ANALYSIS

23(98), July - August, 2019

ISSN
2321–7359
EISSN
2321–7367

Medical Science

Self-efficacy and nutritional behaviors in young adolescents: A Model-guided Study

Parisa Kasmaei[1], **Parisa Mirzajanzade**[2], **Nooshin Rouhani-Tonekaboni**[3], **Asieh Ashouri**[4]✉, **Iraj Zareban**[5], **Hossein Izadi Rad**[6], **Fardin Mehrabian**[7]

[1]Assistant professor, Research Center of Health and Environment, Department of Health Education and Promotion, School of Health, Guilan University of Medical Sciences, Rasht, Iran. Email: parisa_kasmaei@gums.ac.ir

[2]MSc Student, Department of Health Education and Promotion, School of Health, Guilan University of Medical Sciences, Rasht, Iran. Email: parisa.mirzajanzade1366@gmail.com

[3]Assistant professor, Department of Health Education and Promotion, School of Health, Guilan University of Medical Sciences, Rasht, Iran. Tel: +98-13-33824456, Fax: + 98-13-33849413. Email: rouhani.phd@gmail.com

[4]Assistant professor, Cardiovascular Diseases Research Center, Department of Cardiology, Department of Health Education and Promotion, School of Health, and Guilan University of Medical Sciences, Rasht, Iran. Tel: +98-13-33824456, Fax: + 98-13-33849413. Email: a.ashouri@gmail.com

[5]Associate professor, Health Promotion Research Center, Zahedan of University Medical Sciences, Zahedan, Iran

[6]Assistant Professor, Health Promotion Research Center, Zahedan of University Medical Sciences, Zahedan, Iran

[7]Associate professor, Research Center of Health and Environment, Department of Health Education and Promotion, School of Health, Guilan University of Medical Sciences, Rasht, Iran. Email: mehrabian@gums.ac.ir

✉**Correspondence author:**
Assistant professor, Cardiovascular Diseases Research Center,
Department of Cardiology, Department of Health Education and Promotion, School of Health, and Guilan University of Medical Sciences, Rasht, Iran.
Email: A.ashouri@gmail.com

Article History
Received: 20 March 2019
Accepted: 09 May 2019
Published: July - August 2019

Citation
Parisa Kasmaei, Parisa Mirzajanzade, Nooshin Rouhani-Tonekaboni, Asieh Ashouri, Iraj Zareban, Hossein Izadi Rad, Fardin Mehrabian. Self-efficacy and nutritional behaviors in young adolescents: A Model-guided Study. *Medical Science*, 2019, 23(98), 432-440

General Note

Article is recommended to print as color digital version in recycled paper.

ABSTRACT

Background: Healthy eating habits during childhood will affect development and that is the key to a healthy life. Pre-adolescence is an essential time for the formation and stability of behaviors. The aim of this study was to determine the predictive power of the Health Belief Model (HBM) and its constructs in nutritional behaviors in young adolescents. *Methods:* This cross-sectional study was conducted on the 332 (164 boys and 168 girls) fifth-grade of governmental public primary schools (ages 10-11 years old) in Rasht city, the center of Guilan province of the north of Iran during February 2017. Students were selected using a cluster random sampling procedure. Data collection instrument was a questionnaire. In order to examine HBM constructs most predictive of nutritional behaviors, stepwise multiple regression analysis was performed. *Results:* There was no statistically significant difference between demographic variables and nutritional behaviors (P>. 05). Stepwise regression showed that HBM could predicted 22% of the variations of the student's nutritional behaviors with the constructs of perceived self-efficacy (B= 0.217, 95% CI = 0.156 - 0.279, P < 0.001), barriers (B= -0.114, 95% CI = -0.177 - 0.051, P< 0.001) and benefits (B= 0.100, 95% CI= 0.026 - 0.175, P< 0.001). *Conclusion:* According to the predictive power of the HBM, the educational interventions based on this model with emphasis on the construct of perceived self-efficacy is suggested for these young adolescents.

Keywords: Health Belief Model (HBM), Nutritional Behaviors, Students

1. INTRODUCTION

Healthy eating habits and control of body weight in childhood will affect their physical, emotional and mental growth and development that is the important key to a healthy adulthood and old age (Lauria et al., 2015; Harris, 2017). Nutrition is one of the important factors that affect the learning ability and skills of children at school (Nyaradi et al., 2017). Proper and varietal nutrition is one of the most foundations of school health (Sharifirad, Amidi and Akbarzadeh, 2005). A poor diet during childhood can lead to disorders such as diabetes, heart disease and osteoporosis or weak, brittle bones later in life (Harris, 2017; Tahere Etesamifard et al. 2018). Children who do not consume adequate amounts of key nutrients were incapable of working to their full potential at school (Yue et al., 2016). Like many developing countries, poor nutrition of students (6 to 18 years old) is growing in Iran (Zamani, Faghihzadeh and Sadeghi, 2008). Targeting young people is important because evidence suggests that dietary behaviors track from childhood to adolescence and into adulthood (Mikkila et al., 2007). Specifically, adolescence is characterized by some dietary behaviors changing like a decrease in fruit and vegetable intake, a decrease in breakfast eating, and an increase in the consumption of high-fat, high-sugar and snack foods (Niemeier et al., 2006), and pre-adolescence is an essential time for the formation and stability of behaviors (Astrom, 2004). Literature showed that the most effective educational intervention programs are based on theory-oriented approaches because of the complex and real relationship among attitudes, beliefs and behavior patterns, so the models of health education and promotion are used (Christopher and Mark, 2000; Stokes, Ashcroft and Platt, 2006). The Health Belief Model (HBM) is one of the first theories which explain and predict health-related behaviors (Izadirad et al., 2017; Sharma, 2016). It provides specific guidance at the micro level for planning the educational interventions regarding behavioral change and it is one of the most popular models in health education and promotion, and contains five fundamental constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. These were defined as: "Perceived susceptibility: Subjective belief that a person may acquire a disease or enter a harmful state as a result of a particular behavior. Perceived severity: Belief in the extent of harm that can result from the acquired disease or harmful state as a result of a particular behavior. Perceived benefits: Belief in the advantages of the methods suggested for reducing the risk of the seriousness of the disease or harmful state resulting from a particular behavior. Perceived barriers: Belief concerning actual and imagined costs of performing the suggested behavior. Self-efficacy: Confidence in one's ability to acquire a new behavior (Sharma, 2016)." Based on prior studies there are controversial findings on the effect of these constructs on nutritional behaviors (Alizadeh Siuki et al., 2015; Bruening et al., 2010; Fila and Smith, 2006; Lotfi Mainbolagh et al., 2017; Mullan et al., 2014; Rahimi et al., 2012; Sadr Hashemi et al., 2017; Salahshoori et al., 2014; Zabinski et al., 2006) and only a few studies have done based on the prediction of the HBM and its

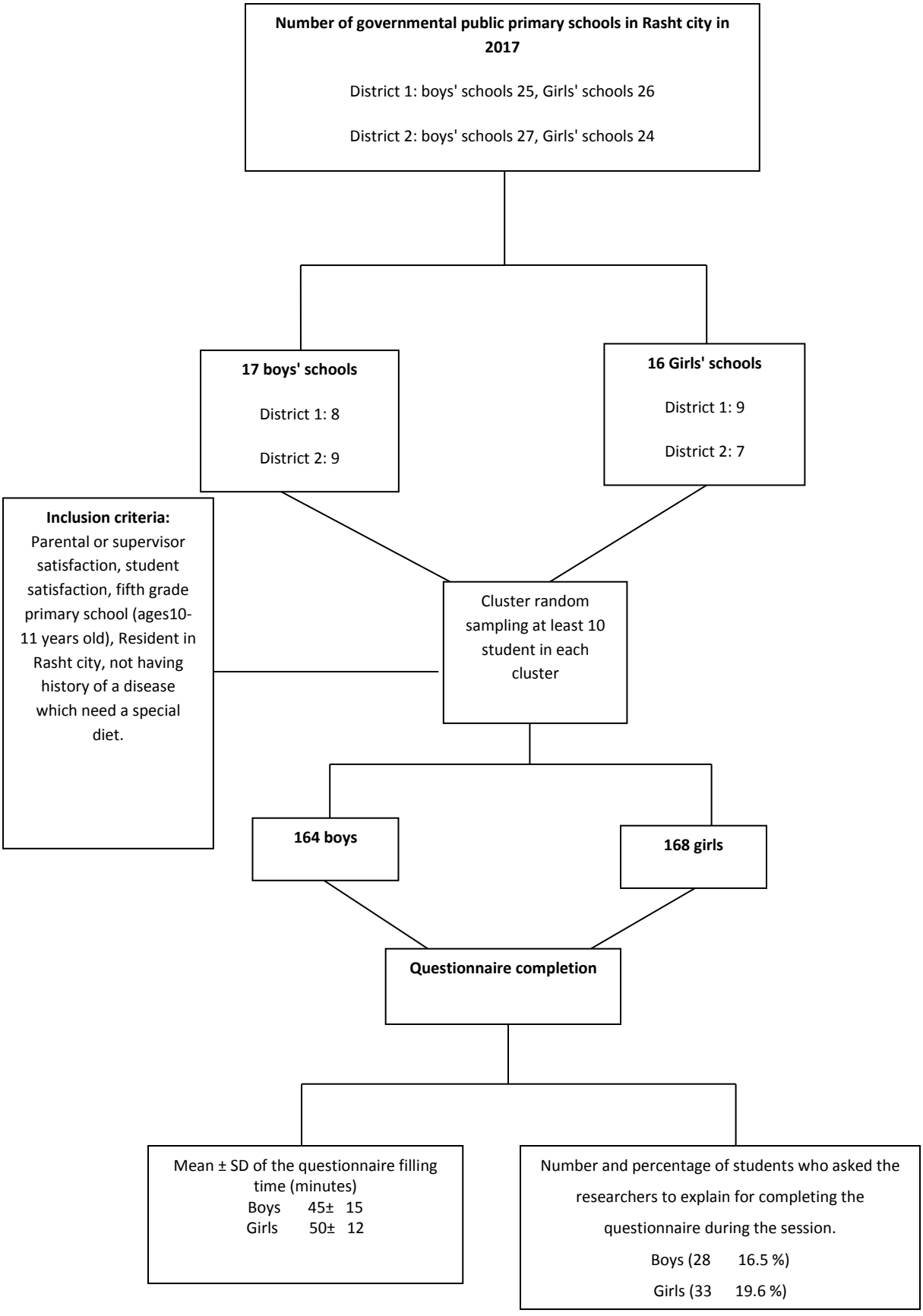

Figure 1 The research method

constructs on young adolescence (Alizadeh Siuki et al., 2015; Lotfi Mainbolagh et al., 2012). Thus we were interested in studying more about this model and its constructs in order to contribute to the literature on this topic. We aimed to study the model to see how this works in young adolescents nutritional behaviors. Actually, our first hypothesis was that the HBM would have considerable predictive power in nutritional behaviors in young adolescents. The second hypothesis was to find out which constructs of this model could predict nutritional behaviors in this group.

2. MATERIALS & METHODS

This cross-sectional study was conducted during February 2017. In the total, 344 boys and girls students of fifth-grade primary school (ages10-11 years old) which resident in Rasht city the center of Guilan province of the north of Iran entered in the study.

The boy and girl students which were approximately equal were selected using a cluster random sampling procedure from a list of all existing governmental public primary schools. If the student or his/her parents did not consent to participate in the study, the other student was selected from the list. While they were responding to the questionnaire two investigators were present to help students, if they need (Figure 1).

The questionnaire was self-administered and contained 3 parts: the first part was demographic characteristics including 7 items (listed in Table 1 and Figure 2); the second parts were HBM constructs including perceived susceptibility, perceived severity, perceived benefits, perceived barriers and perceived self-efficacy, all items were measured on a Likert scale ranging from 1 to 5 (number of items and possible score range are in table 2). The third part was nutritional behaviors to measure diet taking mealtime outside (12 items) including items such as breakfast, snack, milk and other dairy products, fruit and vegetables, sweets, sausage, puff and chips. Each of nutritional behaviors questions set in four items related to unhealthier to a healthier diet that scored chose from 0 to 3 (number of items and possible score range are in table 2).

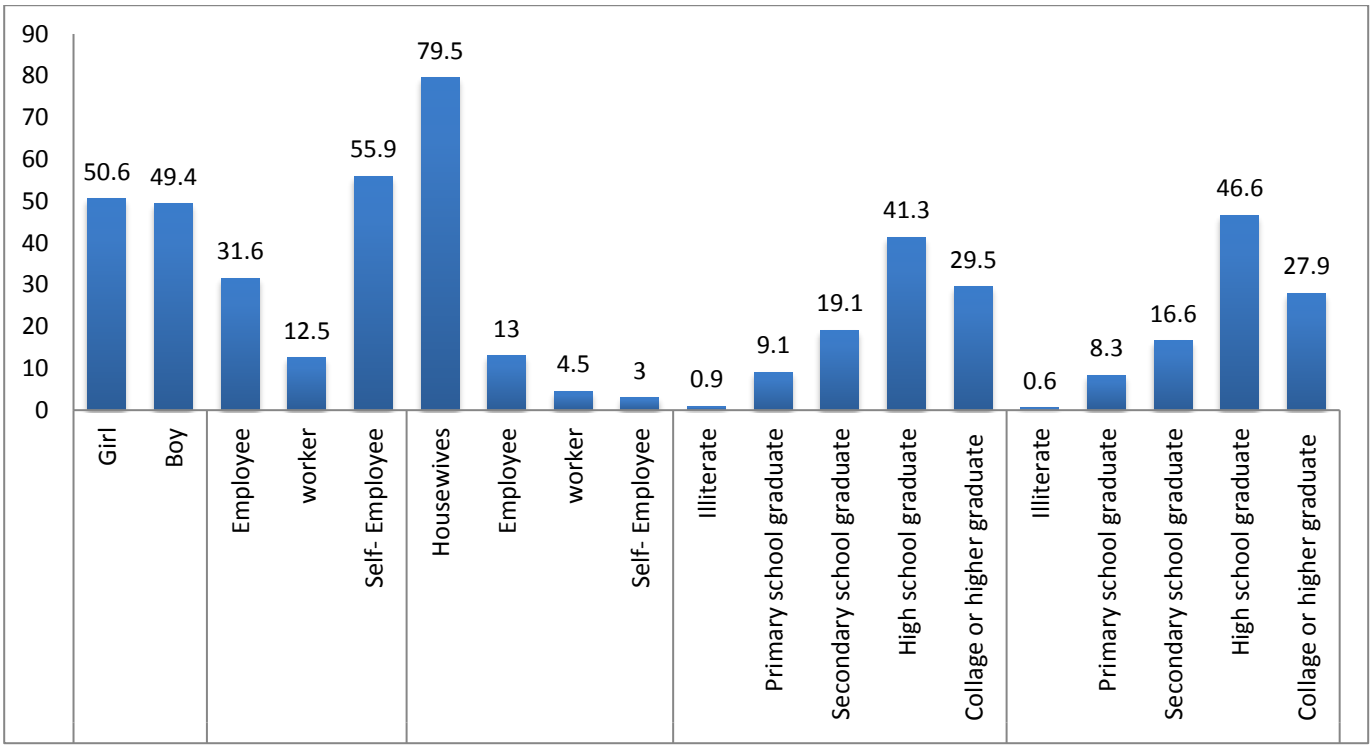

Figure 2 Demographic characteristics

Table 1 Demographic characteristics

Gender	No. *	Percent
Girl	168	50.6
Boy	164	49.4
Father's occupation		
Employee	104	31.6
worker	41	12.5
Self- Employee	184	55.9
Mother's occupation		
Housewives	263	79.5
Employee	43	13.0
worker	15	4.5
Self- Employee	10	3.0
Father educational level		
Illiterate	3	.9
Primary school graduate	30	9.1
Secondary school graduate	63	19.1
High school graduate	136	41.3
Collage or higher graduate	97	29.5
Mother educational level		
Illiterate	2	.6
Primary school graduate	27	8.3
Secondary school graduate	54	16.6
High school graduate	152	46.6
Collage or higher graduate	91	27.9
No. of children, mean (SD)	1.9 (.8, 1-5)	
Birth order, mean (SD)	1.5 (.7, 1-4)	
Data are expressed as mean (standard deviation) or number (percent). *lower total no. of 334 was due to missing data which was the most about 1.8%.		

Since, based on the Piaget's Theory of Cognitive Development, these children were during the concrete operational stage of life which lasts from age 7 to about age 12, can deal with concrete objects rather than abstractions when they consider changes. Because of this they must either see or be able to imagine objects or situations and they have difficulty with abstract terms and cannot reason in a scientific and deductive manner (Kaplan, 1998). So, when we designed the questionnaire before interviewing the target group of students, we considered that since this age group of students did not have abstract thinking, can only have objective imagination (Harris, 2017).

At first, the instrument was developed by the main study researchers based on the literature review. Then, for the content validity of the instrument, the scale was reviewed by an expert panel including health education (n= 4), nutrition (n= 3) and biostatistics (n= 1) specialists. Based on the experts' opinions, some questions were added and some items were revised. For the face validity of the scale, 5 boys and 5 girls' fifth grade students were interviewed to reflect on the simplicity; clarity and readability of the items. For some unclear questions, minor wording changes and explanation were applied according to the students' opinions.

Finally, on a pilot study, the questionnaire was filled two times with a 2- week's gap by the 15 boys and 15 girls. The Cronbach's alpha coefficient was calculated to measure the internal consistency of the HBM constructs and intra-class correlation coefficient (ICC) was calculated to measure the reliability of the nutritional behaviors score, respectively. ICC and Cronbach's alpha coefficients from the first evaluation were reported in table 2.

Researcher explained the fundamental goals of the present research, emphasized that the questionnaire were anonymous. Also, all participants received the same instructions and the researcher gave explanations about completing the questionnaire.

Table 2 Cronbach's alpha coefficient, mean and standard Deviations for the HBM constructs and nutritional behaviors score

Constructs and behavior (number of items)	Cronbach's alpha coefficient	Mean	SD	Possible range
Perceived susceptibility (7)	.91	27.98	5.93	7-35
Perceived severity (6)	.93	25.34	4.94	6-30
Perceived benefits (6)	.91	26.30	4.50	6-30
Perceived barriers (10)	.77	17.85	5.40	10-50
Perceived self-efficacy (8)	.82	32.86	5.61	8-40
Behavior (12)	.68*	25.75	3.45	0-36

Higher scores for perceived susceptibility, perceived severity, perceived benefit and self-efficacy indicate better conditions. For perceived barriers lower scores indicate better conditions. * Intra class correlation (ICC) was reported.

This study was reviewed and approved by the Ethics Committee of the Guilan University of Medical Science, and written informed consent was obtained from parents and authorities. The score of each item for HBM constructs and behaviors were summed. Mean and standard deviation or number and percent were used to describe sample characteristics as well as HBM constructs and behaviors. Normality of the data was also examined through Q-Q plot and skewness and kurtosis statistic, in which values lower than 2 indicated that normality assumption, are set. Pearson correlations were used to examine the associations between the HBM constructs with nutritional behaviors. For conclusion, the size of correlation coefficients between 0.10 - 0.25 was considered as weak, between 0.25 - 0.50 as moderate and more than 0.50 as high. In order to examine most predictive HBM constructs, stepwise multiple regression analysis was performed. P-values lower than 0.05 was considered as significant. The present study was approved by the Ethics Committee of Guilan University of Medical Sciences under the Code Number of IR.GUMS.REC.1395.342.

3. RESULTS

Three hundred thirty-two students including 164 boys (49%) and 168 girls (51%) were included in the analyses. Table 1 and Figure 2 shows the demographic characteristics of the students.

There was no statistically significant difference between boy and girl students according to demographic characteristics, HBM constructs and nutritional behaviors (P>. 05). Also, none of the demographic characteristics of the participants were related to the nutritional behaviors (P>. 05). Mean and standard deviations for the HBM constructs and nutritional behaviors showed in table 2. The correlation analyses between HBM constructs and nutritional behaviors showed that there were significant moderate relations between perceived self-efficacy and perceived barriers with healthy nutritional behaviors (Table 3). Those who had a higher perceived self-efficacy had more healthy nutritional behaviors (Pearson rho = 0. 420, P<. 001). Also, those who had a lower perceived barrier showed a higher healthy nutritional behaviors (Pearson rho = -0. 279, P<. 001).

Table 3 Correlation coefficients of relation between HBM constructs and nutritional behaviors score

Constructs and behavior		1	2	3	4	5	6
1.	Perceived susceptibility	1.00					
2.	Perceived severity	.696(<.001)	1.00				
3.	Perceived benefits	.471(<.001)	.463(<.001)	1.00			
4.	Perceived barriers	-.281(<.001)	-.138(.012)	-.148(.007)	1.00		
5.	Perceived self-efficacy	.223(<.001)	.170(.002)	.191(<.001)	-.231(<.001)	1.00	
6.	Behavior	.234(<.001)	.146(.008)	.225(<.001)	-.279(<.001)	.420(<.001)	1.00

Data are expressed as correlation (p-value).

Stepwise regression of behavior as the dependent variable and HBM constructs as independent variables, showed that in addition to perceived self-efficacy and barriers, perceived benefits independently predict the student's nutritional behaviors (Table 4). Perceived self-efficacy, barriers and benefits predicted 22% of the variations of the student's nutritional behaviors. To determine the prediction of constructs without perceived self-efficacy, only 11% of the variance predicted by perceived barriers and perceived benefits.

Table 4 Result of stepwise regression analysis of nutritional behaviors score based on HBM construct

Constructs	Unstandardized B	95% CI	t-statistic	P-value
Perceived self-efficacy	.217	.156 - .279	6.988	<.001
Perceived barriers	-.114 -.177 -	-.051	-3.548 -3.548	<.001
Perceived benefits	.100	.026 - .175	2.638	.009

CI indicated confidence interval.

4. DISCUSSION

Young adolescence dietary behaviors have important effect on concrete measures of academic accomplishment, healthy adulthood and old age. Changing of nutritional behaviors could have practical consequences (Harris, 2017; Littlecott et al., 2016). The findings from this study indicated that HBM have considerable predictive power in nutritional behaviors and perceived self-efficacy was the most important construct. Since these children were during the concrete operational stage and perceived self-efficacy could be a process of abstract thinking (Kaplan, 1998; Kasmaei et al., 2014), we designed objective questions resulting from the experiences of the students.

The result of this study showed that self-efficacy emerged as a powerful predictor, this construct indicating that decisions to eating nutritional behaviors are influenced by whether individuals consider that these can be performed successfully (Pender, Murdaugh and Parsons, 2006). Anderson et al. reported the self-efficacy as the most important factor of nutritional behaviors (Anderson, Winett and Wojcik, 2007) and there are some studies that confirm this strong relationship (Rahimi et al., 2012; Sadr Hashemi et al., 2017; Salahshoori et al., 2014) But some other studies do not confirm this finding (Alizadeh Siuki et al., 2015; Lotfi Mainbolagh et al., 2012; Zabinski et al., 2006). Among these, only a few studies are based on the HBM and these do not confirm this strong relationship as well (Alizadeh Siuki et al., 2015; Lotfi Mainbolagh et al., 2012). May be the reason of difference in our study with these two studies would be because of the cultural differences. In our sample, 70% of parents had educational level more than high school but in the Alizadeh Siuki et al. study in Torbate Heydariyeh city it was about 20% and 30% in mothers and fathers, respectively (Alizadeh Siuki et al., 2015). It seems that higher educational level in parents can increase the role of self-efficacy in nutritional behaviors. By the way perceived self-efficacy is concerned not with the ability one has but with judgments about what one can be done with whatever abilities one possesses. Perception abilities and competence in a particular domain motivate people to engage in behaviors that they excel in. The feeling of efficacious and skilled in person performance may encourage one to engage more in the target behavior than the feeling of inefficiency and lack of ability (Pender, Murdaugh and Parsons, 2006). The people who have higher self-efficacy, have greater sense of control, consider higher goals and committed, and thus their behavior becomes more favorable (Kelishadi et al., 2005). Another important consideration is the impact of young adolescence period of life in formation and persistence of behaviors (Astrom, 2004), thus focus on increasing perceived self-efficacy in planning the educational interventions nutritional behaviors in this group could be a basic strategy for health promotion during the life time. Although perceived barriers were declared as the main predictor of behaviors in HBM (Sharma, 2016), and in some studies, perceived barriers prevent the consistent consumption of healthful foods such as Evans et al. study in low-income families (Evans et al., 2006). The results of our study showed that perceived barriers predict nutritional behaviors but have not a considerable role. Assessing the validity of our questionnaire is led to removing the question of family income for the reason of could not get a correct answer from the students; it is notable that the questionnaire was anonymous, so we could not get this information from teachers. However based on the questions of occupation and educational level of parents and the average number of children could be concluded that our target group is not from low-income families, also they are not from low educational levels. Anyway, it should notice that in educational interventions, often influences on obstacles as perceived barriers are not simply possible (Sharma, 2016).

In some studies, the construct of perceived benefits was the important significant predictor of nutritional behaviors (Alizadeh Siuki et al., 2012; Lotfi Mainbolagh et al., 2012; Salahshoori et al., 2014), but in a few studies were not a predictor (Rahimi et al., 2012). In our study perceived benefits is not a powerful predictor. People are doing the behaviors that predict the advantages they could be received and these are mental visualization or positive consequences of reinforcing behavior. Benefits of a behavior may be

intrinsic or extrinsic. It is noted that at first extrinsic benefits may have a highly stimulating effect on health behaviors, while intrinsic benefits motivation may be stronger in motivating continuation of health behaviors (Kasmaei et al., 2014). In this study, benefits are internal and related to the eating behaviors impact on human health and this point should be considered in interventions.

Interestingly, there is not any difference in HBM constructs and nutritional behaviors between boys and girls in our study. It may be based on the culture of this city (do not pay attention to gender differences in child upbringing and equal care to their needs), low rate of population growth and average number of children in a family, the educational level and occupation of parents, so the educational programs could be similar in both genders.

The remarkable thing in educational intervention programs in nutritional behaviors of the students is that, devoting time to such activities is not a diverting time in school planning; on the contrary, it is necessary to promote a large number of young adolescents' health. Moreover, since they can transfer such behaviors to families, this could be an investment in the health promotion of community.

Limitations of this study were self-report and conducted on the governmental public schools in Rasht city so; it does not cover non-governmental schools and rural areas with different demographic variables. Therefore, it is recommended that similar studies should be done in those districts.

5. CONCLUSION

The HBM could be useful to improve these young adolescents' nutritional behaviors with focus on perceived self-efficacy. So promoting nutritional behaviors with the educational interventions based on this model with emphasis on self-efficacy is suggested.

Acknowledgement

This article is part of the findings of an approved project by Guilan University of Medical Sciences. The authors appreciate the financial support of Deputy of Research and Technology of this university. In addition, we gratefully acknowledge all participants, their parents and authorities.

Conflict of interest

The authors declare that they have no conflict of interest.

Funding

This study was supported by Guilan University of Medical Sciences.

REFERENCE

1. Alizadeh Siuki H, Jadgal K, Shamaeian Razavi N, et al. Effects of Health Education Based on Health Belief Model on Nutrition Behaviors of Primary School Students in Torbat e Heydariyeh City in 2012. J. Health 2015; 5: 289-99.
2. Anderson ES, Winett RA, Wojcik JR. Self-regulation, self-efficacy, outcome expectations, and social support: social cognitive theory and nutrition behavior. Ann Behav Med 2007; 34: 304-12.
3. Astrom AN. Stability of oral health-related behaviour in a Norwegian cohort between the ages of 15 and 23 years. Community Dent Oral Epidemiol 2004; 32: 354-62. Brooks/Cole Publishing Company; St. Paul West Pub. Co, 1998.
4. Bruening M, Kubik MY, Kenyon D, et al. Perceived barriers mediate the association between self-efficacy and fruit and vegetable consumption among students attending alternative high schools. J Am Diet Assoc 2010; 110: 1542-6.
5. Christopher JA, Mark C. Social cognition models and health behaviour: A structured review, J Health Psychol 2000: 15: 173-189.
6. Evans AE, Wilson DK, Buck J, et al. Outcome expectations, barriers, and strategies for healthful eating: a perspective from adolescents from low-income families. Fam Community Health 2006; 29: 17-27.
7. Fila SA, Smith C. Applying the theory of planned behavior to healthy eating behaviors in urban Native American youth. IJBNPA 2006; 3: 1-11.
8. Harris N. How to Reduce the Intake of Junk Food in Children. Available from: http://www.healthyeating.sfgate.com/reduce-intake-junk-food-children-5768.html. [Last cited on 28 Aug 2017].
9. Izadirad H, Niknami Sh, Zareban I, et al. Improving prenatal care in pregnant women in Iranshahr, Iran: Applying Health Belief Model, Women & Health 2017; 7:1-12.
10. Kaplan PS. The human odyssey: Life-span development. Pacific Grove, USA:

11. Kasmaei P, Shokravi FA, Hidarnia A, et al. Brushing behavior among young adolescents: does perceived severity matter. BMC public health 2014, 14: 2-6.
12. Kelishadi R, Ardalan G, Gheyratmand R, et al. Can the dietary habits of our society provide future health of children and adolescents? CASPIAN study. Iran J Pediatr 2005; 15: 97-109.
13. Lauria L, Spinelli A, Cairella G, et al. Dietary habits among children aged 8-9 years in Italy. Ann. Ist. Super. Sanita 2015; 51: 371-81.
14. Littlecott HJ, Moore GF, Moore L, et al. Association between breakfast consumption and educational outcomes in 9–11-year-old children. Public Health Nutr 2016; 19: 1575-82.
15. Lotfi Mainbolagh B, Rakhshani F, Zareban I, et al. The effect of peer education based on health belief model on nutrition behaviors in primary school boys. J Research Health 2012; 2: 214-25.
16. Mikkila V, Rasanen L, Raitakari OT, et al. Major dietary patterns and cardiovascular risk factors from childhood to adulthood. The Cardiovascular Risk in Young Finns Study. Br J Nutr 2007; 98: 218-25.
17. Mullan B, Wong C, Kothe E, et al. An examination of the demographic predictors of adolescent breakfast consumption, content, and context. BMC Public Health 2014; 14: 264-275.
18. Niemeier HM, Raynor HA, Lloyd-Richardson EE, et al. Fast food consumption and breakfast skipping: predictors of weight gain from adolescence to adulthood in a nationally representative sample. J Adolesc Health 2006; 39: 842-9.
19. Nyaradi A, Li J, Hickling S, et al. The role of nutrition in children's neurocognitive development, from pregnancy through childhood. Hum Neurosci 2013: 7:1-16.
20. Pender NJ, Murdaugh CL, Parsons MA. Health Promotion in Nursing Practice. Upper Saddle River, NJ: Pearson/Prentice Hall; 2006.
21. Rahimi T, Dehdari T, Ariaeian N, et al. Survey of breakfast consumption status and its predictors among Qom students based on the Penders health promotion model constructs. IJNSFT 2012; 7: 75-84.
22. Sadr Hashemi F, Soltani R, Hassanzadeh A, et al. Relationship between Breakfast Consumption and Self-Efficacy, outcome Expectations, Evaluation and Knowledge in Elementary Students. Int J Pediatr 2017; 5: 4163-74.
23. Salahshoori A, Sharifirad G, Hassanzadeh A, et al. An assessment of the role of perceived benefits, barriers and self-efficacy in predicting dietary behavior in male and female high school students in the city of Izeh, Iran. JEHP 2014; 3 (8): 42-7.
24. Sharifirad GR, Amidi MM, Akbarzadeh K. Hygiene of School Food-Shops And Effects Of Training On Their Keepers In Esfahan. SJIMU 2005; 12: 17-23.
25. Sharma M. Theoretical foundations of health education and health promotion. 3th ed. London: Jones & Bartlett Publishers; 2016.
26. Stokes E, Ashcroft A, Platt MJ. Determining Liverpool adolescents' beliefs and attitudes in relation to oral health. Health Educ Res 2006; 21: 192-205.
27. Tahere Etesamifard, Seyed Mohammad Mahdi Hazavehei, Akram Karimi Shahanjarini, et al. Investigating the nutritional status of iron deficiency in youth girl students. Medical Science, 2018, 22(93), 450-454
28. Yue A, Marsh L, Zhou H, et al. Nutritional Deficiencies, the Absence of Information and Caregiver Shortcomings: A Qualitative Analysis of Infant Feeding Practices in Rural China. PLoS ONE 2016:11: 1-21.
29. Zabinski MF, Daly T, Norman GJ, et al. Psychosocial correlates of fruit, vegetable, and dietary fat intake among adolescent boys and girls. J Am Diet Assoc 2006; 106: 814-21.
30. Zamani AF, Faghihzadeh S, Sadeghi F. Application of the Health Belief Model for unhealthy eating prevention among primary school children in Arak/Iran (2004-2005). J Kermanshah Univ Med Sci 2008; 11: 352-67.