

Research Article

The effect of educational intervention based on the Theory of Planned Behavior on the physical activity of female students in Behbahan City (2016)

**Bakhshesh Leila¹, Shakerinejad Ghodratollah²,
Karami Khodabakhsh^{3*} and Hagheghizadeh Mohammad Hosain⁴**

¹MSc Student, Department of Health Education and promotion,
Department of public Health , Faculty of Health,
Ahvaz Jundi Shapur University of Medical Sciences ,
Ahvaz, Iran.L. bakhshesh@ yahoo.com

²Associate Professor, Health Education Research Group, the Academic Center for Education,
Culture and Research (ACECR) - Khuzestan, Ahvaz, Iran .shakerinejad@yahoo.com

^{3*}Corresponding author: Professor, Department of Public Health,
Faculty of Health, Social Determinant of Health Research Center,
Ahvaz Jundi Shapur University of Medical Sciences,
Ahvaz, Iran. Email: karamikb@gmail.com. Tel: +989161112788.

⁴Department of Statistics and Epidemiology, Faculty of Health,
Ahvaz Jundi Shapur University of Medical Sciences, Ahvaz, Iran. Mhhaghighy@yahoo.com

ABSTRACT

Background: Due to inactive lifestyle in different societies it seems interventions to increase physical activity particularly in early adolescence is essential. Given the fundamental role of physical activity in health and quality of life this study aimed to evaluate an educational intervention based on the "Theory of Planned Behavior" on the physical activity of girl high school students.

Methods: This quasi experimental study was performed on 140 students who were randomly was chose in test and control groups. Data was collected by using a researcher-made valid and reliable questionnaire by self-report method with pre-test/post-test procedures. The educational interventions were performed on students for 3 weeks in test group and also for their teachers and parents in two sessions. Post test was conducted 8 weeks after the intervention. Data were analyzed by using SPSS-20 software and appropriate statistical tests including descriptive statistics chi-square, independent-t and paired t-tests.

Results: Before the intervention there was no significant differences was found between test and control groups in mean scores of model structures ($p > 0.05$), but after the intervention show statistically significant increases in the mean scores of behavior intention, attitude, subject norms, and perceived behavioral control.

Conclusion: The results show that the educational intervention based on the Theory of Planned Behavior has a positive effect on the physical activity of female students so we suggested using of interventions based on this model in related health behavior programs.

Key words: Health Education, Physical Activity, Theory of Planned Behavior, Students

INTRODUCTION

Technology improvements and generally changing the life style has led to less physical activity among people [1], which is one of the most important

health problems in our present society [2]. Having a regular physical activity is considered as an important part of a healthy life style that has been

known as a significant and effective factor on health in all ages [3]. According to the World Health Organization, each kind of physical activity performed by the skeletal muscles requiring energy consumption is called physical activity [4]. This behavior is considered as one of the priorities of various organizations working on sanitation and health [5], which is recommended in a society to improve public health and decrease the spreading diseases and medical expenses [6]. The Health Ministry of America has suggested a sixty minute mild to intense physical activity for teenagers in a day [7]. Regular physical activity has various physical, mental, and social advantages for teenagers including preventing cardiovascular illnesses, diabetes, obesity, and increasing the bone density which generally increase the physical readiness [8, 9]. Moreover, there are various documents, which prove that doing regularly physical activity leads to mental improvement, decreasing the depression symptoms and finally improving the life quality [2]. According to the data released by the World Health Organization, at least sixty percent of the people in the world do not perform the physical activity needed for their health; that is why nowadays, inactivity is the fourth factor of death in the world. Based on the statistics, annually, two million people die due to their inactivity [3, 4]. Moreover, based on the researches conducted up to now, not enough physical activity leads to 30% of cardiovascular diseases, 21-35% of breast and colon cancer and 27 percent of diabetes [10]. Inactivity also increased the risk of cardiovascular diseases to 1.5 times [11]. A large number of epidemiological studies have proved that physical activity decreases while a person gets older. Three national studies on Iranians showed that more than 80 percent of them are inactive [12]. The results of a national study among Iranians showed that increasing inactivity in civil and rural areas among women and men aged 15-64 were 76.2 and 58.5 percent respectively [13]. Based on this survey, inactivity among Iranian teenagers was 81.5 percent [14] and inactivity in whom aged above 15, was estimated as 31 percent [13]. Meanwhile,

females generally were more inactive than males. [15] Accordingly, since having regular physical habits from childhood and adolescence is a significant factor for having a healthy and active life in future, many of the behavioral habits and beliefs are formed in these ages [16]. Therefore, these ages are a suitable opportunity for encouraging them to have an active and healthy life style [17]. Accordingly, considering the effective factors on increasing the physical activity to prevent catching a disease and having a healthy and active life style in the first ages of adolescence seems necessary [18]. Therefore, preparing people for getting familiar and following an appropriate life style necessitates recognizing the factors, effective training and creating a suitable behavioral model [19]. Thus, choosing a suitable model or theory for a behavioral change is required in health planning [3]. One of these theories is the Theory of Planned Behavior, which has been developed by Ajzen [20]. According to this theory, the determinant factor for the initial behavioral intention, which represents "the person's motivation for adopting a behavior", is the consequence of : the personal attitude towards behavior, personal perceptions of social norms in our life environment and people around us and personal perceptions to control doing or not doing the behavior. The Theory of Planned Behavior has been considered as the most valid theory for predicting, defining and understanding the behavior of physical activity [21]. In this theory, a person is a reasonable actor so that the person processes the information before performing the behavior. However, during this process, the person's original beliefs and therefore her/his behavior may change [22]. Associating to the significance of using this theory in the present study, it should be mentioned that a number of studies have affirmed its ability to predict regarding to the behavior of physical activity [23]. Moreover, this theory has been widely used in health behaviors such as designing a diet, participating in health screening programs, and the safe road. On average, this theory is able to explain 40 percent of the relationship between health intention and behavior.

Thus, it is claimed that this model has the potential to develop the interventions of changing the behavior [24]. Accordingly, due to the importance of enhancing the physical activity in teenagers, especially in teenage girls due to this fact that more than half of them had a no desirable life style in terms of physical activity, the present research was conducted based on the Theory of Planned Behavior as a theoretical framework to investigate the effect of educational intervention on enhancing the physical activity in female teenagers studying in the eighth grade of high school in Behbahan City.

METHODOLOGY

This study is a quasi-experimental interventional study conducted on 140 female students studying in the eighth grade of high school in Behbahan city, Khuzestan, Iran in 2016. Inclusion criteria of the students for contributing in this study were health confirmation, not having any disease and disability and written parents' consent. To conduct the study, permission is obtained from the Medical Ethics Committee of Ahvaz Jundi Shapur University of Medical Sciences and formal orders were obtained from the Education Departments in Khuzestan province and Behbahan City. The sample size calculated based on a previous study [25] and Pukak formula. It was considered as 59 cases with the Confidence interval of 95% and test power of 80%. With considering a 15% likely loss, the sample size increased to 70 cases for each group. Due to the fact that in Behbahan City, economic, cultural and social condition are almost the same among people, all the schools in this town were devoted to one region and the multi-stage random sampling was performed. On the other hand, among 17 high schools in the town, two schools were selected using simple randomization method; one school was considered as the intervention group and the other as the control group. Then, from each school students in eighth grade were randomly selected. Overall 140 students (70 in the intervention group and 70 in the control group) were randomly entered the study. Data collection instruments were a previous standard researcher-made questionnaire. This

questionnaire consisted of demographic questions and behavior questions which measured their physical activity during a week age using a five-option scale from 0 (not at all) to 4 (always). Obtaining a higher score represented more physical activity.

The third part of the questionnaire was devoted to the theoretical structures of planned behavior which was measured using a five-option Likert Scale from 1 (totally disagree) to 5 (totally agree) and a higher score showed their stronger attitude towards physical activity. The structures of abstract norms consisted of four questions which were measured using a five-option scale from 1 (totally disagree) to 5 (totally agree) and getting a higher score in this section showed more control on the behavior of physical activity. The behavioral intention structure with three questions was measured using a five-option scale from 1 (totally disagree) to 5 (totally agree) and a higher score represented a stronger behavioral intention to do physical activity. Needed to mention that in this questionnaire, the structures were directly measured.

To assess the reliability of the questions, Cronbach's alpha coefficient was used. The questionnaire was given to 30 people out of the study to be completed. Cronbach's alpha coefficient was estimated as 0.71 for the structure of attitude, 0.76 for the subjective norms, 0.63 for the structure of perceived behavioral control and 0.53 for the structure of behavioral intention. Moreover, to assess its content validity, the questionnaire was given to ten experts at health training and nutrition and their comments were all considered. Then, content validity ratio (CVR=0.91) and the content validity index (CVI=0.99) were calculated for each item.

At the first of the study, the questionnaire was completed by both intervention and control groups. After collecting data, they analyzed by SPSS software (version 20). According to the initial analysis and the pre-test results, the educational intervention based on the Theory of Planned Behavior was planned and run for the intervention group. However, no educational programs were conducted for the control group. In this program,

all educational interventions were conducted by speech, questioning and answering, brainstorming and group discussion. In addition, to increase the effect of the educational program, some educational texts including pamphlets and posters were delivered to the intervention group after getting their confirmation. Before starting the intervention, a 30-minute meeting for the principals and teachers and one 30-minute meeting for parents of subjects in the intervention group were held to inform them of the program, its aims and to attract their support and cooperation. In these meetings, the role of school environment and family to adopt healthy behavior in teenagers, specifically in girls who are more flexible, and also the significance of doing physical activity and its positive effects on our physical, mental and social dimensions were emphasized. At the end of the meeting, a summary of the educational pamphlets were given to them for more information.

The educational program was delivered in three 60-minute sessions during two weeks. In the first session, a person talked about the significance of physical activity and its positive effects on physical, mental and social health. In the second session, to create a correct attitude and overcome the negative attitude and also to reinforce positive attitude, the subjects were asked to discuss the advantages and barriers of doing physical activity and manageable fields of physical activity for about 15 minutes. In the third session, the subjects were asked to select a small and possible physical activity. For instance, if a 30-minute hike in one time was not possible for her, she could break it into a two 15-minute hike. In addition, what had been discussed during two previous sessions was reviewed. In the second stage of collecting data and to assess the educational effect of the program, the pre-test was taken eight weeks after the intervention. All collected data were analyzed in SPSS software version 20. To compare the scores of theoretical structures and the behavior before and after the intervention in each group, the paired-T test, to compare increasing the score of

the structures between two groups, the independent T-test and to assess the homogeneity of the groups in terms of demographic variables, the independent T-test and Chi-square test were taken. The significant level in the test was considered as 0.5. Finally, in terms of ethical issues, a complete educational package was given to the subjects in the control group.

RESULTS

In this study, 140 female students studying in the eighth grade were randomly selected for the study in two groups of intervention and control (70 people in each group). The variables in this study had a normal distribution. The results show no significant difference in both groups in terms of demographic variables ($p > 0.05$) and both groups were homogenized (Table 1) ,(Table 2) . Moreover, the results of Independent-T test showed that before the intervention, there was no significant difference in the intervention and control groups between the mean score of physical activity behavior and the theoretical structures of planned behavior. ($p > 0.05$) However, after the educational intervention, there was a significant difference between the scores and attitude, subjective norms and the perceived behavioral control scores, intention and performance scores increased. ($p < 0.05$) (Table 3).As you can see in before the educational intervention between both groups, there was not a significant difference in the mean score of attitude. ($p = 0.821$) However, after the educational intervention between both groups, a significant difference was observed in the mean score of attitude. ($p = 0.001$) The present study showed that before the intervention, there was not a significant difference between both groups in terms of the mean score of subjective norms. ($p = 0.721$),but after the educational program, there was a significant difference between two groups ($p = 0.001$). Moreover, in terms of mean score of perceived behavioral control, before the intervention, there was not a significant difference ($p = 0.073$), however there was a significant difference after the intervention

between two groups ($p=0.001$). The present study showed that in terms of the mean score of intention, there was not a significant difference between two groups ($p=0.759$), however a significant difference was observed between two groups after the intervention ($p=0.001$). In addition, the present study showed that in terms of mean score of behavior in the subjects, there was not a significant difference between both groups before the intervention ($p=0.250$), however a significant difference was observed after the intervention ($p=0.001$). (Table3). Paired-T test also showed that there was a significant difference in the mean scores of theoretical variables of planned behavior and the behavior of physical activity before and after the intervention ($p<0.05$). However, in the control group, no significant difference was observed in the attitude, subjective norms, perceived behavior control and intention ($p>0.05$), but a significance differences was found in their behavior after intervention (Table4).

DISCUSSION

Various studies conducted on physical activity across the world show that physical activity in adolescence has severely decreased [26]. Therefore, informing teenagers of physical activity and getting familiar with its effective factors can motivate and encourage them to do physical activity. Moreover, due to a wide use of the Planned Behavior Theory to improve physical activity, this study aimed to investigate the effect of educational intervention based on this theory on enhancing physical activity among students in Behbahan City.

The results of this study showed that the educational intervention based on the Theory of Planned Behavior improve students' physical activities. In this study, after the intervention, the score of attitude towards behavior increased, which showed the positive effect of the training program in the intervention group. However, in the control group, no changes were seen in the attitude scores after the intervention. These findings are consistent with previous studies[24,

27-29] but are contradictory with other researchers findings [6, 30]. The perceived support from family, friends, and teachers is one of the effective and simplifying factors of health behaviors [23]. In the present study, the educational meeting for teachers and parents and providing them with educational materials as well as creating a perceived positive attitude among students towards affective people around themselves could be effective to increase the perceived subjective norms among the students and also the average score of this structure increased after the intervention. These findings are consistent with studies conducted by previous authors [31, 32] and are contradictory with other findings [13, 27, 30, 33]. The difference may be due to the inappropriate education method or insufficient training time. The perceived behavioral control is one of the important factors to carry out a behavior. In this regard, the findings of the present study showed that after the intervention, perceived behavioral control increased among the students in the intervention group. Therefore, it seems that the educational program was effective to reinforce the perceived behavioral control among students to do physical activity in a way that students feel to have enough control to do the behavior and they can do it under any circumstances. This finding was consistent with other findings [25, 27, 32, 34, 35] but it was not consistent with other studies [30, 32].

This inconsistency was probably because the perceived behavioral control was dependent on the existence or lack of a simplifier or the barriers of behavior and to plan the interventions, the environmental and personal conditions should be considered. As a general rule, positive attitude, appropriate subjective norms and increasing the perceived behavioral control lead to increasing the intention to do the behavior. According to the present study, in the intervention group, compared to the score of behavior, the intention score increased after the intervention, which was consistent with the previous studies[27, 28, 30, 32]. In a study[36] the intention of a behavior was

introduced as the most important factor affecting the physical activity in students. Other studies show a significant increase in the behavioral intention in the elders to go on a hike [34].but it was not consistent with other studies [33]. In the present study, It seemed that providing the educational materials regarding to the advantages of physical activity, disadvantages of inactivity, carrying out some behaviors such as going on a hike, jump roping, going up the stairs, getting familiar with the barriers of doing a behavior and encouraging people to carry out the physical activity led to increasing the behavior in the subjects. This study showed that after the educational intervention, the physical activity among students increased in the intervention group. This result was consistent with previous studies [24, 27, 31, 37],but was not consistent with another study[30]which was probably due to the great number of barriers such as getting older and lack of a suitable environment for doing physical activity at work place . It was also inconsistent with a study[38]on physical activity in outpatients, which was probably because of different educational method, self-reporting by the subject about doing exercises and the differences of sample size.Significant differences in behavior in control group may be related to the closed time of their final examination.

Limitations for design and conduct of our study was data collection instrument , a questionnaire, which was completed in self-reporting mode in which it was not possible to supervise the students for correct answer. The subjects were students, so the researchers were faced with some challenges to find the appropriate time to start training and also having appointment withtheir parents. Good cooperation of school authorities contributed to overcome these limitations.

CONCLUSION

The results of this research showed that applying an educational program based on the Theory of Planned Behavior can improve the behaviors relating to the physical activity in students and it

seems that applying the analytical theories of behavior to run an educational program appropriately can lead to suitable results. According to the results of this study, changing the individual attitude, abstract norms and reinforcing the behavioral control can lead to increasing the intention and physical activity. Moreover, improving the quality of the physical education courses, in which physical activity is placed in the center, providing a suitable place, instruments and safe equipment for exercising at schools, holding the educational courses for parents to attract their attention to sport and physical activity and informing the students of the physical activity to prevent obesity and diseases associated with inactivity can be applied as appropriate strategies to increase physical activity in students.

ACKNOWLEDGMENT

This article is a part of a Master thesis in Health Education that approved by the research deputy of Ahvaz Jundi Shapur University of Medical Sciences (AJUMS) with the code of U-95044. Hereby, the researchers thank the sympathetic AJUMS officials and all who helped us in this study, particularly the authorities of the Education Department of Ahvaz and Behbahan Cities, the managers, teachers and students and their parents who participated in this study.

REFERENCES

- [1] D. Khajavi and N. Shahbazi, "Predicting Physical Activity Level of Female College Students based upon Sources of Perceived Social Support," *JSR*, vol. 17, pp. 108-116, 2016.
- [2] Z. Mehdi Fard, KH. Hekmat, T. Marshi, and R. Bagri "The Effect educational based on the theory of planned behavior on the physical activity of women of child bearing age," *Journal of Nursing and Midwifery* vol. 7, pp. 1-12 (In Persian), 2011.
- [3] M. M. Rostami, S. Hazavehei, B. Moeini, G. Roshanaei, and M. Taheri, "Applying

- BASNEF Model for Predicting Regular Physical Activity of Female High School Students in Hamadan: A Cross-Sectional Theory Based Study," *Journal of Zanjan University of Medical Sciences & Health Services*, vol. 22, 2014.
- [4] WHO. (2015). *Global Strategy on Diet, Physical Activity and Health* Available: <http://www.who.int/dietphysicalactivity/pa/en>
- [5] W. Heath, D. C. Parra, O. L. Sarmiento, L. B. Andersen, N. Owen, S. Goenka, *et al.*, "Evidence-based intervention in physical activity: lessons from around the world," *The lancet*, vol. 380, pp. 272-281, 2012.
- [6] W. Mok and A. Lee, "A case study on application of the theory of planned behaviour: predicting physical activity of adolescents in Hong Kong," *J Community Med Health Educ*, vol. 3, pp. 2161-0711.1000231, 2013.
- [7] WHO. *Sedentary Lifestyle: A Global Public Health Problem*, 2008
- [8] H. Park and N. Kim, "Predicting factors of physical activity in adolescents: A systematic review," *Asian nursing research*, vol. 2, pp. 113-128, 2008.
- [9] C. M. Hoehner, I. C. Ribeiro, D. C. Parra, R. S. Reis, M. R. Azevedo, A. A. Hino, *et al.*, "Physical activity interventions in Latin America: expanding and classifying the evidence," *American journal of preventive medicine*, vol. 44, pp. e31-e40, 2013.
- [10] M. Chan Sun and K. Azmutally, "Leisure-time physical activity among university students in Mauritius," *Am J Health Research*, vol. 1, pp. 1-8, 2013.
- [11] F. Darsareh, T. Aghamolaei, and A. Ghanbarnejad, "Prediction of Physical Activity based on BASNEF Model Constructs among female teachers in Schools of Bandar Abbas," *Journal of Preventive Medicine*, vol. 2, pp. 1-9, 2015.
- [12] L. Hassani, A. Shahab Jahanlu, A. Ghanbarnejad, and A. Salimian Rizi, "Effect of educational intervention based on TTM model about regular physical activity among highschool gairl students in lenjan," *Journal of Preventive Medicine*, vol. 1, pp. 22-30, 2015.
- [13] F. Saber and S. Gh, "The survey of theory of planned behavior constructs regarding girl student's physical activity in Naein payame Noor University in 2012 ", *Health System Res*, vol. 9, pp. 1014-21, 2013.
- [14] H. Sanaee Nasab, A. Delavari, R. Tavakkoli, M. Samadi, and M. Naghizade, "Knowledge, attitude and practice towards physical activity by one of Iran Medical Sciences Universities personnel," *Journal Mil Med*, vol. 11, pp. 25-30, 2009.
- [15] R. C. Plotnikoff, S. A. Costigan, N. Karunamuni, and D. R. Lubans, "Social cognitive theories used to explain physical activity behavior in adolescents: a systematic review and meta-analysis," *Preventive medicine*, vol. 56 ,pp. 245-253, 2013.
- [16] L. Mounesan, M. Sepidarkish, H. Hosseini, A. Ahmadi, G. Ardalan, R. Kelishadi, *et al.*, "Policy Brief for Promoting Physical Activity among Iranian Adolescents," *Journal of Isfahan Medical School*, vol. 31, 2013.
- [17] H. Tamimi and A. Noroozi, "Determinants of Physical Activity in High School Girl Students: Study Based on Health Promotion Model (HPM)," *Journal of Health*, vol. 6, pp. 527-537, 2016.
- [18] M. Yekaninejad, A. Akaberi, and A. Pakpour, "Factors associated with Physical Activity in adolescents in Qazvin: an application of the theory of planned behavior," *Journal of North Khorasan University of Medical Sciences*, vol. 4, pp. 449-456, 2012.
- [19] M. Baghianmoghadam, M. Gholianavval, M. Karimi, T. Kamalikhah, and M. R. Roohi , "Investigating the views of male students on using bicycle based on the theory of Planned Behavior in Yazd University of Medical Sciences," *Journal of School of Public Health* Vol 13(4), pp. 83-92, 2014.

- [20] I. Ajzen, "The theory of planned behavior," *Organizational behavior and human decision processes*, vol. 50, pp. 179-211, 1991.
- [21] A. Defranc, S. Van den Broucke, R. Leroy, K. Hoppenbrouwers, E. Lesaffre, L. Martens, *et al.*, "Measuring oral health behaviour in Flemish health care workers: an application of the theory of planned behaviour," *Community dental health*, vol. 25, pp. 107-114, 2008.
- [22] A. Rashidian, J. Miles, D. Russell, and I. Russell, "Sample size for regression analyses of theory of planned behaviour studies: case of prescribing in general practice," *British journal of health psychology*, vol. 11, pp. 581-593, 2006.
- [23] D. S. Downs and H. A. Hausenblas, "Elicitation studies and the theory of planned behavior: a systematic review of exercise beliefs," *Psychology of sport and exercise*, vol. 6, pp. 1-31, 2005.
- [24] M. Solhi, F. Zinatmotlagh, S. K. Karimzade, M. H. Taghdisi, and F. Jalilian, "Designing and implementing educational program to promote physical activity among students: An application of the theory of planned behavior," 2012.
- [25] E. Gheysvandi, K. Azam, M. Azadbakht, T. Babazadeh, and S. Fathizadeh, "Effect of an educational intervention based on the theory of planned behavior on milk and dairy products consumption by girl-pupils," *Journal of School of Public Health and Institute of Public Health Research*, vol. 13, pp. 45-54, 2015.
- [26] US Department of Health and Human Services Physical Activity and Health: a Report of the surgeon General. Atlanta (GA): US Department of Health and Human Services Center for Disease Control and Prevention", 1996.
- [27] KH Jafarpour, A. Arastoo, and M Araban, "The effect of health education based on theory of Planned behavior to enhance physical activity in women Shushtar city health centers Shushtar," *Journal of Gynecology and Infertility*, vol. 19, pp. 62-74 (In Persian), 2016
- [28] Z. Jalambadani, D. Shojaei Zadeh, M. Hoseini, and R. Sadeghi, "The effect of education for iron consumption based on the theory of planned behavior in pregnant women in Mashhad," *Journal of Clinical Nursing and Midwifery*, vol. 4, pp. 59-68, 2015.
- [29] R. Pawlak, D. Brown, M. K. Meyer, C. Connell, K. Yadrack, J. Johnson, *et al.*, "Theory of planned behavior and multivitamin supplement use in Caucasian college females," *The journal of primary prevention*, vol. 29, pp. 57-71, 2008.
- [30] S. Ahmadi Tabatabaei, M. Taghdisi, N. Nakhaei, and F. Balali, "Effect of educational intervention based on the theory of planned behaviour on the physical activities of Kerman Health Center's Staff (2008)," *J Babol Univ Med Sci*, vol. 12, pp. 62-9, 2010.
- [31] KH. Omidfard Hekmat, T Marashi, and R. Bagheri, "The Effect educational based on the theory of planned behavior on the physical activities of women of childbearing age," *Journal of Nursing and Midwifery* vol. 7, pp. 1-12 (In Persian), 2011.
- [32] H. Tsorbatzoudis, "Evaluation of a School-Based Intervention Programme to Promote Physical Activity: An Application of the Theory of Planned Behavior," *Perceptual and Motor Skills*, vol. 101, pp. 787-802, 2005.
- [33] M. W. Parrott, L. K. Tennant, S. Olejnik, and M. S. Poudevigne, "Theory of planned behavior: Implications for an email-based physical activity intervention," *Psychology of sport and exercise*, vol. 9, pp. 511-526, 2008.
- [34] B. Reger, L. Cooper, S. Booth-Butterfield, H. Smith, A. Bauman, M. Wootan, *et al.*, "Wheeling Walks: a community campaign using paid media to encourage walking among sedentary older adults," *Preventive Medicine*, vol. 35, pp. 285-292, 2002.

- [35] J. J. Martin, K. Oliver, and N. McCaughtry, "The theory of planned behavior: Predicting physical activity in Mexican American children," *Journal of sport and Exercise Psychology*, vol. 29, pp. 225-238, 2007.
- [36] B. Moeini, F. Jalilian, M. Jalilian, and M. Barati, "Predicting factors associated with regular physical activity among college students applying basnef model," *Scientific Journal of Hamadan University of Medical Sciences*, vol. 18, pp. 70-76, 2011.
- [37] B. Hertz and R. Petosa, "Impact of the "Planning to be Active" leisure time physical exercise program on rural high school students," *Journal of Adolescent Health*, vol. , 39pp. 530-535, 2006.
- [38] S. L. Williams, S. Michie, J. Dale, N. Stallard, and D. P. French, "The effects of a brief intervention to promote walking on Theory of Planned Behavior constructs: a cluster randomized controlled trial in general practice ", *Patient education and counseling*, vol. 98, pp. 651-659, 2015.

Table 1 Comparing the demographic variables in both control and intervention groups

Group Variable	Intervention	Control	P-value* (independent T)
	Mean±Standard Deviation	Mean ±Standard Deviation	
Father's age	44.4±4.11	45±4.67	0.325
Mother's age	39.3±3.7	39.6±4.9	0.073
family members	4.14±0.9	4.44±1.07	0.079

Table 2 Comparing the demographic variables in both control and intervention groups

Group Variable		Intervention	Control	Chi-square p
		Number (percent)	Number (percent)	
Father's occupation	Clerk	29 (42.6)	29 (42.6)	0.563
	Self-employed	39 (57.3)	40 (57.9)	
Mother's occupation	Clerk	19 (0.21)	9 (0.13)	0.093
	Housewife	51 (72.8)	60 (86.9)	
Father's education	Secondary school to down	(14.7) 10	(28.9) 20	0.073
	High school	(33.8) 23	(36.2) 25	
	academic	(51.5) 35	(0.34) 24	
Mother's education	Secondary school to down	(17.1) 12	(31.8) 22	0.077
	High school	(41.4) 29	(39.1) 27	
	academic	(41.4) 29	(0.29) 20	
The family income	Less than 500	(8.8) 6	(1.9) 8	0.093
	500-1000000	(0.25) 17	(40.3) 27	
	Above 1000000	(66.2) 45	(47.8) 32	

Table 3 Statistical indicators related to TPB variables in the both groups before and after intervention

Variable	Before		P-value *	After		P-value *
	Intervention group	Control group		Intervention group	Control group	
Attitude	23.6±2.18	23.7±2.95	0.821	27.3±1.98	24.43.17	0.001
Subjective norms	15.7±2.1	15.5±2.48	0.741	17.7±1.72	15.9±2.6	0.001
Perceived behavioral control	16.4±2.88	16.6±3.47	0.073	20.3±2.35	16.9±3.52	0.001
Behavioral intention	10.1±2.25	9.2±2.55	0.759	12.2±1.47	9.88±2.69	0.001
Behavior	5.07±3.36	5.77±3.76	0.250	7.7±2.9	4.31±3.34	0.001

* Independent T

Table 4: comparing the mean scores of the variables in both groups after and before the intervention

Variable	Intervention group		P-value	Control group		P-value *
	Before	After		Before	After	
Attitude	23.6±2.18	27.3±1.89	0.001	23.7±2.95	24.4±3.17	0.004
Subjective norms	15.7±2.1	17.7±1.72	0.001	15.57±2.48	15.94±2.6	0.167
Perceived behavioral control	16.4±2.88	20.3±2.35	0.001	16.63±3.47	16.98±3.54	0.372
Intention	10.31±2.25	12.2±1.47	0.001	9.24±2.55	9.58±2.69	0.167
Behavior	5.07±3.36	7.7±2.9	0.001	5.77±3.79	4.3±3.24	0.001

*Paired-T