http:// ijp.mums.ac.ir
Original Article (Pages: 3777-3785)

Motivating and Inhibiting Factors to Oral-Dental Health Behavior in Adolescents: a Cross-Sectional Study

Zahra Hosseini[1], *Zabihollah Gharlipour[2], Elahe Tavassoli[3], Mohammad Hossein Kaveh[4], Akram Mehtari[5]

[1]Social Determinants in Health Promotion Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran. [2]Department of Health Education and Promotion, Faculty of Health, Qom University of Medical Sciences, Qom, Iran. [3]Department of Public Health, Faculty of Health, Shahrekord University of Medical Sciences, Shahrekord, Iran. [4]Department of Health Education and Promotion, Faculty of Health, Shiraz University of Medical Sciences, Shiraz, Iran. [5]Health Center, Kashan University of Medical Sciences, Kashan, Iran.

Abstract

Background

Oral-dental diseases, especially tooth decay, are among the most common diseases in the world which usually begin in adolescence. Oral health during this period of life has a huge impact on the reduction of dental problems. This study aimed to determine motivating and inhibiting factors to oral-dental health behavior in adolescents.

Materials and Methods

This cross-sectional which had a descriptive and analytical design was conducted on 10-12th grade students in Kashan city, Iran. Using multi-stage sampling method and based on sampling size formula, a total of 290 of the students were randomly selected from the schools and were enrolled into the study. Then they received a research-made questionnaire containing questions about the knowledge and motivating and inhibiting factors to oral-dental health behavior. The collected data were analyzed using SPSS V.20 by independent t-test, ANOVA, and Pearson correlation coefficient.

Results

Of all, 62.8% of students brushed their teeth at least once a day. Moreover, 11.7% used dental floss once a day and 6.6% visited a dentist every six months. Oral-dental health behavior had a significant relationship with gender ($P<0.05$). So that, of all 48.1 percent of boys and, 51.9 percent of girls had oral-dental health behavior score 50 and higher. In addition, there was a significantly negative relationship between inhibiting factors and oral-dental health behavior ($P=0.001$, $r=-0.262$). However, no significant relationship was observed between motivating factors and oral-dental health behavior ($P>0.05$).

Conclusion

When designing educational plans and interventions for improving oral-dental health behavior in students, it is necessary to adopt measures to enhance motivating factors and eliminate inhibiting factors.

Key Words: Adolescent, Behavior, Iran, Oral Health.

*Please cite this article as: Hosseini Z, Gharlipour Z, Tavassoli E, Kaveh MH, Mehtari A. Motivating and Inhibiting Factors to Oral-Dental Health Behavior in Adolescents: a Cross-Sectional Study. Int J Pediatr 2016; 4(11): 3777-85. DOI: **10.22038/ijp.2016.7406**

Corresponding Author:

Dr. Zabihollah Gharlipour, Department of Health Education and Promotion, Faculty of Health, Qom University of Medical Sciences, Qom, Iran..

Email: gharlipourz@yahoo.com

Received date Aug 19, 2016 ; Accepted date: Sep 22, 2016

1- INTRODUCTION

The World Health Organization (WHO) considered the oral-dental health essential for a healthy life (1). Also, oral health has some impacts on health such as quality of life (2). So that, the oral-dental health in providing and promotion of public health is considered extensively, insofar as nowadays, it is known as one important slogan of the 21st century (3).

The prevalence and severity of dental caries in the last 20 years in developing countries, including Iran, have shown a significant increase (4). Given the obvious impact of oral health on physical and mental health of individuals, and since these diseases can be controlled, numerous behaviors have been recommended to prevent these diseases; among these measures we may note the followings: the extensive use of fluoride in various forms, brushing correctly and regularly, use of dental floss, changing health habits, and reducing the consumption of sugary foods (5). Among the mentioned measures, mechanical methods such as brushing and flossing are among the most important and easiest ways to reduce the incidence of dental plaque; they are also considered as the most important factors to maintain oral health (6). One of the oral health goals of the WHO is to lower the Decayed, Missing, Filled Teeth (DMFT) Index, so that it become less than one (7, 8).

According to studies conducted in the Eastern Mediterranean countries, Lebanon had the highest score in DMFT index (5.7) while Pakistan had the lowest score in DMFT index (0.9). Shooriabi et al. showed that the average of DMFT indicator in the patient group was 4.94±1.5 and in healthy group was 5.8±2.04 (9). Without knowledge on views of people about oral health, is not possible to design proper educational plans. Educational planning is particularly focused on children's and adolescents' views and attitudes toward oral-dental health. Adolescents' attitudes and beliefs are directly related to oral health. This means that adolescents' positive attitude and beliefs toward oral-dental health could result in operational behavior about oral health (10). The possibility of adopting health behaviors is influenced by several factors such as: demographic characteristics (age, gender, race), psychosocial factors (personal characteristics, social class, peer groups), and structural factors (information about the disease). The triggers (motivating factors) are the factors that may provoke the adoption of the health measures; they may include either the symptoms of internal diseases, or other factors such as media advertising, physicians' recommendations, or illness or death of a relative due to health problems. Therefore, health care providers need to impress people's reminders to improve their health (11). The adoption of health behaviors depends on an individual's assessment of motivating and inhibiting factors a specific health behavior. The motivating factors for health behavior include behaviors that have an impact on the prevention of a disease or reduction of the severity and complication of a disease; the adoption of health behaviors has one or more economic, social, cultural, and family benefit for an individual's health. On the contrary, the inhibiting factors include physical, psychological, or financial factors that act as a barrier to the health behavior (12, 13).

In a study conducted by Walker, having a beautiful appearance and a desire to please others through brushing teeth (without a reminder), were identified as the factors motivating oral-dental health. In contrast, lack of information or poor knowledge of people about the importance of oral health, lack of institutionalized habits such as brushing and flossing, high costs of dental services, fear of needles, and lack of time were introduced as the inhibiting factors

the adoption of oral-dental health behaviors (14).

Although several studies has been about the prevalence of dental caries throughout the world (15-17), but few studies have examined the motivating factors for oral-dental health behavior (12). Respecting to, the importance of oral health for a healthy life and considering the high prevalence of oral and dental diseases in Iran, the need for the present study was felt. Therefore, the aim of this study was to examine motivating and inhibiting factors to oral-dental health behavior in adolescents.

2- MATERIALS AND METHODS

2-1. Study Design and Population

This descriptive- analytical study was conducted on students in Kashan city (**Figure.1**), Isfahan province, Iran. The study population including 10-12th grade students.

Fig.1: The location of Kashan city, Iran

2-2. Methods

Using multi-stage sampling method and according to a related study (18), with d=0.06, p=0.65 and confidence interval (CI) 95% by using the formula, sample size was calculated as 290 students (including probability 20% sample loss). Since the Kashan city has one area of education. According to, four public schools (two girl schools and two boy schools) were selected via stratified sampling. Then, from each school were selected three classes in 10-12th grade by random sampling. Finally, from each class were selected 25-30 students using the attendance forms.

$$n = \frac{Z^{2}_{1-\frac{\alpha}{2}}[P(1-P)]}{d^{2}}$$

$$n = 1.962\times (.65\times.35) / (0.06)^2$$

2-3. Measuring tools

A research-made questionnaire used for data collection, including seven questions about demographic and background data (age, gender, mother's educational level, father's educational level, mother's job, father's job, and family income level), 12 multiple choice questions about knowledge of oral-dental health status, seven questions about factors motivating oral-dental health behaviors, 10 questions about factors inhibiting oral-dental health behaviors, and five questions about general oral-dental health behaviors. The selected schools were visited to collect the required data from the students. For the questions about the knowledge, correct option was scored one and the wrong option was scored zero. The questions about the motivating and inhibiting factors were Likert-scale type and were scored from 1 to 5 (indicating totally agree to totally disagree). The option "totally agree" was scored 5, "agree" was scored 4, "no idea" was scored 3, "disagree" was scored 2, and "totally disagree" was scored 1.

The questions about oral-dental health behavior were multiple-choice questions, in which the best healthy behaviors received the highest scores while the lack of healthy behavior or the presence of unhealthy behaviors received a score of zero. The reliability of the questions was confirmed using a pilot study on 30

subjects who were selected from the study population. Accordingly, Cronbach's alpha was 0.85 for the question about knowledge, 0.88 for the questions about motivating factors, 0.82 for the questions about inhibiting factors, and 0.80 for the questions about oral-dental health behaviors. To evaluate the validity of the questionnaire, it was presented to five health education specialists and dentists, and based on their views and comments, the necessary modifications were made.

2-4. Inclusion criteria

The inclusion criteria were consisted of being 10-12th grade students and being satisfied to participate in the study.

2-5. Exclusion criteria

The exclusion criteria was just partial completing of the questionnaire and Unwillingness to participate in current study.

2-6. Ethical considerations

Before completing the questionnaire, the aim of the study was presented for the participants and the informed consent was obtained from them. Also, writing the name and family name was not required for students.

2-7. Data analyses

Data were analyzed by SPSS statistical software version 20 using independent t-test for relationship between gender with oral-dental health behavior, ANOVA for relationship between parent's educational level, parent's job, family income level with oral-dental health behavior, and Pearson correlation coefficient for relationship between knowledge, motivating factors, inhibiting factors with oral-dental health behavior.

3- RESULTS

The mean age of the participants was 16.42 ± 0.90 years. Of the 290 students, 50% were boy and 50% were girl. According to the results of this study, 7.2% of students did not brush their teeth at all, 62.8% brushed once a day, and 30% brushed more than once a day. In addition, 27.6% of the samples had not used dental floss at all, and 11.7% used floss once a day. Moreover, 55.9% of students visited a dentist only when suffered a pain, and 6.6% visited a dentist every six months.

The results of this study showed no significant relationship between students' age and the mean score of oral-dental health behavior (P>0.05). As shown in **Table.1**, there was a statistically significant difference between gender and mean score of oral-dental health behavior, so that the mean score of oral-dental health behavior was higher in girls than in boys (P = 0.007). Nevertheless, the mean score of oral-dental health behavior had no statistically significant relationship with some other variables such as parents' educational level, parents' job, and family income level (P>0.05).

Figure.1, the difference between knowledge, motivating factors, inhabiting factors and oral-dental health behavior shows in the boy and girl students.

As shown in **Table.2**, the mean score of knowledge was less than the average, while the mean scores of motivating factors and oral-dental health behavior were high. **Table.3** presents the relationship between knowledge, motivating factors, inhabiting factors, and oral-dental health behavior. Based on the results of Pearson correlation test, oral-dental health behavior had no statistically significant relationship with knowledge (P = 0121, r = 0.091) and motivating factors (P = 0.315, r = 0.059). However, there was a statistically significant negative relationship between inhibiting factors and oral-dental health behavior (P = 0.001, r = -0.262), so that with increasing score of the inhibiting factors, the score of oral-dental health behavior decreased.

Table-1: The relationship between oral-dental health behavior and demographic variables in Participating students

Variables	Oral-dental health behavior score		P-value
Gender	Female	85.51 ± 20.61	P = 0.007, t = -2.7
	Male	77.93 ± 26.74	
Father's educational level	Illiterate	83.63 ± 23.35	P = 0.89, f = 0.47
	Primary school	77.91 ± 26.45	
	High school	80.30 ± 26.57	
	Diploma	84.67 ± 21.02	
	Collegiate	82.00 ± 23.88	
Mother's educational level	Illiterate	85.88 ± 23.19	P = 0.75, f = 0.47
	Primary school	79.44 ± 25.88	
	High school	83.60 ± 22.65	
	Diploma	82.25 ± 24.02	
Father's job	Unemployed	86.66 ± 32.65	P = 0.45, f = 0.96
	Self-employed	80.77 ± 23.91	
	Worker	77.91 ± 26.99	
	Employed	84.40 ± 22.29	
	Farmer	88.88 ± 10.54	
	Retired	84.84 ± 22.92	
	Other	78.18 ± 23.01	
Mother's job	Housewife	82.01 ± 24.30	P = 0.79, f = 0.34
	Employed	76.66 ± 23.86	
	Retired	90.00 ± 14.14	
	Other	7.50 ± 22.51	
Family income level	High	83.37 ± 22.80	P = 0.55, f = 0.58
	Mediate	80.55 ± 24.89	
	Low	84.37 ± 23.13	

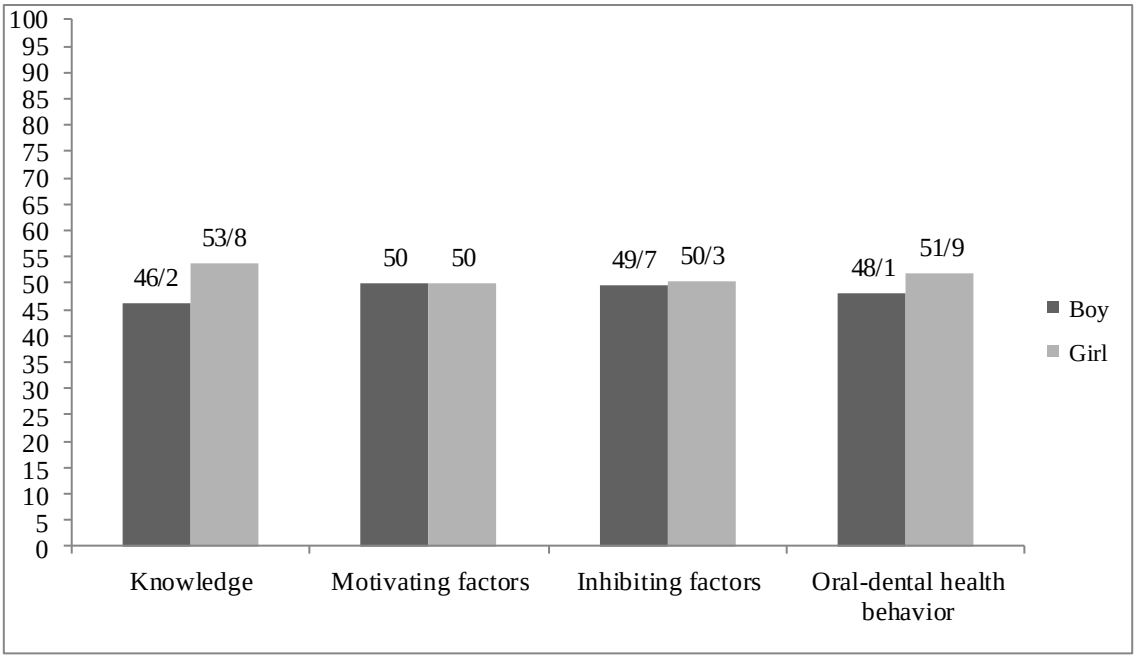

Fig.1: The comparison of knowledge, motivating factors, inhibiting factors and oral dental health behavior score in participating students (scores reported in percent)

Table 2: Mean and SD of knowledge, motivating factors, inhabiting factors, and oral-dental health behavior in participating students

Variables	Mean*	SD *
knowledge	47.15	13.21
Motivating factors	81.69	10.48
Inhabiting factors	53.61	11.71
Oral-dental health behavior	81.72	24.13

SD: Standard deviation; * Scores are calculated on a 100 point scale.

Table-3: The relationship between knowledge, motivating factors, inhibiting factors, and oral-dental health behavior in participating students

Variables	knowledge	motivating factors	inhibiting factors	oral-dental health behavior
Knowledge	1			
Motivating factors	p = 0.0001 r = 0.191	1		
Inhabiting factors	p = 0.068 r = 0.108	p = 0.010, r = 0.153	1	
Oral-Dental health behavior	p = 0.121 r = 0.091	p = 0.315 r = 0.059	p = 0. 001 r = -0.262	1

4- DISCUSSION

The current study, gender differences had a significant relationship in the adoption of oral-dental health behaviors. So, oral-dental health behavior score was higher in female students than the male students. Our finding is consistent with the results of Zare et al.'s study (19).

In addition, Bahmanpour et al. conducted a study to determine factors associated with oral-dental health behaviors among high school students in Marivan- Iran based on Pender's Health Promotion Model. The results of their study showed a significant difference between genders and the oral-dental health behaviors (20). In Hazavehei et al.'s study, there was a significant difference between boys and girls in terms of dental plaques and DMFT indices; however no statistically significant difference was observed between the two genders in terms of oral-dental health behaviors (21). Probably the observed difference is due to the fact that women and girls are more sensitive to health issues and they also consider oral health as a factor enhancing the beauty and improving the appearance. In this study 62.8% of the students brushed at least once a day which represented a relatively favorable status of tooth brushing behavior in students. In Zare et al.'s study, 95.7% of the subjects brushed at least once a day (19), while in Mazlomi Mahmodabad and Rohani Tonekaboni it was 65.5% (18). Taking into consideration the results obtained by different studies, it can be concluded that the incidence of tooth decay and oral diseases is higher in Iranian students and the use of interdental cleaners is low (22). Therefore, it is necessary to utilize training programs to promote oral-dental health behaviors (brushing and flossing), both quantitatively and qualitatively. The current study, 11.7% of the students used dental floss once a day. According to the results of Hazavehei et al.'s study, 18.35% of students used dental floss (21). In Karami et al.'s study, 51.7% of fifth grade students used dental floss

(23). In addition, according to the results of a study by Alkurt and Peker in Turkey, 32.1% of university students used dental floss (24). Ostberg conducted a study on Swedish adolescents, and the results showed that 52% of the studied adolescents used dental floss (25). The use of dental floss helps to remove dental plaques in interdental areas; individuals who do not use floss are more likely to develop gum diseases. Perhaps the infrequent use of dental floss among students is due to the lack of students' knowledge and knowledge and the shortage of adequate trainings about the important role of this behavior in oral health. In this study, 6.6% of the students visited a dentist every six months. Emami Moghadam et al.'s study reported that 87.5% of those surveyed had not visited a dentist for examination (26).

In addition, in the study by Mazlomi Mahmodabad and Rohani Tonekaboni, only 11.1% of students visited a dentist once every six months (18). The low frequency of students' visits to dentists could be due to people's interpretations of health, because people visit a dentist only when they experience a tooth pain. It seems that there is no effective training in schools about the importance of flossing and regular visits to the dentist and students have not yet fully understand the benefits of these types of behavior.

In the present study, there was a significant negative relationship between inhibiting factors and oral-dental health behavior. However, no significant relationship was observed between knowledge and factors motivating oral-dental health behavior. Kaykhaee et al. conducted a study on oral-dental health behaviors of female students in Zabol and the results of their study showed a significant correlation between the inhibiting factors and behavior; however, no significant relationship was observed between the benefits and oral-dental health behaviors (27). Moreover, Mazlomi Mahmodabad and Rohani Tonekaboni carried out a study to determine the factors associated with oral-dental health in female students in high schools of Yazd city. The results of the mentioned study showed a significant reverse relationship between perceived benefits and students' behaviors; on the other hand, no statistically significant relationship was observed between the perceived benefits and oral-dental health behaviors (18). Hazavehei et al. conducted a study entitled the assessment of the status of oral and dental health in grade one junior high school students in Hamadan city. The results of their study showed that knowledge and benefits of oral health had no significant relationship with oral-dental health behaviors. However, a significant relationship was observed between the inhibiting factors and oral-dental health behaviors (21). Also, Charkazi et al. showed that there was a negative relation between oral health behaviors and perceived barriers (28). In this study the mean knowledge score was not satisfactory; apparently, it is due to the lack of appropriate theoretical and practical training in the field of oral health. It might be also attributed to the fact that non-systematic trainings are less effective than school-based education models and theories. Therefore, students need to be educated about oral-dental health. The lack of knowledge is also reported by Hezarehee et al.'s study as well (21). Moreover, the students' knowledge of the inhibiting factors is more effective and stronger than their knowledge of the benefits of oral health and it affects their decisions about adopting oral-dental health behaviors.

4-1. Limitations of the study

As one of the limitations of this study, because of the lack of registered data, it was not possible to use more objective information including DMFT index and the status of the gums. Hence, the officials

and practitioners in this field are recommended to take measures to register the data about the oral health status and indicators including DMFT in health records of students in all levels of education; even a portal can be designed to collect the related data. Moreover, because of the differences in demographic, economic, social, and health conditions which may affect oral health, the findings of this study cannot be generalized to other groups and populations. As a result, it is suggested to conduct further studies on the status of oral health in different population groups in rural areas.

5. CONCLUSION

According to the results of this study, 62.8% of students brushed once a day, and 30% brushed more than once a day. In addition, 11.7% of students used floss once a day. Moreover, 6.6% of students visited a dentist every six months. Respecting to, there was a significant negative relationship between inhibiting factors and oral dental health behavior, therefore suggests to design and develop group - specific interventions for adolescents to eliminate the inhibiting factors, also education toward benefits a regular plan of oral health behavior must be regarded.

6- CONFLICT OF INTEREST: None.

7- ACKNOWLEDGMENT

The authors would like to express their thanks to school administrators, teachers, and all students in Kashan city who helped us to conduct this study.

8- REFERENCES

1. WHO. Oral health, general health and quality of life Bulletin of the World Health Organization. 2005; 83(9):641-720.

2. Keboa M, Madathil S, Nicolau B. Do perceived dental treatment needs reflect objectively measured needs in children? Int J Pediatr. 2016 (in press).

3. Mak K, Day JR. Dental health behaviours among early adolescents in Hong Kong. Int J DentHyg2011;9(2):122-6.

4. Hosseini M, Bekry G, Mozaffari HR, Sadeghi R, Yousefifard M, Rostambeigi M, et al. Effect of educational intervention on oral health behavior based on health belief model in female secondary school students of Paveh in 2011. Educ Res Med Sci 2014; 2(3):2-9.

5. Fallahinejad M, Mirshekar Z, Razavi Sh. Knowledge and attitude toward oral and dental health among Zahedan's guidance school students. J Dent Sch 2006; 24(4): 492-98.

6. Nourbakhsh N, Talebi A, Heidari A. Microbial contamination of toothbrushes. Beheshti Univ Dent J 2005; 23(2): 342-54.

7. Sadeghi M, Bagherian A. DMFT Index and Bilateral Dental Caries Occurrence among 12-Year- old Students in Rafsanjan- 2007. J Rafsanjan Univ Med Sci 2008; 7(4): 267-74.

8. McDonald RE, Avery DR, Dean JA. Dentistry for the child & adolescent.7th ed. New York: Mosby; 2004: 802-7.

9. Shooriabi M, Zareyee A, Gilavand A, Mansoori B, Keykhaei Dehdezi B. Investigating DMFT Indicator and its Correlation with the amount of Serum Ferritin and Hemoglobin in Students with Beta-thalassemia Major in Ahvaz, South West of Iran. Int J Pediatr. 2016; 4(3): 1519-27.

10. Stokes E, Ashcroft A, Platt MJ. Determining Liverpool adolescents' beliefs and attitudes in relation to oral health. Health Educ Res. 2006; 21(2): 192-205.

11. Torshizi L, Anoosheh M, Ghofranipour F, Ahmadi F, Houshyar-rad A. The Effect of Education Based on Health Belief Model on Preventive Factors of Osteoporosis among Postmenopausal Women. Iran Journal of Nursing. 2009; 22 (59):71-82.

12. Halvari AEM, Halvari H. Motivational Predictors of Change in Oral Health: An Experimental Test of Self-Determination Theory. Motiv Emot 2006; 30: 295–306.

13. Liana ChWH, Phingb TS, Chata ChSh, ShinaBCh, Hakim Baharuddina L, Jalili Che'JalilaZhB. Oral health knowledge practice among secondary school students inattitude

andKuching. Arch Orofac Sci 2010; 5(1): 9-16.

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

15. Varenne B, Petersen PE, Ouattara S. oral Health behavior of children and adults in urban and rural areas of Burkina Faso, Africa. Int Dent j. 2006 Apr; 56 (2): 61-70.

16. Mahejabeen R, Sudha P. Dental caries prevalence among preschool Children of hubli: Dharead city. J Indian Soc Pedod Prev Dent 2006: 24(1): 19-22.

17. Smyth E. Caamano F. Factors related to dental health in 12-year-old children: a cross sectional study in pupils. Gac Sanit 2005; 19(2):113-9.

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). Journal of Birjand University of Medical Sciences. 2008; 15(3):40-7.

19. Zare M S, Noroozi A, Tahmasebi R. Factors Influencing Tooth Brushing Behaviour based on Health Belief Model among Bushehr Primary School 5th & 6th grade Students. Hayat. 2013; 19 (2): 67-78.

20. Bahmanpour K, Nouri R, Nadrian H, Salehi B. Determinants of oral health behavior among high school students in Marivan County, Iran based on the Pender's Health Promotion Model. Journal of School of Public Health And Institute of Public Health Researches. 2011؛9(2): 93-106.

21. Hazavei MM, Sohrabivafa M, Moeini B, Soltanian AR, Rezaei L. Assessment of oral – dental health status: using Health Belief Model (HBM) in first grade guidance school students in Hamadan. Quarterly Journal of Health Sciences Ahvaz Jundishapur University of Medical Sciences. 2012; 4 (3): 65-75.

22. Amidi Mazaheri M, Sharifi Rad Gh. Examine the impact of educational posters to raise knowledge of Isfahan Apartments resident attitudes regarding oral health. J Health Sys. 2010;3:383-9.

23. Karami Kh, Shakerinejad Gh, Kabiry B. Effect of education based on health belief model on students' oral health behavior change. Journal of Ilam University of Medical Sciences. 2014؛21(7) : 134-141.

24. Peker I, Alkurt MT. Oral Health Attitudes and Behavior among a Group of Turkish Dental Students. Eur J Dent. 2009; 3: 24-31.

25. Ostberg AL. Oral health status and oral health behavior of urban and rural schoolchildren in Southern Thailand. Int Dent J. 2001; 51: 95-102.

26. Emami Moghadam Z, Ajami B, Behnam Vashani HR, Sardarabady F. Perceived Benefits Based on the Health Belief Model in Oral Health Related Behaviors in Pregnant Women, Mashhad, 2012. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2013؛ 16(44): 21-27.

27. Keikhaee R, Rakhshani F, Izadi Sh, Hashemi SZ. Survey of oral health behaviors and its associated factors in female students of primary schools in Zabol based on health belief model. Journal of zabol university of medical sciences and health services. 2012؛4(2): 33-41.

28. Charkazi A, Ozouni- Davaji RB, Bagheri D, Mansourian M, Qorbani M, Safari O, et al. Predicting Oral Health Behavior using the Health Promotion Model among School Students: a Cross-sectional Survey. Int J Pediatr. 2016; 4(7): 2069-77.