

Effect of educational intervention on physical activity-related knowledge, attitude and behavior of among first-grade students of male high schools

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ABSTRACT

Introduction: Regular physical activity has positive effects on physical, mental and social aspects of individual and community health. Considering the prevalence of noncommunicable diseases such as primary hypertension, osteoporosis and cardiovascular diseases for which sedentary lifestyle is a responsible factor, health policy makers have planned to encourage people to do more physical activities. Development of beneficial health habits during childhood and early adolescence are very important because the behaviors, which start at adolescence tend to continue into adulthood, too. This study aimed to determine the effect of educational intervention on physical activity-related knowledge, attitude and behavior of the first grade students in male high schools of Bavanat in 2010. **Materials and Methods:** In this prospective experimental study, after selecting two qualified schools from five high schools, all students of one school (two classes including 42 individuals) were randomly assigned to the experimental group and all the students of another high school (two classes including 43 individuals) were randomly assigned to the control group. The data gathering tool was a 4-section questionnaire which included demographic questions, knowledge- and attitude-related questions and the questionnaire of physical activity performance. The first three sections of the questionnaire were the researcher-designed and validated by face and content validity. Test-retest and internal consistency (Cronbach's Alpha) methods were used to determine the reliability of knowledge questionnaire and attitude questionnaire, respectively. For the measurement of physical activity behavior, a self-reporting questionnaire (valid and reliable Garcia scale) was used in this study. After conducting the pretest, the educational intervention was done for the experimental group. Post-tests were conducted immediately and 1 month after intervention. The collected data were analyzed using SPSS₁₈ statistical software (independent t-test, paired t-test, chi-square, Mann-Whitney test and repeated measures ANOVA). The participants voluntarily and consciously participated in this study. **Results:** The findings indicated no significant differences between the

groups in terms of mean scores of knowledge ($P = 0.934$), attitude ($P = 0.155$) and behavior ($P = 0.387$) before the intervention. There was a significant difference between mean scores of knowledge in the immediate follow-up ($P < 0.001$) and 1 month after intervention follow-up ($P < 0.001$), and also between mean scores of attitude immediately ($P < 0.001$) and 1 month after intervention ($P = 0.01$) follow-ups in the experimental group compared with the control one. Mean scores of physical activity 1 month after the intervention in both experimental and control

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groups significantly increased ($P < 0.001$, $P = 0.01$, respectively), but the mean scores of physical activity between two groups were not significantly different ($P = 0.390$). **Discussion and Conclusion:** The results indicated the effectiveness of educational intervention, consequently increased knowledge and improved attitude of students, in the experimental group compared with the control one in terms of physical activities; thus, physical activity behavior of intervention group increased. Although the mean scores of physical activity in the control group significantly increased, other studies should be done which can control and consider confounding variables.

Key words: Attitude, behavior, knowledge, physical activity

INTRODUCTION

Today, many different factors have combined to noticeably decrease physical activity of mankind, which is the origin for the emergence of many different diseases. Welfare state of housing, using cars, working with machines, living in apartments, emergence of sedentary occupations like office jobs and business, indolence, sedentary entertainment (cinema, TV, computer, getting used to reading newspapers and so on) all together have noticeably decreased and in some cases completely removed muscular work and physical activities.^[1] In today's mechanical life, most people in urban areas suffer from mental or physical diseases, fatigue, and weakness due to lack of activities.^[2,3] Decrease in physical activity is one of the problems of urbanization and industrial development that has a dominant role in the emergence of diseases, morbidity and mortality.^[4] American Heart Association (AHA), which has mentioned cardiovascular risk factors as three factors of smoking, hypertension and hypercholesterolemia for years, now, is introducing low physical activity as another risk factor that could be modified via changing lifestyle.^[5] According to World Health Organization (WHO), up to 2020, noncommunicable diseases will constitute three-fourths of all death in developed countries.^[6] With regard to the importance of physical activity, formerly, one of the objectives of WHO up to 2010 was to increase the number of people who have sufficient physical activities for maintaining their health^[7] and physical activity was considered an important indicator of healthy people in 2010.^[8] Today, experts of human issues believe that one of the best factors that can stop being sedentary and indolence and invigorate human in today's harsh and noisy mechanical environment is sport.^[9] Regular physical activities, fitness and sport are of special significance for people's health and feeling well in all ages. In America, physical fitness is a priority for all ages. Studies in the U.S. in 1993 demonstrated that 14% of mortality in the U.S. were related to nutritional and activity patterns. Another study considered sedentary lifestyle associated with 23% of death caused by chronic diseases.^[10] According to studies in different countries, the level of physical activity in developed and developing countries was decreasing.^[7] According to WHO and investigation of American Center of Disease Control in 1994, at least 60% of people in the world do not perform the recommended and required amount of physical activities in order to benefit from health advantages and 25% of people have no physical

activity outside their workplaces.^[11,12] Studies show that the reduced trend of physical activity in adolescents progressively continues among high school students and goes on well into adulthood.^[13] Physical activity is unfortunately decreasing all throughout adulthood^[10,12] and lack of activity in some groups of society is more prevalent like among women, the elderly, non-white races and lower socioeconomic classes^[12,14] while better nutrition and sport activities can prevent from annual 300,000 death caused by cardio-vascular diseases, diabetes, cancer and stroke.^[15] Despite the importance of activity and its outcomes for all age groups, especially the youth and adolescents, only 27% of students in grades 9 to 12 perform the recommended amount of moderate to vigorous physical activities.^[16] In 2006, 48.9% of all youngsters in Germany did not have any physical activities in their leisure time and it was the same for both genders; however, among the people who had physical activity during their leisure time, women were less active compared with men. In terms of age, the youngest group of women had the minimum level of physical activity.^[17] In a study by Sisson *et al.* in 2008, the maximum and minimum levels of physical activity were observed in Australian boys aged 12-17 years old (74%) and in Russian boys and girls aged 17-18 years old (0%), respectively.^[18] A study by Caspersen *et al.* in 2000 on the changes of physical activity patterns in terms of age and gender demonstrated that patterns of physical activity among adults decreased from 15 to 18-year-old and vigorous and regular activities and strengthening patterns progressively increased from 12 to 21-year old.^[19] Small regional studies also have revealed a similar pattern among Iranian youth. A decrease in physical activity as a result of the increase in the duration of watching TV, playing computer games and decrease in the opportunity for physical activities have been stated in communities and schools.^[20] According to a national study, 60% of Iranian students were sedentary and the level of their physical activity decreased with the increase in educational level; it was also more widespread in girls.^[21] In the study by Alikhani *et al.*, which aimed at investigating physical activity-related knowledge, attitude and performance of Tehran's students in 2002, the number of students who lacked the required physical activity was 81.5%.^[22] In contrast, the study by Ziaee *et al.* on 21111 students in elementary, middle and high schools in 2005 demonstrated that the level of physical activity with moderate and high intensity was acceptable among the country's students. Significant decrease in physical activities with high and moderate intensity in girls and decrease of

physical activities during high school were other findings of this study.^[23] A descriptive study was done by Dareh *et al.* in which the patterns of physical activities among children in Isfahan and Markazi Provinces were determined in 2004. They investigated knowledge, attitude and performance of 4000 urban and rural children and adolescents in elementary to high school levels in Isfahan and Markazi Provinces along with their parents and 500 school authorities and trainers in terms of physical activity and duration of watching TV via a questionnaire. The findings of this study showed that about 40% of students in high and middle schools in these two provinces performed regular physical activities in school less than 2 hours per week. In general, the findings demonstrated that the level of physical activity of middle and high school students in the central parts of Iran was less than the optimum level.^[24] The results of a theory-based study by Teimouri *et al.* in 2007 which was done on Iranian adolescents revealed that only 35.9% of girls against 64.1% of boys were in the stage of doing and maintaining physical activity behavior and the average time spent for physical activity in girls was 31.82 min per day^[25] while the recommended time was at least 60 min of moderate to vigorous physical activity per day, at least five times or more per week.^[24,26] The period of youth is a period from which many risky diseases of middle age and elderly periods originate.^[5] Considering the importance of physical activity and its outcomes, especially in adolescents, and also considering the important and determinant role of education in improving the level of regular physical activity, the present study aimed at investigating the effect of educational intervention on physical activity-related knowledge, attitude and behavior among the first grade students of Bavanat (a city in Fars province) governmental high schools in 2010.

MATERIALS AND METHODS

The present prospective experimental study examined the population of boy students in the first grade of governmental high schools in Bavanat. Convenient sampling was used in this study in that the city of Bavanat had five boys high schools; two of them had no first grades and another one was a boarding school, the students of which were in a special condition (entrance condition of having GPAs higher than 18, children of clerks and teachers, so on). Therefore, only two high schools in city of Bavanat were qualified for the study, so the control and experimental groups were randomly assigned to them. Each of the two selected high schools had two first grade classes; thus, the total number of students of a high school (42 people in two classes) was randomly assigned to the experimental group and the whole students of another school (43 students in total) were considered as the control group. Both high schools were at the same level in terms of economic, social, cultural and educational conditions and were not geographically close to each other. In the present study, the data collection tool was a questionnaire which included four parts and contained nine questions with regard to demographic information and general specifications, seven questions of knowledge, three questions of which were divided to 13 and 15 questions and seven other questions were

multiple choice questions, 19 three-point Likert style (agree, no idea, disagree) and 20 questions related to the evaluation of the level of physical activity in the students. The questions of three initial parts of the questionnaire were formulated by the researcher and their validity was confirmed by face validity and content validity. Knowledge and attitude questionnaires were given to 31 students that were similar to the studied students in terms of demographic characteristics and, 10 days later, only knowledge questions were given to the same 31 people again. After filling them out, the reliability of knowledge questions was confirmed by $r = 0.70$. Alpha of attitude questions were estimated 0.60 and confirmed after removing three nonkey questions;^[27] however, to measure the performance, the self-reporting Garcia questionnaire was used, the reliability and validity of which have been previously evaluated.^[28] It should be mentioned that the level of performed physical activity in different studies was evaluated using different methods. Most studies considered physical activity of leisure time or the hours spent for sports as the criteria and even some considered daily activity as physical activity. A number of studies considered all three cases; however, in the present study, the hours spent for doing sport was considered via using Garcia physical activity questionnaire. In Garcia physical activity measurement questionnaire, two of the cases mentioned for physical activities (snow play and the option of “dancing”) were removed from the questionnaire for localization and lack of fitting with the culture of society, respectively. Instead, the option of “other sports or games” was used. After doing all the steps for measuring the tool’s reliability and validity and determining experimental and control groups, the researchers went to the high schools, introduced themselves to the students and asked for their voluntary cooperation. The pretest started and students listened to the explanations of the researcher about the way the questionnaire should be filled out and completed it in 20 min (knowledge and attitude questions) and gave them back to the researcher. For the scoring method of knowledge questions, each correct response received 2, incorrect 0 and “no idea” 1. For the attitude questions, the answers which provided their educational objective (agree or disagree) were assigned 3 and the responses which were in contrast to the educational objectives (agree or disagree) received 1; 2 was given to the response “no idea.” The performance was measured in the following way: from the beginning of the week and for six consecutive days, one physical activity measurement form which included 20 cases of common sports activities in Iran were given to the students and they were asked to determine their physical and sports activity on the day before that; i.e., they were asked to mark “no” if their response to the question “Did you have any physical activities yesterday?” was negative and present them on the following day. If their answer was positive, they would mark “yes” and determine the type and duration of activity in the next part in the 6 time units of (1-10 min, 1-20 min, 1-40 min, 1-60 min, 1-120 min and more than 120 min). Then, the mentioned form was taken on the following day and the next form was given to them. Therefore, each student filled out six forms during a week and given them to the researcher. If a student returned four out of six forms, even in the reporting

format, which included lack of physical activities, it was considered valid; otherwise, if the student did not answer the question “Did you do any physical activities yesterday? (Yes / No)”, it was not qualified and he was removed from the list of participants. In fact, any student had to fill out at least 1 form as “yes” or “no”. To calculate the score of physical activity of students per day, they received the score of zero for their negative answers to the question on their yesterday physical activities. In the cases that each of the mentioned activities were done, the average of 5.5 min, 15.5 min, 30 min, 50 min, 90 min and 120 min were calculated for the 1-10 min, 1-20 min, 1-40 min, 1- 60 min, 1-120 min and more than 120 min time periods, respectively. Then, the time duration for all the activities performed on one day was summed and recorded as the performance score of that day. To calculate the mean of physical activities per day for each student in terms of min, the reported times were summed and divided by the number of valid days (yes or no responses in terms of days). Therefore, the results were analyzed after doing the pre test and, based on the results obtained from the part of knowledge and attitude, the educational content was gathered and the training of the experimental group started. Considering that the high school which was the experimental group had two first grade classes, each class separately received two sessions on knowledge and one session on attitude; i.e., in total, six training sessions were held during the two weeks. Depending on the educational goals and characteristics of the learners, different methods like speech, group discussion, question and answer and different training aids like PowerPoint, pamphlet, educational booklet and whiteboard were used for implementing the educational intervention. Immediately after ending the training, the first step of post-test (including the questionnaire of knowledge and attitude) was performed. According to the program, two months after the end of training, the second step of the post-test (including knowledge, attitude and behavior of physical activity) should have been done; however, this step was performed 1 month after the end of the educational program due to the work process and its coincidence with the final exams of students and the possibility of losing the study population. It should be mentioned that the same exclusion criteria mentioned in the pretest step were held in this step, too. After collecting the required data, they were analyzed by the SPSS₁₈ software. To compare the means of score of knowledge, attitude and performance scores of groups with each other before, immediately after and 1 month after the

educational program, the independent t-test was used. To compare the means of knowledge and attitude scores at three different times in each group and the performance between two times for each group, repeated measures ANOVA test and a paired t-test were applied. Participants consciously and voluntarily took part in the whole process of study.

RESULTS

The findings of the present research showed that the two experimental and control groups were homogenous in terms of age, father’s educational level, mother’s educational level, father’s occupation, mother’s occupation and receiving or not receiving physical activity training. The source of data collection about their physical activities was the same and there was no significant difference between control and experimental groups in this regard. The comparison of their knowledge about regular physical activities in the pretest step showed lack of any significant differences in the beginning of the study between the two groups. Independent t-test confirmed this issue that before the intervention, there was no significant difference between the means of knowledge scores between two control and experimental groups ($P = 0.934$). However, immediately after the intervention, the mean of knowledge score in the experimental group significantly increased while that level was not significant in the control group. The result of independent t-test demonstrated a significant difference between the mean scores of knowledge in control and experimental groups immediately after the intervention ($P < 0.001$). Moreover, this test indicated that the difference between the mean of knowledge scores was significant between two control and experimental groups one month after the educational intervention ($P < 0.001$). Repeated measures ANOVA revealed a significant difference between mean score of knowledge before the intervention and in the follow-up intervals in the experimental group ($P < 0.001$); however, this test did not indicate significant differences in the follow-up intervals in the control group ($P = 0.136$) [Table 1].

Before the educational intervention, no significant difference was observed between the mean scores of attitude among the students in control and experimental groups in terms of physical activities ($P = 0.155$) and both groups were in a similar situation; however, immediately after the intervention, the means of attitude scores significantly increased in the

Table 1: Comparing mean and standard deviation of knowledge score in terms of physical activities before, immediately after and 1 month after the intervention in the students of control and experimental groups

Group	Situation						Significance level of R.M. ANOVA test
	Before intervention		Immediately after intervention		One month after intervention		
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	
Experimental	47.93	6.16	63.85	6.46	62.38	8.62	$P < 0.001$
Control	47.48	8.15	50.06	6.46	53.23	6.26	$P = 0.136$
Significance level of independent t-test	$P = 0.934$		$P < 0.001$		$P < 0.001$		-

experimental group while it had a small decrease in the control group. Thus, the independent t-test demonstrated a significant difference between the mean of attitude score in experimental groups and mean of attitude scores in the control group immediately after the educational intervention and also one month after that ($P = 0.01$ and $P < 0.001$, respectively). Repeated measures ANOVA indicated a significant difference in the mean of attitude scores before the intervention and in the follow-up interval in the experimental group ($P < 0.001$) and lack of a significant difference in the follow-up intervals in the control group ($P = 0.0083$) [Table 2].

Independent t-test indicated that before the educational intervention, control and experimental groups did not have any statistically significant differences in terms of performance score of physical activities and the mean of physical activity score of experimental and control groups were 106.57 and 90.47, respectively ($P = 0.378$). However, 1 month after the end of the educational intervention, the mean of physical activity score of the students in the control and experimental groups considerably increased and the paired t-test indicated this significant difference in both groups ($P = 0.01$ in the experimental group and $P < 0.001$ in the control group). Also, independent t-test showed that the difference between the mean of physical activities in the students of control and experimental groups at 1 hour after the educational intervention program was insignificant ($P = 0.390$) [Table 3].

the students of the experimental group indicated the effect of educational intervention and success of this training in increasing the knowledge of this group. Along with the results of the present research, the knowledge improvement of participants in the educational programs has been observed in many studies inside the country, some of which were theory-oriented. For instance, in the study by Hezavei *et al.* which was done based on the BASNEF model,^[29] in the research conducted by Estebsari *et al.* based on the PRECEDE model^[30] and also in the study of Fadaie and Zahedi,^[31] knowledge made a significant increase after the intervention of the experimental group compared with the control one. Various foreign studies have also obtained similar results in different studies. The results of the study by Whaley^[32] and the review study by Stone, Tell and Vellar^[33] were in line with those of the present study. The studies of Parcell *et al.*, Davis *et al.*^[33,34] Perry *et al.*^[35] and Harrell *et al.*,^[36] which were school oriented, had similar results to the ones of this study and reported significant increase in the knowledge score of the experimental group compared with the control group after educational intervention. With regard to the number of educational sessions for the experimental group and control group, the improved knowledge in the experimental group and lack of significant increase in the control group considering lack of educational intervention were also the objectives of the study which were fulfilled. This result was of high importance since having knowledge is considered a prerequisite for creating a correct attitude and adopting proper behaviors.

In two separate studies conducted by Pearman *et al.* and Wilson *et al.*, it was proved that holding sports courses leads

DISCUSSION

Significant change in the mean of knowledge score among

Table 2: Comparing mean and standard deviation of attitude scores in terms of physical activities before, immediately after and 1 month after the intervention in the students of control and experimental groups

Group	Situation						Significance level of R.M. ANOVA
	Before the intervention		Immediately after the intervention		One month after the intervention		
	Indicator						
	Men	Standard deviation	men	Standard deviation	Mean	Standard deviation	
Experimental	46.47	3.43	53.94	2.11	52.07	4.06	$P < 0.001$
Control	48.16	6.19	47.58	5.76	49.72	4.27	$P 0.83$
Significance level of independent t-test	$P = 0.155$		$P < 0.001$		$P = 0.01$		-

Table 3: Comparing mean and standard deviation of score of physical activity performance before and 1 month after the educational intervention in the students in the control and experimental groups

Group	Situation				Significance level of paired t-test
	Before the intervention		One month after the intervention		
	Indicator				
	mean	Standard deviation	Mean	Standard deviation	
Experimental	106.57	89.16	139.25	96.35	$P = 0.01$
control	90.47	74.65	159.65	112.77	$P < 0.001$
Significance level of independent t-test	$P = 0.387$		$P = 0.390$		-

to the increase in the positive attitude of and motivation for sports activities in the studied students;^[37] however, although many studies and the present research mentioned the positive effect of training on the improvement of attitude in the experimental group after the educational intervention, change in the attitude after knowledge is not always obtainable after the educational intervention. For instance, in contrast to the above-mentioned studies, Fadaie and Zahedi did not observe any difference between experimental and control groups during the course of study in terms of changes in the attitude toward sports and physical activities after educational intervention,^[31] however, in the present study, training led to the significant increase in the mean of attitude scores in the students of experimental group at 1 month after the educational intervention compared with before that. At the same time, no significant increase was observed in the control group, which shows the important role of education and necessity of paying attention to this issue for changing attitude and paving the field for making and maintaining a healthy behavior.

In this study, in addition to the mentioned changes in the knowledge and attitude, a significant increase in the mean of physical activity score was observed in both experimental and control groups before and one month after the training; in spite of this increase, no significant changes were observed between the physical activity of the two groups in the end. In contrast, in various studies, significant increase in the score of physical activity after the intervention was only reported in the experimental group. In all the studies by Pena *et al.*,^[8] Parcell *et al.*, Perry *et al.*, Harrel *et al.*, Marcus *et al.*, Tell, Vellar and Davis *et al.*,^[33-36] Teimouri *et al.*^[28] and Estebarsari *et al.*,^[38] the students of the experimental group showed a significant increase in the posttest in the physical activities compared with the control group; in some cases in which both groups had significant increases, its amount was higher in the experimental group.^[39] Thus, their findings were similar to and in line with those of the present research; on the other hand, they have not reported any significant increase in the score of physical activities in the control group, which is not in line with the present research. In addition, some studies like Marks *et al.* compared the intervention type and stated that the way of implementing the educational intervention can affect the changes in the objectives of the participants in the physical activities and concluded that written intervention was more influential than web-based intervention.^[40]

In contrast, few other studies which were in line with the present research stated that although educational intervention in the experimental group may lead to the increase in the level of physical activities and, in some cases in the control group, in the end, no significant difference was observed between experimental and control tests. These studies include Pena *et al.*,^[8] Fadaie *et al.*,^[31] Nader *et al.*,^[38] Rafiei *et al.*,^[37] Rahimi Kian *et al.*^[41] and Pekmezi *et al.*^[42] In line with the findings of the present study, the results of the performed research by Baranowski *et al.* demonstrated the increase in physical activities followed by the intervention in both control and experimental

groups;^[43] even in studies like Manely *et al.* the opposite of the mentioned results was reported and this study not only did not report any significant difference in the amount of physical activities between two experimental and control groups, but also showed insignificant decrease of both groups in terms of physical activities.^[44] Most mentioned studies have been theoretical (different behavioral change patterns and theories like SLT, SCT, SM, BASNEF model, PRECEDE model, etc., have been used in studies like Parcell, Perry, Harrell, Marcus, Vellar, Tell, Davis, Hezavei, Estebarsari)^[29,30,33-36] and their results reported either the increase in variables of knowledge, attitude and behavior of physical activities in the experimental group and in some cases in the control group or lack of significant changes between two groups after the intervention. Thus, it should be considered that the present study which was implemented in terms of KAP (knowledge, attitude and performance) obtained similar and parallel results with the theoretical studies; this issue confirms the success of educational intervention in the experimental group.

CONCLUSIONS

The comparison of before and after intervention in this study showed statistically significant differences in the variables of knowledge, attitude and behavior of physical activity in the experimental group. Therefore, it can be concluded that training the experimental group influenced the increase in knowledge, attitude and behavior of physical activities in students. It should be mentioned that significance of mean of knowledge score in the situations of before and one month after the educational intervention and also mean of attitude score immediately after and 1 month after intervention in the control group were by most likelihood related to the confounding variables like sensitivity of students to the influencing possibility of results of the questionnaire on the trend of educational evaluation (test effect), stimulation of students' curiosity and attempt to obtain information and programs broadcast via mass media. Probably, another factor can be common teachers, which finally led to the increase in attitude and knowledge of students, but not at the level of experimental group; i.e., this increase was not comparable with the increase of attitude and knowledge in the experimental group after the intervention. Moreover, increase in the mean of behavior score of physical activity in the control group can be attributed to factors mentioned for the increase in their knowledge and attitude. Additionally, there is the possibility that after frequent commutes to school to complete and collect the questionnaire and forms of daily physical activities, students may have considered themselves to be studied and tried to manifest themselves as athletes in competition with their classmates. Using self-reporting tool in this study was one of its limitations which should be considered for future works; in the presence of more actual and precise tools, results with no ambiguity and uncertainty could be obtained. Some students might have carelessly filled out the questionnaire due to different reasons like being in a low mood, voluntary nature of cooperation in the research and devotion of leisure time or classes of easier lessons like

their sports classes to the researcher for holding educational intervention classes. This issue may cause skewed results. In addition, the authorities should consider that wider programming and educational interventions are required for changing the considered behavior in schools.

REFERENCES

- Sabour Ordubadi A. Exercise and fitness. Office of Research and Teaching Physical Education. First publication; 1986. p. 18-26.
- Varma V. Physical therapy. Translated by Ekbari H, Attaranzadeh A. Mashhad: Mahban, First publication; 1997. p. 1-5.
- Alinejad H, Rajabi H, Sadigh Sarvestani R, Amirzadeh F. Relationship of level of physical activity, physical fitness and body composition with the socio-economic status of 15-17-year-old girl students in Tehran. *J Sports Mov Sci* 2005;14:28.
- Rajaie M, Mostajeran M. Evaluating physical status of students in faculty of health and medicine. Research plan with the code 73069. Isfahan: Isfahan University of Medical Sciences; 2004.
- Ziaei V, Fallah J, Rezaei M, Bayat A. Relationship between BMI and physical fitness in 513 medical students. *Journal of Faculty of Medicine. Tehran University of Medical Sciences* 2007;65:76-84.
- Kelishadi R. Preventive pediatric cardiology. *ARYA J* 2006;1:157-8.
- Saidi M. Investigating the pattern of physical activities of nurses in the Tamin Ejetmai hospitals of Isfahan province. *Res Soc Sci* 2007, 2008;3:71-8.
- Pena E, Morrow JR, Balcazar H, Martin SB, Jackson AW, FitzGerald SJ. Effects of a school-based intervention on Latino youth physical activity behaviors. *Med Sci Sports Exerc* 2004;36:S102.
- Taghavi SR. Forty fountains of knowledge. Tehran: Hamahang, First publication; 2003. p. 271-80.
- U.S. Department of Health and Human Services: Office of the assistant secretary for planning and evaluation. June 20, 2002. Physical activity fundamental to preventing disease. Available from: <http://aspe.hhs.gov/health/reports/Physicalactivity>. [Last accessed on 2009 Nov 4].
- Maleki M, Oraei S. Cardiovascular diseases. Chapter 1, Atherosclerosis. In: Azizi F, Hatami H, Janghorbani M, editors. *Epidemiology and control of prevalent diseases in Iran*. 2nd ed. Tehran: Khosravi; 2003. p. 18-9.
- World Health Organization (WHO). Physical inactivity: A global public health problem. Available from: http://www.who.int/dietphysicalactivity/factsheet_inactivity/en/index.html. [Last accessed on 2009 Nov 4].
- Gillman MW, Pinto MB, Tennstedt S, Glanz K, Marcus B, Friedman RH. Relationships of physical activity with dietary behaviors among adults. *Prev Med* 2001;32:295-301.
- Navi N, Hakimi M, Minh HV, Juvekar S, Razzaque A, Ashraf A, *et al.* Prevalence of physical inactivity in nine rural LNDEPTH Health and Demographic Surveillance Systems in five Asian countries. *Glob Health Action* 2009;6 Incl Supplements:44-53.
- Fielder CR. Knowledge, motivation, and behaviors regarding eating a healthy diet and physical activity in relation to self-esteem in college students. San Marcos: Honors thesis presented to the Honors Committee of Texas University; 2008.
- Centers for Disease Control and Prevention. Recommendations to increase physical activity in communities. *Am J Prev Med* 2002;22(4 Suppl):67-72.
- Haenle MM, Brockmann SO, Kron M, Bertling U, Mason RA, Steinbach G, *et al.* Overweight, physical activity, tobacco and alcohol consumption in a cross-sectional random sample of German adults. *BMC Public Health* 2006;6:233.
- Sisson SB, Katzmarzyk PT. International prevalence of physical activity in youth and adults. *Obes Rev* 2008;9:606-14.
- Caspersen CJ, Pereira MA, Curran KM. Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Med Sci Sports Exerc* 2000;32:1601-9.
- Pirasteh A, Hidarnia A, Asghari A, Faghihzadeh S, Ghofranipour F. Development and validation of psychosocial determinants measures of physical activity among Iranian adolescent girls. *BMC Public Health* 2008;8:150-6.
- Hamshahri Online. 60% of Iranian students are inactive. Available from: <http://www.hamshahronline.ir/News>. Update 4 Nov 2009. [Last accessed 13 Aban 1388].
- Sanaie Nasab H, Delavari AR, Tavakkoli R, Samadi M, Naghizadeh MM. Knowledge, attitude and performance of one of the staff in the national universities of medical sciences relative to physical activities. *Mil Med* 2009;11:25-30.
- Ziaei V, Kelishadi R, Ardalan G, Gheiratmand R, Majdzadeh SR, Motaghian Monazzam M. Level of physical activities of Iranian students, Caspian studies. *Iran J Child Dis* 2005;16:157-64.
- Dareh F, Kelishadi R, Rabiei K, Heidari S, Baghaie A. Determining the pattern of physical activities in children in Isfahan and Markazi provinces in 2002. *Res Sci J Arak Univ Med Sci* 2004;7:1-10.
- Teimouri P, Niknami SH, Ghofranipour F. Effect of school-oriented intervention based on Pender health promotion model for increasing physical activities in girl students. *Armaghan Danesh* 2007;12:47-59.
- U.S. Department of health and human services and U.S. department of agriculture dietary guidelines for Americans. 6th ed. Washington, DC: U.S. Government Printing Office; 2005. Available from: <http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2005/2005DGDGPolicyDocument.pdf>. [Last accessed on 2009 Nov 22].
- Ghaffari M, Niknami SH, Kazemnejad A, Mirzaei A, Ghofranipour F. Designing, validity and reliability of 10 scales in terms of preventing AIDS in adolescents. *Res Sci J Kermanshah Univ Med Sci (Behboud)* 2007;11:38-50.
- Teimouri P, Niknami SH, Ghofranipour F. Recognition and social-factors of behavior of physical activities in the adolescents in city of Sanandaj within the framework of Pender health promotion model and stages of change model (2006). *Behboud- Res Sci J Kermanshah Univ Med Sci* 2008;11:393-406.
- Hezavei M, Assadi Z, Hassanzadeh A, Shekarchizadeh P. Investigating the effect of second physical training course organized based on the BASNEF model on the regular physical activity of girl students in Isfahan University of Medical Sciences. *Res Sci J Zanjan Univ Med Sci* 2010;17:70-83.
- Estebarsari F, Shojaizadeh D, Mostafaie D, Farahbakhsh M. Designing an educational intervention for increasing physical activities of girl students in middle schools based on PRECEDE model. *Journal of Faculty of Nursing and Midwifery, Tehran University of Medical Sciences (Hayat)* 2010;16:48-54.
- Fadaie A, Zahedi M. Investigating the effect of training on healthy lifestyles in rural areas of Chaharmahal Bakhtiari province. 10th National Conference on Environmental Health. Hamadan University of Medical Sciences; 2007.
- Whaley DD. The effect of nutrition and physical activity counseling on knowledge and behavior of elementary students in a rural, coastal community. A thesis submitted to the School of Nursing in partial fulfillment of the Requirements for the degree of Master of Science in Nursing. The Florida State University School of Nursing; 2005.
- Stone EJ, McKenzie TL, Welk GJ, Booth ML. Effects of physical activity interventions in youth: Review and synthesis. *Am J Prev Med* 1998;15:298-315.
- Parcel GS, Simons-Morton B, O'Hara NM, Baranowski T, Wilson B. School promotion of healthful diet and physical activity: Impact on learning outcomes and self-reported behavior. *Health Educ Q* 1989;16:181-99.
- Perry CL, Klepp KI, Halper A. Promoting healthy eating and physical activity patterns among adolescents: A pilot study of "Slice of Life." *Health Educ Res* 1987;1:93-103.
- Harrell JS, McMurray RG, Bangdiwala SI, Frauman AC, Gansky SA, Bradley CB. Effects of a school-based intervention to reduce cardiovascular disease risk factors in elementary-school children: The Cardiovascular Health in Children (CHIC) Study. *J Pediatr* 1996;128:797-805.

37. Rafiei GH, Ranjbar M, Sayyadi A. Comparing sports activities of MSc students of nursing and midwifery, Kerman and Rafsanjan Universities of Medical Sciences before and after passing physical training courses. *Rafsanjan Journal of Faculty of Nursing, Midwifery and Paramedics* 2008 and 2009;1:21-8.
38. Nader PR, Sallis JF, Patterson TL, Abramson IS, Rupp JW, Senn KL, *et al.* A family approach to cardiovascular risk reduction: Results from the San Diego Family Health Project. *Health Educ Q* 1989;16:229-44.
39. Simons-Morton BG, Parcel GS, Baranowski T, Forthofer R, Hara NM. Promoting physical activity and healthful diet among children: Results of a School-based intervention study. *Am J Public Health* 1991;81:986-91.
40. Marks JT, Cambell MK, Ward DS, Ribisl KM, Wildemuth BM, Symons MJ. A comparison of web and print media for physical activity promotion among adolescent girls. *J Adolesc Health* 2006;39:96-104.
41. Rahimi Kian F, Moshrefi M, Yavari P, Mehran A, Mirzaei Rouzbehani M, Amel Valizadeh M. Effect of simultaneous training on mothers and daughters about their osteoporosis-preventive behaviors of high school girls. *Journal of Faculty of Nursing and Midwifery, Tehran University of Medical Sciences (Hayat)* 2008;4: 15-22.
42. Pekmezi DW, Neighbors CJ, Lee CS, Gans KM, Bock BC, Morrow KM, *et al.* A culturally adapted physical activity intervention for latinas. *Am J Prev Med* 2009;37:495-500.
43. Baranowski T, Simons-Morton B, Hooks P. A center based program for exercise change among black-American families. *Health Educ Q* 1990;17:179-96.
44. Manely D. Self-efficacy, physical activity, and aerobic fitness in middle school children: Examination of a pedometer intervention program. A dissertation presented for the graduate studies council the university of Tennessee Health Science center. 2008.

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