Evaluation of oral hygiene care of under 4 years old children by their mothers based on the Health Belief Model

[1]Mohammad Hossein Baghiani Moghadam [*2]Mahnoosh Mozaffarian Azad [3]Mina Biria [4]Siamak Sabour

[1]Professor, Dept. of Health Education and Promotion, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
[*2]MSc student, Dept. of Health Education and Promotion, Shahid Sadoughi University of Medical Sciences, Yazd, Iran. E-mail: mahnooshmozaffarian@yahoo.com
[3]Associate Professor, Dept. of Pediatric Dentistry, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
[4]Assistant Professor, Dept. of Clinical Epidemiology, Health School, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Abstract

Objective: Oral health is one of the basic components of preschool children's health. Young children completely depend on their parents, specially their mothers, to have an appropriate oral health. Health belief model shows the relationship between some structures related to personal perceptions, barriers and perceived self-efficiency, and behavior. This study aims to determine the oral health care status of children under 4 by their mother according to health belief model in Tehran.

Methods: In this cross-sectional (descriptive-analytic) study, 200 mothers with children under 4 who visited health care centers under the authority of Shahid Beheshti University of medical Sciences were randomly chosen. A questionnaire which was designed according to health belief model (HBM) was used to collect data. Collected data was analyzed by SPSS software.

Results: It was found that only in 10% of the cases knowledge score was favorable. Participants scored 50.85%, 75.93%, 72.23%, 92.06%, 48.2%, 86.31%, 64.07% in knowledge structures, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self efficiency and behavior respectively. Knowledge structures (p<0.01, r=0.276), perceived barriers (p<0/01, r=0/314) and perceived self efficiency (p<0.01, r=0.269) showed positive correspondence and significant relationship with the oral and dental health behaviors by their mothers. Structures of health belief model could describe 17.9% of behavior variance. Amongst these structures, perceived barriers had more important role.

Conclusion: This study estimated that the behavioral status of oral and dental health care of children under 4 by their mothers is moderate. Therefore planning an educational program using behavioral models and theories, such as health belief model is suggested, so that it can increase knowledge and self-efficiency and reduce perceptive barriers to promote children's oral health.

Key words: Children, Health Belief Model, Mothers, Oral health.

Please cite this article as:

Baghiani Moghadam MH, Mozaffarian Azad M, Biria M, Sabour S. Evaluation of oral hygiene care of less than 4 years old children by their mothers based on the Health Belief Model. J Dent Sch 2015; 33(1): 9-18.

Received: 05.01.2014 Final Revision: 16.02.2014 Accepted: 16.03.2014

Introduction:

Oral hygiene is one of the most important branches of public health and attention to it is of WHO' programs in the areas of prevention of chronic disease and health promotion (1). Tooth decay is a common problem that affects children on the worldwide and causes pain, infection, chewing problems, behavioral problems, mental health disorders, psychological problems and low quality of life (2). Many young kids and even before 12 months of age are suffering from premature decay. Children with dental caries, compared Peer stripped of its decay have worse

health-related quality of life (3, 4). In addition, children with decay may experienced other problems such as local infections and pain and nutrition, sleep and their growth be impaired and negative behavior be appear at them(4,5). to ensure optimal conditions for maintaining oral health, dental care program should be started from infancy (6). Because only by taking care of children's teeth can be expected that the eruption of permanent teeth be corrected (7). Preschoolers are not enough still developing and mature to take care of their mouth and teeth and this responsibility is with their parents (8). Parental involvement in children's oral health care has become one of the principles of health services. Given the importance of children's oral health risk assessment and home care in it, parents have turned to a therapist (6). Brushing teeth of children twice a day from an early age with parental involvement combined with the control of sugar intake can help to prevent tooth decay (9) Using the health belief model (HBM) and determine the factors affecting oral health may be more appropriate to provide a program in this regard (1).

HBM is one of important model that show the relationship between health beliefs and behavior and it is based on the assumption that preventive actions is a person's beliefs (10). HBM is used in relation to various issues, including cervical cancer, osteoporosis, diabetes care, dental health, dental plaque control and ... (11-14), that is apply of significance of this pattern This model is focused on motivation, past experience, and general focus on the fluctuation of the beliefs and capable of describing the long-term and short-term health behaviors (10).

This model is a useful framework for predicting the behavior of mothers on their children's oral health. Based on this model for the adoption of health practices, the mother should feel threatened by the fact of oral and dental problems of her children and believe that if poor oral hygiene child, her baby is at risk for oral and dental problems (perceived susceptibility). Then understand that severity and deterioration of these risks, in physical, psychological, social and economic is serious (perceived severity)and overcome the problems that prevent the health care for their child (perceived barriers) Then he must be ensured that the proposed preventive behaviors is affect on preventing dental problems of her child (perceived benefits),and believes that she has the ability to perform preventive behaviors (self- efficacy) ,The mother must belief that barrier of preventive behaviors is less than those the benefits and then with the analysis of information about children's oral health Such as health advice of health workers and relatives and friends (cues to action) determined to do preventive behaviors.

So far the lack of proper observance of the oral health of children may be with serious consequences and lead to undesirable and parents, especially mothers, have an important role in this care. The aim of this study was to determine the oral health care status in children under 4 by their mothers, based on Health Belief Model (HBM) in health centers of Shahid Beheshti University of Medical Sciences in 2012-2013, so that it could contribute to offer guidelines for promotion of mothers' education in this field.

Methods:

This cross- sectional (descriptive-analytic)was done on 200 mothers with children under 4years that were referred to the medical centers of Shahid behesti medical university . Shahid Beheshti University of Medical Sciences consist of three health district in East, North and Shemiranat in Tehran that from each of these district, three centers were randomly selected, these centers were Taleghani, Lilh alghadr, Shobair, Shahid Jafari, Nader, Dogmehchi, Taleghani hospital and Chizar. The samples were 70 people from medical centers of north,

60 from east and 70 from Shemiranat.

The data were collected by a researcher making questionnaire in two sections. Section one was 13questions about demographic variables (Age of mothers, Age of children, Sex of children and...) Section 2 of questionnaire was 42 questions about 8 constructs of HBM (knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barrier, self - efficacy, cues to action and preventive behavior), The design was based on the study objectives. The basic design of the questionnaire was based on validated questionnaires in previous studies (15-17).

Knowledge factors:

In this study, mothers' knowledge about the eruption of the first tooth and the permanent tooth, Maximum remaining length of the tooth in the mouth, Number of teeth, the role of fluoride toothpaste in preventing tooth decay and the right time to start using it and the need to clean the teeth were examined. For every correct answer score 1 and a wrong answer and do not know a score of zero was assigned.

Behavior factors:

Behaviors examined in this study were: Visit the gum cleaning the child by the mother, A device used to clean the child's teeth, The frequency of cleaning teeth, Maternal use of fluoride toothpaste for children, The rate of consumption of toothpaste for children, Children's frequency of sweets and snacks per day, Cutting the baby at night. For every answer accordingly, was awarded a score of zero to three.

HBM constructs:

Maternal sensitivity towards dental caries, Cleaning the teeth and not using the baby bottle at Night's sleep and the mothers understand the importance of baby teeth, tooth pain, Lack of desire for the child to hunger and negative effects of tooth loss in the permanent teeth were examined.

The questions for structure of perceived benefits was: The benefits of good oral hygiene, Prevention of tooth decay, Fix Halitosis Children and mental health of child and construction of perceived barrier, with questions, In connection or lack of cooperation of child, lack of time, The cost of buying a toothbrush and toothpaste for children was studied.

Questions of structure of self- efficacy was: ability of mother in brushing the child, Not giving the child a pacifier habit, buy toothbrushes for children and was examined by a pediatric dentist.

Knowledge and behavior questions was multiple choice and questions of constructs of model was classified on a 5-point Likert scale from totally "agree to totally disagree" .To obtain an overall pattern of scores of structures among the subjects, Those who gain 33.3% or lower score was considered too weak, Those between 33.3%, up 66.6% score obtained in moderate and those with scores more than 66.6% were within normal limits.

Content and face validity of the questionnaire was assessed by Dentistry for Children, Periodontologist and health educator and their corrective comments was applied and reliability of the questionnaire was approved on 20 samples and Cronbach's alpha was calculated. Cronbach's alpha coefficients areas for perceived susceptibility (α=0.65), the area of perceived severity (α=0.69), the area of perceived benefits (α=0.82), the area of perceived barriers (α=0.71), the scope of self-efficacy (α=0.75) were determined. Considering the power of the study was significantly lower than 0.05 and at least 80% of the study and in terms of the number of samples in the same groups and the importance of each quantitative variable, And by taking the standard deviation of 2.5 units on the outcome variables studied the sample size of 99 men in each group and the collection of 198 samples were required in this study, that 200 samples were studied.

After the researcher explained the study objectives, a questionnaire completed by the

mother if the mother with any reason to refuse to participate in the study, she was excluded from the study and replaced by another person. Also, if the cases required additional clarification to the question, the investigators gave this explanation to the mother. The data was encoded and with using SPSS 19 software the data was analyzed. To describe the data, we used frequency distribution tables, for data analysis from ANOVA tests and to determine the relationship between variables, Pearson's correlation coefficient and regression.

Results:

The range of age of maternal was between 18-45 years with a mean (SD) of the 30.61 (5.06) and 65.5% of those age was between 26-35 years. The age range of children was between 3-48 months and 56% were between 19-36 months, about 71% the children during the day were kept by their mothers, and the frequency of job about 66.5% of mothers were housewives and the education of 80% of mothers and 70% of fathers was of high school to graduate. (Table 1)

The highest mean score of perceived susceptibility among subjects related to tooth decay for children less than 3 years and then increase the risk of tooth decay due to a lack of awareness of parents about the correct way to brush children and the lowest perceived susceptibility to was about tooth decay in children by using a bottle during the night. (Table 2).

Table 1- Mean, standard deviation and percentage of the maximum obtainable score

Scores Constructs of model	mean	SD	The maximum range	The average percentage of the maximum
Knowledge	3.56	1.56	0-7	50.85
Perceived susceptibility	11.39	2.46	3-15	75.93
Perceived severity	21.67	2.66	6-30	72.23
Perceived benefits	13.81	1.50	3-15	92.06
Perceived barriers	16.87	4.47	7-35	48.2
Self- efficacy	30.21	3.29	7-35	86.31
Behavior	8.33	2.29	0-13	64.07

Table 2- Frequency distribution (%) of situation of structure HBM

Situation of structures structures of model	weak	moderate	normal
Knowledge	24.5	65.5	10
Perceived susceptibility	7	42	51
Perceived severity	0.5	41.5	58
Perceived benefits	0.5	5	94.5
Perceived barriers	0	31	69
Self- efficacy	0	10.5	89.5
Behavior	9.5	56.5	34

The data of table show that, apart from the knowledge and behavior that were at the medium level the scores of rest of the structures were within normal limits.

The data showed that about 66% of samples did not know that the number milk tooth. 46.5% of the mothers were unaware of the exact time the first tooth eruption. Most barrier felt by the subjects (43%) were lack of cooperation of the child during brushing the child teeth by mother. 73.5% of mothers claimed that they brush the their child teeth at least once a day.

Based on the findings, most of the foreign cues to action of mothers regarding oral care children were: Radio and television 59 (29.5%), Health centers 31(15.5%), family and friends 34 (17%), Internet 26 (13%), Magazines and Journals 20(10%) and Poster and pamphlet 7 (3.5%). (Table 3)

Table 3- Correlation coefficient between HBM constructs and behaviors in children's oral health

structures	Knowledge	Perceived susceptibility	Perceived severity	Perceived benefits	Perceived barriers	Self-efficacy	Behavior
Knowledge	1						
Perceived susceptibility	0.258**	1					
Perceived severity	0.263**	0.343**	1				
Perceived benefits	0.289**	0.283	0.329**	1			
Perceived barriers	-0.127	0.119	0.096	-0.036	1		
Self- efficacy	0.171*	0.054	0.153*	0.297**	-0.300**	1	
Behavior	0.276**	0.034	0.090	0.107	-0.314**	0.269**	1

*p<0.01 **p<0.05

The Pierson test showed significant association between knowledge and behavior (p<0.01, r=0.276), between mean grade scores of perceived self- efficacy and behavior (p<0.01, r=0.269), also there was Inverse correlation and significant difference between mean grade scores of perceived barriers and behavior (p<0.01, r=-0.314). There was no significant between behavior and other variables (table 4).

Table 4- Analysis regression HBM constructs as predictors of oral hygiene behavior by mothers of children less than 4 years

Independent variables	β	p	R2	Dependent variable
Knowledge	0.224	0.002	0.179	Behavior
Perceived susceptibility	0.004	0.959		
Perceived severity	-0.014	0.848		
Perceived benefits	-0.011	0.879		
Perceived barriers	0.238	0.001		
Self- efficacy	0.166	0.023		

Discussion:

The findings showed that mothers' knowledge about oral health care for children under 4 years was moderate. Based on the answers to the questions of knowledge, most mothers didn't correct information about the number of teeth, the maximum age at which a child's baby teeth remain in the mouth and the right time to use fluoride toothpaste for children. The results of Phishva, *et al*. (2009) showed that most of the mothers didn't know about the number of teeth, they knew that the time of the eruption of the primary incisors was in 6-8 month after birth

that it is match with our results (18). The data of Naderifar, *et al*. (2006) in Zahedan revealed that the knowledge of 52.6% of mothers was weak and moderate that these results suggest that the level of awareness of the mothers of children under 6 years about importance of oral health of theirs child is low (19). The data of Wong, *et al.* (2001) in china showed that the knowledge of 12.6% of mothers was poor and 87.5% of the mothers stated that they would like to receive more information about dental care of their child (20). Results of Shamsi, *et al.* (2012) revealed that the knowledge of pregnant mother about oral health was lower than moderate (21). Due to the alignment of the results of these studies that these studies have shown that mothers' knowledge about oral health have reported average or below average and the important responsibilities of mothers in maintaining oral health of their children under 6 years, Planning to upgrade the knowledge of women and benches special education programs are essential in this field.

The results of present research showed that there was significant difference between knowledge and perceived susceptibility ($p<0.01$) and perceived severity ($p<0.01$). Since perceived susceptibility and severity and have a strong understanding and partly dependent on individual knowledge we can raise the level of awareness in relation to oral health care for children, increased perceived susceptibility and severity of samples, because the expression of negative consequences and effects of the hazards to persons is adjustment of the sensitivity and the severity (22).

The data of present study revealed that there was significant difference between perceived barriers and behavior ($p<0.01$) that is same as the results of studies of Hazavei, *et al.* (2012) (23), Mazloomi Mahmoodabad and Roohani Tonekaboni (2008) (1) and Solhi, *et al.* (2010) (14). When people are poor at risk perception, perceived barriers, increases (24). The results of this study showed that mothers had barriers to oral health care for their children that the most of them is uncooperative children during brushing. To reduce these barriers we would taught to mothers the correct way to brush children's teeth. Because of lack of information on the correct use of an instrument may inability to perform the task (19).

The results of this study showed there was no correlation between perceived susceptibility and behavior ($p=0.63$) that is same as the results of Mazloomi, *et al*. (2008)(1),but is not same as the data of Hazavae, *et al.* (2012) (23) and Solhi, *et al.* (2010) (14), the correlation in those study was significant. Perhaps the causes of this different is about difference in aim participants and different in their ages. Low the ages in this study is the causes of that the mean grade scores of perceived susceptibility and severity of the mother is low. So that the mothers with older children have more experienced and need of mothers to their children's needs oral health the mean grade scores of these two structures also increased. In the results of Barker, sensitivity, combined with the benefits had a related with behavior (25).

The data of present study showed that the perceived susceptibility at 99% of participants was moderate and suitable. The upper believe of samples that the consequences of the lack of oral health care for children, perhaps is the experience and understand the seriousness of the problems and pain and eventual of tooth loss after the child period of mothers. The data of our study showed that there was no relation between perceived severity and behavior ($p=0.20$) that is same as the results of Hazavei, *et al.* (2012) (20), but we can see this relation in studies of Mazloomi Mahmoodabad and Roohani Tonekaboni (2008) (1) and Solhi, *et al.* (2010) (14). Because the perceived threat is integration of perceived susceptibility and perceived severity it appears that this structural is more effective on behavior than other structures.

In fact, understanding of people and their assessment of the risk is the based for using the model and the perceived severity as an important factor that forms the behavior are increased by child specialists, health educators, and mass media (23).

The results of this study show a significant relationship was not found between perceived benefits and behavior (p=0.13) that was compatible with the results of Mazloomi (1) and Hazavei, *et al.* (2012) (23). But there was significant difference in results of some other studies between perceived benefits and behavior (14). The results of this study showed that participants had a high believes to the benefits and consequences of oral health care of their children and had good understanding of the benefits of cleaning gums and brushing teeth of their children. The more the mothers experience dental problems such as dental pain and tooth extraction, the more they will perceive the benefits of oral health care.

Subjects' believe in their ability to carry out oral health care for children in the study were favorable the results show a significant relationship between self-efficacy and health behavior (p=0.01) that is same as the data of Hazavei, *et al*. (2012) (23), Buglar, *et al.* (2010) (26), Mehri and Morowati sharifabad (2009) (27) and Bahmanpour, *et al*. (2011) (28). Given the importance of self-efficacy on behavior, strengthening this structure in instructional planning In the process of improving children's oral health and prevent tooth decay has a significant role. Mothers' positive perceptions of their ability to care about children's oral health has directly related to doing these health behaviors (17). Self efficacy that it can be strongly associated with behavior and is the introduction of a behavior, should be Special attention , because knowing that what must to do and should do and what is the reasons for his behavior is not enough, They must ability to do their own behavior (29). Regarding to the important role of self-efficiency, individuals get stimulated to take healthy behaviors and maintain them even in confrontation of challenges, only when they feel they have control over the healthy behavior.

The results revealed that mothers' behavior in relation to oral health care for children under 4 years was moderate .The results of Naderifar et al showed the behavior of mothers relation to oral health care for their children 1- 6 years was poor (30). The most frequent (73.5%) oral health care of children by their mothers was" children are dental cleaning at least once a day" This finding contrasts with results of Mohebbi, *et al.* (2008). He has reported a lower frequency of children tooth cleaning by mothers in comparison to developed countries. Statistics brushing twice a day for children 1 to 4 years in the Scandinavian countries and the United States of America is (85-97%) (17). In Middle Eastern countries such as Jordan, the figure is (66-75%). In this respect a strict advice to parents that had not necessary the skills and knowledge about cleaning teeth of their children less than 6 years do brushed up (31).

In this study, the structure of HBM could explain the 17.9% of the variance of behavior that the role of perceived barriers was more likely than other structures. In the study that was done by Shamsi, *et al*. (2012), the structure of HBM could explain the 43% of the variance of behavior of brushing that the role of Barriers of perception and self-efficacy was more than others (21). In a study in Yazd the role of perceived barriers and self-efficacy was more than others and could explain 29% of variance of behavior (27).

As well as strategies that can be used to apply a beloved mothers on children's oral health care, is: Donated toothbrushes (conventional and digital), toothpaste, fluoride rinse, children's discounts on business expenses by pediatric dentists for early detection of tooth decay and other oral problems.

The limitation of this study was: The use of self-report instruments and not objective observation of oral health behaviors, Description of the study and the possibility of error in completing the questionnaires. It is expected that in future studies, longitudinal assessments and educational interventions be designed and conducted in the field of oral healthy behaviors for all population groups, based on behavioral models.

Conclusion:

Due to the moderate knowledge of mothers to oral health care for children in this study there is an urgent need to promote and improve awareness. Also for Promotion of oral health care for children, training programs in the health belief model should be designed in a way that strengthens the structure of self efficacy and weaken the perceived barriers, to reinforce the idea that mothers, in spite of obstacles; they can intervene in children's oral health care.

Acknowledgement:

This article is from thesis of Mehnoosh Mozaffarian Azad the students of health education of Yazd University of Medical Sciences. The authors are acknowledgments from the Deputy of health of Beheshti University of Medical Sciences and all those who helped us in conducting this research.

Conflict of Interest: "None Declared"

References:

1. Mazloomi Mahmoodabad SS, Roohani Tonekaboni 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: 40-7. [Persian]
2. Ferreira SH, Béria JU, Kramer PF, Feldens EG, Feldens CA. Dental Caries in 0- to 5-year-old Brazilian children: prevalence, severity, and associated factors. Int J Paediatr Dent 2007; 17: 289-296.
3. Filstrup SL, Briskie D, da Fonseca M, Lawrence L, Wandera A, Inglehart MR. Early childhood caries and quality of life: child and parent perspectives. Pediatr Dent 2003; 25: 431-440.
4. Low W, Tan S, Schwartz S. The effect of severe caries on the quality of life in young children. Pediatr Dent 1999; 21: 325-326.
5. Acs G, Lodolini G, Kaminsky S, Cisneros GJ. Effect of nursing caries on body weight in a pediatric population. Pediatr Dent 1992; 14: 302-305.
6. Pinkham J, Casamassimo P, McTigue D, Fields H, Nowak A. Pediatric Dentistry Infancy Through Adolescence. 4th Ed. Elsevier: W.B. Sanders Co. 2005; Chaps 13, 14: 207-208, 230-232.
7. Khedmat S. Orodantal diseases. 1st Ed. Tehran, Saman 2001; Chap 1: :12-32.
8. Whaley L, Wong D. Nursing care of infant and children. 1st Ed. Washington: The C.V. Mosby Co. 2006; Chap 10: 727-728.
9. Vanagas G, Milasauskiene Z, Grabauskas V, Mickeviciene A. Associations between parental skills and their attitudes toward importance to develop good oral hygiene skills in their children. Medicina (Kaunas) 2009; 45: 718-723.
10. Solhi M, Shojaei Zadeh D, Seraj B, Faghih Zadeh S. A new model for oral health education. J Qazvin Univ Med Sci 2000; 3: 3-11. [Persian]
11. Guvenc G, Akyuz A, Acikel CH. Health Belief Model Scale for Cervical Cancer and Pap Smear

Test: psychometric testing. J Adv Nurs 2011; 67: 428-437.
12. Khorsandi M, Shamsi M, Jahani F. The effect of education based on Health Belief Model on osteporosis preventive behaviors among pregnant women referred to Arak health centers. Daneshvar Med 2010; 18: 1-11. [Persian]
13. Shamsi M, Sharifirad G, Kachoyee A, Hassanzadeh A. The effect of educational program walking based on Health Belief Model on control sugar in woman by type 2 diabetics. Iranian Journal of Endocrinology Metabolism 2010; 11: 490-499. [Persian]
14. Solhi M, Shojaee Zadeh D, Seraj B, Faghih Zade S. The application of Health Belief Model in oral health education. Iranian Journal of Public Health 2010; 39: 114-119. [Persian]
15. Hallett KB, O'Rourke PK. Early childhood caries and infant feeding practice. Community Dent Health 2002; 19: 237-242.
16. Pine CM, Adair PM, Nicoll AD, Burnside G, Petersen PE, Beighton D, et al. International comparisons of health inequalities in childhood dental caries. Community Dent Health 2004; 21: 121-130.
17. Mohebbi SZ, Virtanen JI, Murtomaa H, Vahid-Golpayegani M ,Vehkalahti M. Mothers as facilitators of oral hygiene in early childhood. Int J Paediatr Dent 2008; 18: 48-55. [Persian]
18. Pishva N, Asefzadeh S, Pishva MH, Majedi Z. Traditional beliefs and behaviors of mothers and teachers related to oral health of children in rural districst of Qazvin: A qualitative study. The Journal of Islamic Dental Association of IRAN (JIDA) 2009; 20: 292-300. [Persian]
19. Naderifar M, Akbarsharifi T, Pairovi H, Haghani H. Mothers' awareness, regarding orodental health of their children at age of 1-6 Years old. IJN 2006; 19: 15-27. [Persian]
20. Wong MC, Lo EC, Schwarz E, Zhong HG. Oral health status and oral health behaviors in Chinese children. J Dent Res 2001; 80: 1459-1465.
21. Shamsi M, Hidarnia A, Niknami S. A Survey of oral health care behavior in pregnant women of Arak: Application of Health Belief Model. J Mazandaran Univ Med Sci 2012; 22: 104-115. [Persian]
22. Safari M, Shojaezadeh D, Ghofranipuor F. Health education&promotion theories, models & methods. 1st Ed. Tehran: Asare sobhan 2009; Chap 3: 56-58. [Persian]
23. Hazavei MM, Sohrabi Vafa 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. Jundishapour J Health Sci 2012; 4: 65-75. [Persian]
24. Naidoo J, Wills J. Health promotion. 1st Ed. London: Bailliere Tindall 2000; Chap 4: 224-293.
25. Barker T. Role of health beliefs in patient compliance with preventive dental advice. Community Dent Oral Epidemiol 1994; 22: 327-330.
26. Buglar ME, White KM, Robinson NG. The role of self-efficacy in dental patient's brushing and flossing: Testing an extended Health Belief Model. Patient Educ Couns 2010; 78: 269-272.
27. 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: 81-87. [Persian].
28. 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 Research 2011; 9: 93-106. [Persian]
29. Dehdari T, Heidarnia AR, Ramezankhani A, Sadeghian S, Ghofranipour F, Etemadi S. Planning and evaluation of an educational intervention programme to improve life quality in patients after

coronary artery bypass graft-surgery according to PRECEDE-PROCEED model. Birjand Univ Med Sci 2009; 15: 27-37. [Persian].

30. Naderifar M, Ghaljaei F, Akbarizadeh MR. Determination of the mothers' practice about orodental health of their children up to six years old. Zahedan Journal of Research in Medical Sciences 2010; 12: 43-48. [Persian]
31. Mohebbi SZ, Virtanen JI, Vahid-Golpayegani M, Vehkalaht M M. Feeding habits as determinants of early childhood caries in a population where prolonged breastfeeding is the norm. Community Dent Oral Epidemiol 2008; 36: 363-369.