have preterm labor or give birth to low birth weight babies (8). Also, oral-dental treatments and dental services are costly in the whole world, and even in high-income countries, between 5% and 10% of public health spending is on oral-dental care, and findings from a study showed that \$ 298 billion is spent on direct dental care per year in the world, which means 4.6% of total health expenditures (9), and it imposes high expenses on households (10). Furthermore, in low-income and average-income countries, investment in oral care is very low and few available resources are used for emergency care and relief of dental pain (11). Considering the effect of oral health on physical and mental health of individuals as well as control of these diseases, many measures have been taken

to prevent these diseases, which include the wide use of fluoride in various forms, the promotion of oral hygiene, the reduction of sugar intake and community-based health education programs (5). In this regard, community-based dental specialists believe that oral health of the community can be improved by changing the conditions, behavior, environment and organization of the services (12). These facts clarify the necessity of implementing health interventions; on the other hand, the need for any type of health planning is to identify the effective and predictive factors of behavior, and although the discovery of all factors affecting behavior is difficult, achieving a number of factors and variables affecting these behaviors facilitate the prediction power and help the practitioners to formulate programs (13). Therefore, many studies have shown that perceived vulnerability is one of the strongest predictors of adopting oral health promotion behaviors among children (14, 15). The objective of this study was to determine the demographic characteristics associated with vulnerability of oral diseases among primary school students in south of Iran.

2- MATERIALS AND METHODS

2-1. Study design and procedure

The study was a part of a project conducted among primary school students in Shadegan city, Khuzestan province, the south of Iran, during 2016, with the aim of providing knowledge for promotion of the oral health care behaviors. The sample size was calculated at 95% significance level according to the results of a pilot study and a sample of 300 was estimated. To enroll the participants and collect data the following stages were done. First, different areas of the city were classified based on the division of the geographical region, next for each social class one girls and one boys primary school were randomly selected (a total of eight primary school

were selected). Then, among students who study on the school, subjects were enrolled into this study voluntarily. Finally, the volunteers were gathered by interviewing among participants based on questionnaire. This study was conducted with approval from Abadan school of Medical Sciences, institutional review board and informed consent was obtained from participants (IR.ABADANUMS.REC.1395.88). Of the population of 300, 288 (96%) signed the consent form and voluntarily agreed to participate in this study.

2-2. Measures

Prior to conducting the main project, a pilot study was carried out. Initially the relevant questionnaires were administered to 30 primary school students who were similar to study population in order to estimate the duration of the study conduction and to evaluate the reliability of the questionnaire.

Questionnaire included three sections that comprised fifteen items; including, seven questions for demographic factors, one item about daily tooth brushing, and seven items for perceived vulnerability construct.

2-2-1. Demographic characteristics

The background variables assessed in this study included: age (years), gender (male, female), father age (years), mother's age (years), father's educational level (under diploma, diploma, and academic), mother's educational level (under diploma, diploma, and academic), family members (numbers).

2-2-2. Daily tooth brushing

To assess whether or not the children's had daily tooth brushing, we used their responses one questions "have you had daily tooth brushing"? For which the response category was Yes or No.

2-2-3. Perceived vulnerability Scale

Perceived vulnerability scale was designed based on standard scales (5, 16, and 17).

Seven items were designed to measure perceived vulnerability about oral disease (e.g. "may I also be suffering from oral diseases" or "oral diseases cause stink of my mouth"). Based on the questionnaire instructions for responding, A 5-point Likert type scaling, ranging from 1 (strongly disagree) to 5 (strongly agree), was used. Furthermore, the range of questionnaire from 5 to 35, and a higher score indicated better perceived vulnerability about oral disease generally. The reliability coefficient for the perceived vulnerability scale in our study was 0.79, suggesting that the internal consistency was adequate.

2-3. Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 16.0 was used for the purpose of data entry, manipulation, and analysis. Descriptive statistics were used to summarize and organize the data. Cronbach's Coefficient Alpha was used to estimate the internal consistency of the perceived vulnerability scale. Furthermore, Pearson correlation, t-test, and one-way ANOVA were performed to explain the significant relationship between background variables and perceived vulnerability.

3- RESULTS

The subjects ranged in age from 7 to 12 with the mean of the 9.91 years (standard deviation [SD]: 1.26). The mean age of fathers of respondents was 40.04 years (SD: 5.40), and age of mothers was 33.69 years (SD: 5.20).

Based on our findings, 48.3% (139/288) of respondents were boy, and 51.7% (149/288) were girl. Furthermore, 44.8% (129/288), 49.7% (143/288), and 5.6% (16/288) of the respondents reported that their fathers were under diploma, diploma and academic education, respectively. In addition, 26.4% (76/288), 63.2% (182/288), and 10.4% (30/288) of the

respondents reported that their mothers were under diploma, diploma and academic education, respectively. The mean perceived vulnerability of respondents was 27.20 [95% CI: 26.67, 27.72], ranged from 7 to 35. Also, 30.6% of the volunteers reported had daily tooth brushing. **Table.1** shows bivariate correlation between perceived vulnerability with subject's age, age of fathers, and subject's age of mothers. The results showed that perceived vulnerability was significantly related to subject's age of fathers ($r=0.178$), and subject's age of mothers ($r=0.129$). However there was no

significant correlation between perceived vulnerability with the age of respondents ($r=0.063$). Association of mean perceived vulnerability with gender, parent's education level, and number of family members among participates was shown in **Table.2**. Based on our findings mother education level (P: 0.031), and daily tooth brushing (P: 0.042) were the influential predictors on perceived vulnerability of oral diseases. In **Table.3**, it has been showed the mean scores accrued of the perceived vulnerability items among participants.

Table-1: Bivariate correlation between perceived vulnerability with subject's age, subject's age of fathers, and subject's age of mothers

Component	X1	X2	X3
X1. Subject's age	1		
X2. Subject's age of fathers	0.106	1	
P-value	0.072		
X3. Subject's age of mothers	0.129*	0.742**	1
P-value	0.028	< 0.001	
X4. Perceived vulnerability	0.063	0.178**	0.129*
P-value	0.291	0.002	0.029

* Correlation is Significant at the 0.05 Level (2-Tailed). ** Correlation is Significant at the 0.01 Level (2-Tailed).

Table-2: Association of background variables with perceived vulnerability

Variables	Sub-group	Mean (SD)	P-value
Gender	Boy	26.77 (5.09)	0.124
	Girl	27.60 (3.87)	
Father's education level	Under diploma	26.56 (5.50)	0.090
	Diploma	27.77 (3.37)	
	Academic education	27.31 (4.12)	
Mother's education level	Under diploma	26.08 (5.04)	0.031
	Diploma	27.50 (4.39)	
	Academic education	28.20 (3.34)	
Family members	Three people	26.90 (5.43)	0.739
	Four people	27.60 (3.71)	
	Five people	27.10 (4.05)	
	More than five people	27.37 (3.13)	
Daily tooth brushing	No	26.84 (4.79)	0.042
	Yes	28.02 (3.72)	

SD: Standard deviation.

Table-3: The mean scores accrued of the perceived vulnerability items

No	Items	Total Mean (SD)	Boy Mean (SD)	Girl Mean (SD)	P-value
1	I may also be suffering from oral and dental diseases.	3.95 (0.98)	3.86 (1.05)	4.03 (0.89)	0.144
2	Oral diseases are only found in children who consume a lot of snacks and sweets.	3.76 (0.98)	3.64 (0.89)	3.87 (0.89)	0.047
3	Oral diseases cause complications at any age.	3.82 (0.98)	3.83 (0.95)	3.82 (0.86)	0.924
4	Oral diseases cause bad smelling of my mouth.	4.10 (0.98)	4.07 (1.04)	4.12 (1.99)	0.683
5	Oral diseases cause severe toothache in me.	4.18 (0.98)	4.17 (0.94)	4.20 (0.72)	0.752
6	Oral-dental problems cause my teeth to decay.	4.00 (0.98)	3.89 (1.12)	4.10 (0.73)	0.062
7	Oral diseases cause people to stay away from me.	3.36 (0.98)	3.29 (1.07)	3.43 (0.97)	0.234

SD: Standard deviation.

4- DISCUSSION

The aim of this study was to determine factors related to perceived vulnerability of oral diseases among primary school students in south of Iran. The results of the present study indicated that mother's education level, mother age, father age, and daily tooth brushing were the influential predictors on perceived vulnerability of oral diseases. According to the results, 30.6% of the volunteers reported had daily tooth brushing. This result is similar to the results reported by other studies. For example, Mazloomi et al. carried out a research on female high school students in Yazd, Iran, and reported that 37.5% of the students used dental floss daily (18). Varenne et al stated that 58% of rural and urban children in Africa had not daily tooth brushing (19).

The American oral health associations stated that regularly brushing twice daily and using daily dental floss are the basis for the principles of oral health care (20). Furthermore, world health organization, reported that oral health as the one of important issue in prevention of chronic diseases and health promotion in the society (21). Our results indicated high percentage of school children's dot use of daily tooth brushing and this problem can be followed several complications. Our findings can be warning to children's health policy makers; and should be the focus of special attention. The results of

the present study indicated the mean perceived vulnerability of respondents was 27.20 (range from 7 to 35), so the participants received 77.71 % of maximum score acquirable of 100%. These result indicated participants had not get about a quarter of a maximum score of perceived vulnerability. In addition, our finding indicated significant association between high score of perceived vulnerability and doing daily tooth brushing. In this regards, other study reported the perceived vulnerability is an important fear arousal factor in predicting the behavior while people believe that they are susceptible to get a disease or engage in an unhealthy behavior (22).

Also, Ramezankhani et al. carried out a research on five-grade boy students in the primary school in south of Iran, and indicated the correlation between perceived susceptibility and daily tooth brushing among children's (23). Comprehensive health education programs need to emphasize on psychological factors that mediate and predict health-related behaviors (13). Based on our result, it seems that designing and implementation of educational programs to increase seriousness about side effect of oral disease may be usefulness of the results in order to promotion of oral health care behavior. Regarding the coloration between age and perceived vulnerability, our findings indicated no significant

correlated between perceived vulnerability and age of respondents; but perceived vulnerability had significant correlated with subject's age of parents, suggesting the rising perceived vulnerability by increasing age of parents. In this regards, Buglar et al. in their study stated that age is the important role in promotion oral health care behaviors (24). The findings of the current study suggest that the mother education level had significant correlated with perceived vulnerability, suggesting the rising perceived vulnerability by increasing level of mothers education. Mehri and Morowatisharifabad stated that the oral health behavior among students has been increasing based on the parents' education (25).

Several studies indicated parent's education level (especially mothers) can explain or predict the get health services and healthy behaviors among children's (26, 27). Our result is similar to the results reported by other studies. It is clear that during childhood, parents, and especially mothers, have the most important role in the oral health of children, and their health measures can stabilize healthy behaviors for a lifetime in their offspring (27). These findings suggest that paying attention to mothers (as the ones who form children's behaviors) is essential in promoting health behaviors, including oral-dental health promotion behaviors.

4-1. Limitations of the study

Our findings reported in current study had a few limitations. First, data collection was based on self-reporting, which is usually prone to recall bias. Second, data collection only among sample of primary school students in the south of Iran and due to non-probability nature of sampling, results cannot be generalized to other population of primary students in Iran. Third, this study investigated daily tooth brushing using yes-no scale which was the main limitations of present study and asks

for more attention while interpreting the results. Finally, we limited our focus on some backgrounds variables, which was the another limitation of present study.

5- CONCLUSION

There are multiple factors to explain the oral health care behaviors among children's. Based on our findings, mothers education levels had significant role on increasing vulnerability of oral diseases among primary school students, and may be usefulness of the results in order to promotion of oral health care behaviors among children. In addition, our findings indicated significant correlation between perceived vulnerability with participant's mother age, father age, and daily tooth brushing.

6- CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

7- ACKNOWLEDGEMENT

It is a part of a research confirmed by Abadan School of Medical Sciences, Abadan, Iran. Funder had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication. Hereby, the researchers appreciate the Abadan School of Medical Sciences, Abadan, Iran.

8- REFERENCES

1. Nemat Shahrababaki B, Hashemian M, Fallahi A, Rahmani A, Saedpanah A. The Relationship between Stages of Dental Cleaning Behavior Change Based on Trans-theoretical Model (TTM) with School Role and Social Support in Students. *International Journal of Pediatrics*. 2017; 5(5):4939-49.
2. Babaei Hatkehlouei M, Tari H, Goudarzian AH, Hali H. Decayed, Missing, and Filled Teeth (DMFT) Index among First-grade Elementary Students in Mazandaran Province,

Northern Iran. *International Journal of Pediatrics*. 2017; 5(6):5069-77.

3. Naito M, Yuasa H, Nomura Y, Nakayama T, Hamajima N, Hanada N. Oral health status and health-related quality of life: a systematic review. *Journal of Oral Science*. 2006; 48(1):1-7.

4. Lewis CW, Grossman DC, Domoto PK, Deyo RA. The role of the pediatrician in the oral health of children: a national survey. *Pediatrics*. 2000; 106(6):e84.

5. Mahboubi M, Motlagh MI, Mirzaei-Alavijeh M, Jalilian F, Gharibnavaz H, Fattahi M. Determinants of Tooth Brushing among Primary School Students. *World Family Medicine/Middle East Journal of Family Medicine*, 2017; 15(7):157-61.

6. Nahvi M, Zarei E, Marzban S, Jahanmehr N. Utilization of Dental Services and Its Out-of-Pocket Payments: A Study in Dental Clinics of Ramsar. *J Mash Dent Sch*. 2017; 41(2): 171-82.

7. Kelishadi R, Mortazavi S, Hossein TR, Poursafa P. Association of cardiometabolic risk factors and dental caries in a population-based sample of youths. *Diabetology and Metabolic Syndrome*. 2010; 2(1):22.

8. Guimarães AN, Silva-Mato A, Miranda Cota LO, Siqueira FM, Costa FO. Maternal periodontal disease and preterm or extreme preterm birth: an ordinal logistic regression analysis. *Journal of Periodontology*. 2010; 81(3):350-8.

9. Listl S, Galloway J, Mossey PA, Marcenes W. Global economic impact of dental diseases. *Journal of Dental Research*. 2015; 94(10):1355-61.

10. Srivastava P, Chen G, Harris A. Oral health, dental insurance and dental service use in Australia. *Health Econ* 2015; 2(1): 45-62.

11. Tajik F, Ferdosi M, Rejaliyan F. Determining the Socio-Economic Inequalities in Health Services Utilization among Ischemic Heart Disease Patients; Case of Falavarjan City. *Health Research*. 2016; 2(1):9-16.

12. Dutt P, Chaudhary SR, Kumar P. Oral health and menopause: a comprehensive review on current knowledge and associated

dental management. *Annals of Medical and Health Sciences Research*. 2013; 3(3):320-3.

13. Mirzaei-Alavijeh M, Kok G, Niknami S, Motlagh ME. Family-based cognitive factors effective on preventing the onset of substance use in Iranian society's children: applying the intervention mapping protocol. *Acta Medica Mediterranea*. 2016; 32:1015-20.

14. Walker K, Jackson R. The health belief model and determinants of oral hygiene practices and beliefs in preteen children: a pilot study. *Pediatric Dentistry*. 2015; 37(1):40-5.

15. Yevlahova D, Satur J. Models for individual oral health promotion and their effectiveness: a systematic review. *Australian Dental Journal*. 2009; 54(3):190-7.

16. Walker K, Jackson R. The health belief model and determinants of oral hygiene practices and beliefs in preteen children: a pilot study. *Pediatric Dentistry*. 2015; 37(1):40-5.

17. Buglar ME, White KM, Robinson NG. The role of self-efficacy in dental patients' brushing and flossing: testing an extended Health Belief Model. *Patient Education and Counseling*. 2010; 78(2):269-72.

18. Mazloomi Mahmoodabad SS, Roohani Tanekaboni N. Survey of some related factors to oral health in high school female students in Yazd, on the basis of health behavior model (HBM). *J Birjand Univ Med Sci*. 2008; 15 (3):40-47. (Persian)

19. Varenne B, Petersen PE, Ouattara S. Oral health behavior of children and adults in urban and urban and rural areas of Burkina faso, Africa. *Int Dent J* 2006; 2:61-70.

20. Bellamy P, Barlow A, Puri G, Wright K, Mussett A, Zhou X. A new in vivo interdental sampling method comparing a daily flossing regime versus a manual brush control. *The Journal of Clinical Dentistry* 2004; 15(3):59-65.

21. Dixit LP, Shakya A, Shrestha M, Shrestha A. Dental caries prevalence, oral health knowledge and practice among indigenous Chepang school children of Nepal. *BMC Oral Health*. 2013 May 14; 13(1):20.

22. Allahverdipour H, Jalilian F, Shaghghi A. Vulnerability and the intention to anabolic steroids use among Iranian gym users: an application of the theory of planned behavior. *Substance Use and Misuse*. 2012; 47(3):309-17.
23. Ramezankhani A, Mazaheri M, Dehdari T, Movahedi M. Relationship between health belief model constructs and DMFT among five-grade boy students in the primary school in Dezfool. *Scientific Medical Journal of Ahwaz University of Medical Sciences* 2011; 10(71): 221-8.
24. Buglar ME, White KM, Robinson NG. The role of self-efficacy in dental patients' brushing and flossing: testing an extended Health Belief Model. *P Educ Couns* 2010; 78(2):269-72.
25. Mehri A, Morowatisharifabad M. Utilizing the Health Promotion Model to predict oral health behaviors in the students of Islamic Azad University of Sabzevar (2008). *JDM*. 2009; 22 (1): 81-87. (Persian)
26. Victorino CC, Gauthier AH. The social determinants of child health: variations across health outcomes—a population-based cross-sectional analysis. *BMC Pediatrics*. 2009; 9(1):53.
27. Fallahinejad Ghajari M, Mojtahedzadeh S, Kharazifard M J, Mahdavi N, Mohtavipour S. Evaluation of Knowledge, Attitude and Practice of Parents of Children with Cardiac Disease about Oral Health. *The Journal of Islamic Dental Association of Iran*. 2013; 25 (4):317-21.