



Effect of the Educational Program Based on the Planned Behaviour Theory on Breakfast Consumption of the High School Students

ARTICLE INFO

Article Type

Original Research

Authors

Khani Jeihooni A.*¹ PhD,
Jafarzadeh S.² PhD,
Kashfi S.M.¹ PhD,
Rakhshani T.¹ PhD,
Afzali Harsini P.³ BSc

How to cite this article

Khani Jeihooni A, Jafarzadeh S, Kashfi S.M, Rakhshani T, Afzali Harsini P. Effect of the Educational Program Based on the Planned Behaviour Theory on Breakfast Consumption of the High School Students. Health Education and Health Promotion. 2021 ;9(1):41-47.

ABSTRACT

Aims Breakfast as the most important course meal is often neglected by children and adolescents. The present study aimed to determine the effect of the educational program based on the theory of planned behavior on breakfast consumption among the high school students of Fasa.

Materials & Methods The present study is a quasi-experimental study consisting of 120 students selected by the simple random sampling method. The data collection tool was a questionnaire including the demographic questions and the constructs of the theories of planned behavior theory that were completed self-reportedly before and three months after the educational intervention by the intervention and control groups. The intervention group received 10 educational sessions based on the constructs of the theory of planned behavior. Data were statistically analyzed using SPSS software version 22 and using chi-square, independent t-test, paired t-test, and Wilcoxon tests.

Findings Mean scores of attitudes (46.92 ± 6.26), intention (11.24 ± 2.53), perceived behavioral control (22.50 ± 4.25), subjective norms (40.84 ± 7.12) in the experimental group significantly increased after the education compared to the control group. The mean area of attitude after the intervention showed a more significant increase compared to other areas.

Conclusion The results showed the effect of the educational program based on the theory of planned behavior on the constructs of attitude, behavior, perceived behavioral control, subjective norms, and behavioral intention related to increased breakfast consumption among the first-grade high school students. Therefore, considering the appropriate context of education in schools, the low cost, and effectiveness of educational interventions, theory-based design, and implementation of educational interventions based on the mentioned structures can be suggested to increase breakfast consumption.

Keywords Theory of Planned Behavior; Breakfast; Students; Health Education

¹Departement of Public Health, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran

²Department of Nursing, School of Nursing, Fasa University of medical sciences, Fasa, Iran

³Department of Public Health, School of Health, Kermanshah University of Medical Sciences, Kermanshah, Iran

*Correspondence

Address: Department of Public Health, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran. Postal code: 7153675541.
Phone: +98 (917) 5328065
Fax: +98 (71) 37257288
Iran.khani_1512@yahoo.com

Article History

Received: September 30, 2020

Accepted: January 20, 2021

ePublished: May 09, 2021

CITATION LINKS

[1] The effect of education on increase ... [2] Selected data on the dietary habits ... [3] Breakfast consumption is positively ... [4] Breakfast consumption and adiposity ... [5] School breakfast and body mass index ... [6] Who European childhood obesity ... [7] The "motor of the day": Parent and ... [8] Effectiveness of educational intervention ... [9] Effect of educational interventions ... [10] Effect of breakfast composition on ... [11] Randomised controlled trial of a brief ... [12] Irregular breakfast eating and health ... [13] School breakfast program but not ... [14] Breakfast habits, nutritional status ... [15] Racial/ethnic and socioeconomic status ... [16] Family correlates of breakfast consumption ... [17] Survey the eating pattern between ... [18] Breakfast consumption augments appetite ... [19] Study of not eating breakfast and some ... [20] The breakfast-eating habits of inner ... [21] Breakfast habits of 1202 northern Italian ... [22] Survey of breakfast consumption status ... [23] Using social cognitive theory to determine ... [24] The comparison of educational intervention ... [25] Increasing the frequency of ... [26] Impact of breakfast skipping ... [27] Health Behavior and Health ... [28] Comparison of two methods of ... [29] The study of breakfast habits and ... [30] A systematic review of the quality ... [31] Breakfast consumption and body ... [32] The evaluation of breakfast intake ... [33] Application of an integrative approach ... [34] effect of an educational intervention ... [35] Evaluating the relationship between attitudes ... [36] Effectiveness of educational intervention ... [37] The effects of theory of planned behavior ... [38] Prediction of helmet use among Iranian ... [39] Application of a combined approach to identify ... [40] effectiveness of school-based interventions ... [41] Using the two factor Theory of Planned ...

Introduction

As the first meal of a day, breakfast should provide energy in the range of 20% to 35% of all energy needed for the body during a day [1]. Because of the rapid growth, biological, psychological, and emotional changes, adolescence is very important. It is a period in which new and relatively sustainable eating habits emerge. One of the most favorable habits is breakfast that positively affects nutritional balance, physical growth, educational performance, and learning [2]. The importance of breakfast in contributing to the nutrient intakes of children and adolescents has been recognized for decades and has been the topic of numerous reviews. These reviews and studies published more recently have indicated that breakfast consumption is frequently associated with higher energy and nutrient intakes. The overall nutrient profile appears most favorable among those who consume breakfasts that include ready-to-eat cereal (RTEC). Although most studies have been conducted in the USA, research conducted with children from other countries has yielded similar findings [3]. Regular breakfast consumption has repeatedly been shown to be associated with healthy body weights [4, 5], and children who skip breakfast are more likely to be overweight than children who consume breakfast regularly [3, 6, 7]. Since breakfast follows the longest period of hunger in the day and its regular consumption can drastically increase the absorption of micronutrients such as calcium, iron, and vitamins for growth, it is considered the most important course meal of the day. Therefore, breakfast is closely associated with physical health and longevity, balanced weight, improved cognitive functions, increased short-term memory, attention, and concentration [7-9]. The results of numerous studies also indicated the beneficial effects of breakfast consumption on improving nutrition quality, higher ability to learn and doing school assignments, reduced absenteeism, and preventing overweight [10-12]. Hence, eliminating this course meal can decrease the nutrients necessary for the brain, cognitive functions, and physical growth, leading to behavioral problems such as decreased learning ability, hyperactivity, irritability, tobacco use, and decreased physical activity [2, 3]. Various studies have shown that despite the many benefits of breakfast, the consumption of this course meal has decreased from the last half of the century to mere neglect by children [2, 3, 13]. The studies in the United States show that almost 25% of students go to school without having breakfast [14]. Surveys in Iran also show that 8% of students at Langrood Elementary School, 15.2% in Urmia, and 18.2% in Sanandaj go to school without having breakfast [15-17]. As children and adolescents get older, avoiding breakfast also increases. According to various studies, the main reasons for not having

breakfast include lack of hunger, lack of desire to eat breakfast, and oversleep [18-20]. Given that food choice is a complex behavior and is influenced by different environmental, individual, and biological factors, considering the importance of the relationship of these three factors in children's and adolescents' food choices is essential [15]. In this regard, some experts believe that one of the causes of the failure of educational programs is the lack of attention to etiological studies and their structuring without psychosocial models as a specific intellectual framework in educational programs [16]. Since the nutritional habits and behaviors form in childhood, their correction in the early years of life, especially in educational settings, can prevent childhood and adolescent diseases [17]. It should be noted that the effectiveness of educational programs largely depends on the correct use of educational theories and models [17]. One of the most effective theories to predict and express nutritional behaviors is the theory of planned behavior. This theory predicts the occurrence of a particular behavior provided that the individual intends to do so. According to this theory, the behavior is predicted by three factors: (a) attitude: shows the individual's positive or negative evaluation of doing behavior; (b) subjective norm: refers to the social pressure perceived by individuals to perform or not to perform the intended behavior; (c) perceived behavioral control: the degree of an individual's sense of intended control to perform or not to perform a behavior. According to the theory, when there is no restriction on acceptance of a particular behavior, the individual may have or have not the complete control over a behavior because it may require factors such as resources, facilities, skills, etc. that the individual lacks [2, 21, 22]. In this regard, the school, teachers, and parents who convey the awareness, create the desired attitude and ultimately change students' behavior can play a decisive role in community health development because children and adolescents are less resistant to learning than other age groups. Moreover, since the correct concepts and patterns of behavior remain stable and can affect the child's future lifestyle, the children are considered the transmitter of health messages from school to family [23, 24, 11].

Evidence also shows that only a limited number of interventions were successful in increasing eating breakfast. It is believed that this unsuccessfulness is largely due to ignoring the cognitive variables that are related to this behavior. In a study, Kothe and Mullan have shown a systematic review, where between 11 studied articles, just three of them that focused on making changes in psychosocial variables were successful in increasing eating breakfast [1, 20, 21]. The results of eating breakfast in poor groups approve these findings, so that such studies rarely

reported the lack of food as a result of lack of breakfast, as an example in a study that was done among young people that lived in slums, just 3% of people that did not eat breakfast, said that food was not available for them. Instead, they reported that psychosocial factors such as lack of time and unwillingness to eat breakfast in the early hours a day are the main reason for breakfast skipping [21, 25, 26]. But so funny, now day's huge people both developed and developing countries still omit breakfast with various reasons. In Japan, based on a national dietary survey, the incidence of missing breakfast averages 14% in men and 9% in women, while in high school students be found 18%, also miss breakfast and 4% in elementary school. In Korea found that 31% of people aged 13-59 regularly miss breakfast, most of them young age and unmarried. While other developing countries such as Indonesia, the Philippines, and Thailand found 1-13% people with different age groups omit the breakfast 7, including Malaysia and Singapore [27, 28]. However, despite the omission of breakfast among the students, most of the studies in Iran have investigated the overall status of breakfast intake. The relationship between breakfast consumption and short-term memory, and few educational interventions were designed and implemented on this matter [15, 22-24, 29]. Although studies confirm the importance of intentions in predicting behavior, research shows that not all intentions are translated into action, and despite the widely known importance of regularly eating breakfast, the rate of breakfast skipping in many populations is very high [11, 30-33]. Therefore, the present study aimed to determine the effect of the educational program based on the theory of planned behavior on breakfast consumption among the high school students of Fasa in 2016.

Materials & Methods

This study is a quasi-experimental study performed on 120 first-grade high school students of Fasa. After necessary coordination, four girls' and boys' schools were selected by the simple random sampling, one school as the intervention group (one boy and one girl) and two as the control group. A sample size of 120 subjects was determined based on the Gheysvandi *et al.* [34] study with a 95% confidence level and statistical power of 80%. The subjects were divided into two groups of 60 subjects (experimental and control).

Inclusion criteria were the first grade of high school students with the written consent of their parents, and exclusion criteria included discontent about participation in the study and continued absence in the educational sessions. This study was approved by the Research Council of Fasa University of Medical Sciences (number research: 95234, Ethical code: IR.FUMS.REC.1396.217). It also provided

students and parents with adequate explanations about the purpose of the research and the confidentiality of their information. Besides, it was emphasized that the participants could leave the study at any time they would not wish to continue. With the parents' consent, the study units entered the study, and before conducting the educational program, the questionnaire was completed through self-report and interview. The intervention was performed in 10 sessions of 5-44 minutes for the experimental group.

The first and second sessions aimed to enhance the students' knowledge about food groups and how much they are consumed in breakfast. In the third and fourth sessions, the benefits of breakfast to improve student attitudes were discussed. In sessions five and six, strategies to increase self-efficacy regarding the correct pattern of breakfast consumption were emphasized. In order to reinforce the subjective norms, two educational sessions were held for teachers and parents on food groups and the benefits of breakfast. Two educational sessions were also held one month and two months after the intervention for the experimental group. Methods used in educational sessions included lecture, question and answer, group discussion, role play, booklet, brochure, and PowerPoint. Three months after the last educational session, the same questionnaire was completed by the intervention and control group participants to evaluate the effect of the educational intervention.

The data collection tool was a questionnaire based on the other studies [3, 5, 37, 29, 35] consisted of two general parts. The first part of the questionnaire was about demographic information and the second part was about the questions of the constructs of the theory of planned behavior. The number of questions and how to score them was as follows: the attitude toward the healthy breakfast consisted of 12 questions with a 1 to 5 point rating scale ranging from strongly agree (score 5) to disagree (score 1); The subjective norms motivating breakfast consumption consisted of 17 items with a 1 to 3 point rating scale ranging from strongly agree (score 3) to no comments (score 2) and disagree (score 1); The constructs of the perceived behavioral control also included 10 items with a 1 to 3 point rating scale ranging from the most likely (score 3) to the least likely (score 2) and unlikely (score 1); The healthy breakfast consumption behavioral intention consisted of 3 questions with a 1 to 5 point rating scale ranging from completely false (score 1) to false (score 2), uncertain (score 3), true (score 4) and completely true (score 5); The healthy breakfast consumption behavior included 12 questions about the types of food available during breakfast for one week. In this part, the amount of food consumed by each student was questioned, converted into food units, and evaluated and categorized whether they

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met the standards or not. The validity of the questionnaire was assessed by the content validity method. The questionnaire was designed based on the theory of planned behavior and the other studies. Then, it was evaluated by 10 health education experts and 2 nutritionists, and its validity was finally confirmed by the Lawshe table. Cronbach's alpha coefficient test was used to assess reliability after conducting a basic study on 30 students. Reliability coefficients were calculated as 0.77 for attitude constructs, 0.80 for subjective norms, 0.82 for perceived behavioral control, 0.79 for behavioral intention, and 0.78 for behavior. Data were analyzed using SPSS 22 and Chi-square, Independent t-test, Paired t-test, and Wilcoxon test. The significance level for all tests was considered less than 0.05.

Findings

The mean age of students was 15.85 ± 1.45 years in the experimental group and 15.98 ± 1.41 years in the control group, with no significant difference between the two groups ($p=0.108$). The mean BMI of the students in the experimental group was 21.09 ± 2.14 and 21.24 ± 2.08 in the control group, with no significant difference between the two groups ($p=0.165$). Table 1 shows the distribution of sex frequency, parents' education, parent's occupation, and birth rate in the intervention and control groups. Results of Chi-square and Fisher's exact test showed no significant difference between the two groups in terms of demographic variables before intervention ($p>0.05$).

Table 2 shows the mean and standard deviation of the scores of the theory of planned behavior in the intervention and control groups before and after the educational interventions. According to the results, comparing the mean scores of these variables with regard to the results of the independent t-test, there was no significant difference between the intervention and control groups before the educational intervention. However, there was a significant difference between the mean scores of perceived behavioral control attitude and behavioral intention in the experimental group before and three months after the educational intervention ($p<0.001$). Attitude compared to other constructs showed the highest increase after the education intervention.

According to the Wilcoxon test results, the mean of the breakfast nutrition's consumption, egg, halva, and milk in the experimental group increased significantly three months after the intervention, while in the control group, there was no significant difference.

Table 1) Frequency distribution of students' characteristics in the experimental and control groups before the intervention

Variables	Experimental group		Control group		Sig.
	Number	Percentage	Number	Percentage	
Gender					
Male	28	46.67	30	50.00	0.245
Female	32	53.33	30	50.00	
Birth order					
First	28	46.67	31	51.67	0.217
Second	20	33.33	22	36.67	
Third	12	20.00	7	11.66	
Father's education					
Illiterate	4	6.67	2	3.33	0.135
Primary/ Secondary school	20	33.33	18	30	
High school	24	40.00	25	41.67	
College	12	20.00	15	25	
Father's occupation					
Self-employed	42	70.00	40	66.67	0.521
Employed	18	30.00	20	33.33	
Mother's education					
Illiterate	5	8.33	4	6.67	0.413
Primary/ Secondary school	25	41.67	24	40.00	
High school	22	36.67	20	33.33	
College	8	13.33	12	20.00	
Mother's occupation					
Housewife	54	90	56	93.33	0.324
Employed	6	10	4	6.67	

Table 2) Comparing mean scores of the construct of the theory of planned behavior before and three months after the educational intervention in the two experimental and control groups.

Variable	Before intervention	After intervention	p-value
Attitude			
Experimental	32.24±6.35	46.92±6.26	<0.001
Control	33.18±6.28	34.26±6.81	
p-value	0.165	p<0.001	
Subjective norms			
Experimental	27.14±5.36	40.84±7.12	<0.001
Control	26.75±5.84	27.84±5.64	
p-value	0.189	p<0.001	
Perceived behavioral control			
Experimental	16.35±3.28	22.50±4.25	<0.001
Control	17.02±3.12	17.90±3.10	
p-value	0.314	p<0.001	
Behavioral intention			
Experimental	6.24±2.54	11.24±2.53	<0.001
Control	6.65±2.27	6.78±2.32	
p-value	0.264	p<0.001	

Discussion

Adolescence is a period in which new and relatively sustainable eating habits emerge. One of the most favorable habits is breakfast that positively affects nutritional balance, physical growth, educational performance, and learning [8]. In this regard, the purpose of the present study was to determine the effect of the educational program based on the theory of planned behavior on breakfast consumption among the high school students of Fasa. The present study results showed that the

mean score of attitude in the intervention group increased significantly from 32.22 before the intervention to 46.92 three months after the educational intervention. Mohammadimanesh *et al.* study showed that the mean score of attitudes in the intervention group was significantly increased 2 months after the intervention [8], which was consistent with the present study results. Also, the results of Mohammadi Zeydi *et al.* study showed an increase in the mean score of the attitude of the intervention group regarding breakfast consumption and healthy snacks after educational intervention [36], which was consistent with the results of the present study, Hosseini *et al.*, Shahanjarini, Emily *et al.* [5, 11, 24]. The students' low attitude before the intervention can be attributed to their lack of positive understanding of the values and benefits of breakfast [3]. Therefore, when students evaluate the outcomes of behavior (breakfast consumption) positively, this factor will motivate and encourage them to change the behavior [11]. Then, education should be designed so that students first learn about the benefits of the behavior and become sensitive to the subject to be encouraged to perform healthy behavior. The present study results also showed that the mean score of subjective norms increased from 27.14 before the intervention to 40.84 after the intervention. In the study of Hosseini *et al.*, the educational intervention significantly changed the subjective norms in the intervention group after the educational sessions on increasing breakfast consumption [3] which was consistent with the results of the present study, Niknami *et al.* and Mohammadi Zaidi studies [36, 37]. Subjective norms as the predictors of behavioral intentions in breakfast consumption are also highly influenced by parents because, if they introduce breakfast as an important course meal, they will play an essential role in encouraging their children to have breakfast [3]. In the same way, the educational sessions in the present study showed the important role of parents in increasing the mean scores of subjective norms. The mean scores of perceived behavioral control among students in the intervention group increased from 16.35 before the intervention to 22.5 three months after the intervention. The results of the study by Gheysvandi *et al.* also showed the mean score of perceived behavioral control regarding milk and dairy consumption after educational intervention based on the theory of planned behavior [23], which was consistent with the results of the present study, Mohammadimanesh's, Mohammadi Zaidi, Hosseini, *et al.*, Niknami, and Aghamolaei studies [2, 25, 36-38]. The perceived behavioral control construct reflects individual beliefs about the presence or absence of resources and opportunities available to perform certain behaviors. Just as there are internal or external factors interfering with behavior, the increase of the

construct following educational intervention reflects the effect of education on the development of control and perception of the individual, as well as the effect of education on removing barriers preventing the promotion of the perceived behavioral control [2, 3]. Thus, it seems that mothers' employment, lack of opportunity to have breakfast, lack of variety in food, and emphasis on timely attendance at school could be the barriers discouraging students from having breakfast [2, 3, 28]. It should be noted that identifying these barriers and advising the student in choosing appropriate strategies to overcome the barriers can lead to a dramatic change in the wrong habits of children and adolescents. Findings of the present study indicated that the mean score of behavioral intention construct, like the other constructs, showed a statistically significant increase from 6.24 to 11.24 after educational intervention, which was consistent with the results of the studies by Mohammadimanesh, Mohammadi Zeidi, Hosseini, Niknami and Juon [3, 9, 26, 37, 33, 39-41]. Regarding the pattern of breakfast consumption, the findings also showed that the mean number of breakfasts in the experimental group during the three months of intervention significantly increased compared to before the intervention. Hosseini *et al.* also reported that breakfast consumption in the experimental group increased from 74.3 before the intervention to 98.3% 2 months after the educational intervention [9], indicating a positive effect of the educational program on improving the breakfast consumption pattern among the students. The present study results also showed that the mean number of eggs, halva, and milk consumption in the intervention group increased significantly after the intervention, which was consistent with the Cauwenberghes *et al.* study [4]. Overall, the findings of the present study showed a significant increase in mean scores of attitude, subjective norms, behavioral intention, and perceived behavioral control 3 months after the educational intervention in the intervention group compared to the control group, which was consistent with the results of Mohammadimanesh, Conner, Hosseini studies [8, 9, 42]. As a result, as health education, health-related attitudes and behaviors are formed at an early age, nutritional education implemented in schools based on well-proven patterns in early childhood and their repetition in adolescence can play a crucial role in preventing obesity, cardiovascular disease, and reducing health risk factors. Among the strengths of this study are providing a group with low consumption breakfast with community-based teaching intervention. Therefore, considering the appropriate context of education in schools, the low cost, and effectiveness of educational interventions, theory-based design, and implementation of educational interventions based on the mentioned structures can be suggested to increase breakfast consumption.

One of the limitations of the present study was the short time of the evaluation and follow-up of the educational program. Therefore, it is suggested that more time be allotted in future studies to evaluate the results better. Also, the final evaluation could be biased because it was based on the self-reporting method. In this regard, it is suggested that future studies combine the self-reporting method with direct observation of behavior and reporting by parents and school officials.

Conclusion

The present study results showed the effect of education based on the theory of planned behavior on the constructs of attitude, behavior, perceived behavioral control, subjective norms, and behavioral intention related to breakfast consumption among the first-grade high school students of Fasa. Improving some of the breakfast consumption pattern components in the intervention group indicated a positive effect of the educational program, which appears to be increased if the health educators systematically teach the students based on the patterns and theories of behavior change.

Acknowledgments: The researchers would like to express their gratitude to the research assistant of Fasa University of Medical Sciences and to all the staff, managers, and teachers of Fasa who helped us with this study.

Ethical Permissions: The study procedures were carried out following the Declaration of Helsinki. This study was approved by the Ethics Committee of Fasa University of Medical Sciences (Ethical code: IR.FUMS.REC.1396.217).

Conflict of Interests: The authors have no conflicts of interest to declare.

Authors' Contributions: Khani Jeihooni A. (First author), Introduction author/Methodologist/Original researcher (25%); Jafarzadeh S. (Second author), Introduction author/Methodologist/Statistical analyst/Discussion author (20%); Kashfi S.M. (Third author), Assistant researcher/Discussion author (20%); Rakhshani T. (Forth author), Statistical analyst/Discussion author (20%); Afzali Harsini P. (Fifth author), Methodologist/Statistical analyst/Discussion author (15%).

Funding/Sources: Research reported in this article was jointly supported by Fasa university of medical sciences. The funder approved the initial research proposal, cooperation with health centers and played no further role in the design of the study and collection, analysis, and interpretation of the data.

References

- 1- Salimi N, Karimi-Shahanjarini A, Mahdi Hazavehei SM, Roshanaei GH. The effect of education on increase breakfast consumption among female students based on social cognitive theory (SCT). *Health Scope*. 2018;7(4):e61758.
- 2- Rho JO, Lee JS. Selected data on the dietary habits of Korean students in Jeonju/South Korea. *Ernaehrungs Umschau Int*. 2013;60(11):194-200.

- 3- Barr SI, DiFrancesco L, Fulgoni VL. Breakfast consumption is positively associated with nutrient adequacy in Canadian children and adolescents. *Br J Nutr*. 2014;112(8):1373-83.
- 4- Blondin SA, Anzman-Frasca S, Djang HC, Economos CD. Breakfast consumption and adiposity among children and adolescents: An updated review of the literature. *Pediatr Obes*. 2016;11(5):333-48.
- 5- Wang S, Schwartz MB, Shebl FM, Read M, Henderson KE, Ickovics JR. School breakfast and body mass index: A longitudinal observational study of middle school students. *Pediatr Obes*. 2017;12(3):213-20.
- 6- Wijnhoven TMA, van Raaij JMA, Yngve A, Sjöberg A, Kunešová M, Duleva V, et al. Who European childhood obesity surveillance initiative: Health-risk behaviours on nutrition and physical activity in 6-9-year-old school children?. *Public Health Nutr*. 2015;18(17):3108-24.
- 7- Eck KM, Delaney CL, Clark RL, Leary MP, Pagan Shelnutt K, Olfert MD, et al. The "motor of the day": Parent and school-age children's cognitions, barriers, and supports for breakfast. *Int J Environ Res Public Health*. 2019;16(18):3238.
- 8- Mohammadimanesh A, Rakhshani F, Eyvazi R, Farhadian M. Effectiveness of educational intervention based on theory of planned behavior for increasing breakfast consumption among high school students in Hamadan. *J Educ Commun Health*. 2015;2(2):56-65. [Persian]
- 9- Hosseini Z, Aghamolaei T, Gharilpour Gharghani Z, Ghanbarnejad A. Effect of educational interventions based on theory of planned behavior to promote breakfast consumption behavior in students. *Hormozgan Med J*. 2014;19(1):e87421.
- 10- Mahoney CR, Tylor HA, Kanarek RB, Samuel P. Effect of breakfast composition on cognitive processes in elementary school children. *Physiol Behav*. 2005;85(5):635-50.
- 11- Kothe EJ, Mullan BA, Amaratunga R. Randomised controlled trial of a brief theory-based intervention promoting breakfast consumption. *Appetite*. 2011;56(1):148-55.
- 12- Yang RJ, Wang EK, Hsieh YS, Chen MY. Irregular breakfast eating and health status among adolescents in Taiwan. *BMC Public Health*. 2006;6:295.
- 13- Gleason PM, Dodd AH. School breakfast program but not school lunch program participation is associated with lower body mass index. *J Am Diet Assoc*. 2009;109(Suppl 2):S118-28.
- 14- Rampersau GC, Pereira MA, Girard BL, Adams J, Metzl JD. Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *J Am Diet Assoc*. 2005;105(5):743-60.
- 15- Delva J, O'Malley PM, Johnston LD. Racial/ethnic and socioeconomic status differences in over-weight and health related behaviors among American students: National trends 1986-2003. *J Adolesc Health*. 2006;39(4):536-45.
- 16- Pearson N, Biddle SJH, Gorely T. Family correlates of breakfast consumption among children and adolescents: A systematic review. *Appetite*. 2009;52(1):1-7.
- 17- Soheili Azad AA, Nourjah N, Norouzi F. Survey the eating pattern between elementary students in Langrood. *J Gilan Uni Med Sci*. 2007;16(62):36-41. [Persian]
- 18- Gwin JA, Leidy HJ. Breakfast consumption augments appetite, eating behavior, and exploratory markers of

sleep quality compared with skipping breakfast in healthy young adults. *Curr Dev Nutr*. 2018;2(11):nzy074.

19- Alimoradi F, Barikani A, Mohammadpoor-Asl A, Javadi M. Study of not eating breakfast and some related demographic factors in 14-18 years old adolescents of Sanandaj in 2013. *J Neyshabur Univ Med Sci*. 2015;2(5):57-64. [Persian]

20- Sweeney NM, Horishita N. The breakfast-eating habits of inner city high school students. *J Sch Nurs*. 2005;21(2):100-5.

21- Vanelli M, Iovane B, Bernardini A, Chiari G, Errico MK, Gelmetti C, et al. Breakfast habits of 1202 northern Italian children admitted to a summer sport school. Breakfast skipping is associated with overweight and obesity. *Acta Biomed*. 2005;76(2):79-85.

22- Rahimi T, Dehdari T, Ariaeian N, Gohari MR. Survey of breakfast consumption status and its predictors among Qom students based on the Pender's health promotion model constructs. *J Nutr Sci Food Technol*. 2012;7(2):75-84. [Persian]

23- Jalily M, Barati M, Bashirian S. Using social cognitive theory to determine factors predicting nutritional behaviors in pregnant women visiting health centers in Tabriz, Iran. *J Educ Commun Health*. 2015;1(4):11-21. [Persian]

24- Hazavehei S, Sharifirad Gh, Kargar M. The comparison of educational intervention effect using BASNEF and classic models on improving assertion skill level. *J Res Health Sci*. 2008;8(1):1-11.

25- Kothe EJ, Mullan B. Increasing the frequency of breakfast consumption. *Br Food J*. 2011;113(6):784-96.

26- Nuru H, Mamang F. Impact of breakfast skipping toward children health: A review. *Int J Commun Med Public Health*. 2015;2(3):201-9.

27- Glanz K, Rimer BK, Viswanath K. *Health Behavior and Health Education: Theory, Research and Practice*. Hoboken: John Wiley & Sons; 2008.

28- Sadrzadeh-Yeganeh H, Angoorany P, Keshavarz SA, Rahimi A, Ahmady B. Comparison of two methods of nutrition education techniques on breakfast-eating practice in primary school girls, Tehran. *J Sch Public Health Inst Public Health Res*. 2006;4(1):65-72. [Persian]

29- Karimi B, Sadat Hashemi M, Habibian H. The study of breakfast habits and its relationship with some factors in Semnan (Iran) pupils. *KOOMESH*. 2008;9(4):285-92. [Persian]

30- Mullan BA, Singh M. A systematic review of the quality, content, and context of breakfast consumption. *Nutr Food Sci*. 2010;40(1):81-114.

31- Mortazavi Z, Roudbari M. Breakfast consumption and

body mass index in primary, secondary and high school boys in Zahedan 2005-2006. *Iran J Endocrinol Metab*. 2010;12(4):345-51. [Persian]

32- Sohrabi Z, Mohammadi A, Eftekhari MH, Gaemi H. The evaluation of breakfast intake pattern and short-term memory status in junior secondary school students in Shiraz 2007. *J Shahrekord Univ Med Sci*. 2010;11(4):35-41. [Persian]

33- Karimi Shahanjarinin A, Shojaezade D, Majdzade SR, Rashidian A, Omidvar N. Application of an integrative approach to identify determinants of junk food consumption among female adolescents. *Iran J Nutr Sci Food Technol*. 2009;4(2):61-70. [Persian]

34- Gheysvandi E, Eftekhar Ardebili H, Azam K, Vafa MR, Azadbakht M, Babazadeh T, et al. effect of an educational intervention based on the theory of planned behavior on milk and dairy products consumption by girl-pupils. *J Sch Public Health Inst Public Health Res*. 2015;13(2):45-54. [Persian]

35- Barati M, Yarmohammadi A, Mostafaei S, Gholi Z, Razani S, MiryHazave SS. Evaluating the relationship between attitudes and beliefs, influencing fastfood eating among students of Hamadan University of Medical Sciences. *J Health Syst Res*. 2014;10(3):500-8. [Persian]

36- Mohammadi Zeidi I, Pakpour A. Effectiveness of educational intervention based on theory of planned behavior for promoting breakfast and healthy snack eating among elementary school students. *Razi J Med Sci*. 2013;20(112):68-78. [Persian]

37- Hatefnia E, Niknami Sh, Mahmoudi M, Lamieian M. The effects of theory of planned behavior based education on the promotion of mammography performance in employed women. *J Birjand Univ Med Sci*. 2010;17:50-8. [Persian]

38- Aghamolaei T, Tavafian SS, Madani A. Prediction of helmet use among Iranian motorcycle drivers: an application of the health belief model and the theory of planned behavior. *Traffic Inj Prev*. 2011;12(3):239-43.

39- Juon HS, Choi S, Klassen A, Roter D. Impact of breast cancer screening intervention on Korean-American women in Maryland. *Cancer Detect Prev*. 2006;30(3):297-305.

40- van Cauwenberghe E, Maes L, Spittaels H, van Lenthe FJ, Brug J, Oppert JM, et al. effectiveness of school-based interventions in Europe to promote healthy nutrition in children and adolescents: Systematic review of published and 'grey' literature. *Br J Nutr*. 2010;103(6):781-97.

41- Conner MT, Hugh-Jones S, Berg CM. Using the two factor Theory of Planned Behavior to predict adolescent breakfast choices. *Educ Child Psychol*. 2011;28(4):37-50.