

## Effect of Educational Intervention Based on Self-Efficacy on Health-Promoting Behaviors in High-School Girl Students: A Quasi-Experimental Study

Tayebeh Rakhshani<sup>1</sup>, \*Seyyed Mansour Kashfi<sup>2</sup>, Leila Movahed nezhad<sup>3</sup>, Zahra Motlagh<sup>4</sup>,  
Nooshin Kohan<sup>5</sup>

<sup>1</sup>MD, PhD, Nutrition research center, Department of Public Health, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran. <sup>2</sup>M.D, M.P.H, Research Center for Health Sciences, Institute of health, Shiraz University of Medical Sciences, Shiraz, Iran. <sup>3</sup>MSc Student in Community Based Education of Health System, Department of Public Health, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran. <sup>4</sup>PhD, Research Center for Health Sciences, Institute of health, Shiraz University of Medical Sciences, Shiraz, Iran. <sup>5</sup>PhD, Department of Medical Education, Virtual University of Medical Sciences, Tehran, Iran.

### Abstract

#### Background

According to the importance of self-efficacy and the role of health-promoting behaviors in training of adolescents and in order to develop interventions, better understanding of adolescents' health behaviors is required in daily life in order to target activities related to the adolescent health. This study was conducted to investigate the effect of educational intervention on self-efficacy and health-promoting behaviors in Iranian female high-school students.

**Materials and Methods:** This quasi-experimental study was conducted on high-school girl students in Darab city, Iran in 2018. The sampling method was cluster and the way of assigning individuals to the experimental and control groups was simple random method (70 students for experimental group and 70 students for control group). The outcomes of the study were self-efficacy and health-promoting behaviors that were assessed before and two months after intervention in control and training groups. The data were analyzed using SPSS software version 20.0.

**Results:** Mean age of participants was  $15.82 \pm 0.48$  years. Independent t-test results showed there was no significant difference between the components of health-promoting ( $P > 0.05$ ), and self-efficacy ( $P = 0.5$ ) before the educational intervention between the experimental and control groups, while there was a significant difference between the components of health-promoting and self-efficacy after the educational intervention between the experimental and control groups ( $P < 0.05$ ).

#### Conclusion

Among high-school girl students, training intervention used was effective in increasing health-promoting behaviors and self-efficacy.

**Key Words:** Adolescents, Education, Health Promotion Behaviors, Self-Efficacy.

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#### \*Corresponding Author:

Seyyed Mansour Kashfi, MD, Research Center for Health Sciences, Institute of health, Shiraz University of Medical Sciences, Shiraz, Iran.

Email: smkashfi@yahoo.com

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## 1- INTRODUCTION

Lifestyle is one of the main criteria of determining health, which is directly related to the prevention of diseases (1-3). The American Heart Association considers lifestyle to be one of the most important predisposing factors of disease and mortality in the United States and considers about 70% of all physical and mental illnesses related to the lifestyle (4). What is certain is that many healthy and unhealthy habits are formed during adolescence and effect later life periods, such as youth, middle age and old age (5, 6). Studies in the United States show that more than 60 percent of adolescents consume too much fat and less than 20 percent consume 5 or more courses of fruits and vegetables despite the importance of a healthy lifestyle in adolescents (7). 15.3% of adolescents in the United States and 7% of people aged 11-15 are physically active. In many Western countries, the prevalence of smoking in 13-year-old individuals has increased from 3.5 to 12.5, and it has increased in 15-year-old individuals from 17 to 24.5 (8). Research in the eastern Mediterranean has indicated an increase in the risk factors of non-communicable diseases in children and adolescents (9).

Iran is considered one of the youngest countries with more than 18 million adolescents that unfortunately, according to studies conducted by the National Youth Organization, 51% of adolescents studied do not have proper health behaviors (6). Research in Iran on students aged 6-18 has shown that inactive lifestyle, poor nutrition and smoking are significant health problems in adolescents (10). School is the second home of the student and a place for his social training. Much of his life is increasingly devoted to school (11). The health of people in school ages can play a major role in the success and development of a country, because the person in school learns health behaviors and shapes his

lifestyle due to the interaction with other students and teachers (12, 13). The World Health Organization has emphasized the importance of this issue by presenting the plan of health-promoting schools (2). According to health and non-health behaviors in adulthood which are different from adolescents, recognizing the structure and mental perspective of adolescents in practice in a particular lifestyle will give health workers the opportunity to formulate the approaches of modern and innovative prevention, to promote the ability of adolescents and to correct them, in addition to evaluating the lifestyle accurately and based on its essence (14).

A healthy lifestyle in human is a reflection of various factors. In order to influence the effective factors on behavior, recognizing this causal network is one of the most important issues that the specialists of behavioral sciences have been looking for in recent years (15). Among these, self-efficacy is considered as one of the most important factors in having a healthy lifestyle (16). Self-efficacy is not related to one's skills, but it is related to the judgments that one can make with the amount of skills he has. Judging one's efficacy differs from the expected results (3). In the study of Jahani Eftekhari et al., on the effect of educational intervention based on the self-efficacy and health literacy theory on health promoting lifestyles among female health volunteers of Neyshabur, Iran, showed that educational intervention based on self-efficacy can promote a healthy lifestyle among health volunteers (17). In order to develop the interventions, a better understanding of adolescent health behaviors is needed to target the activities related to the adolescents' health, so the present study aimed to investigate the effect of educational intervention based on self-efficacy on health-promoting behaviors in high-school girl students in Darab city, Iran.

## 2- MATERIALS AND METHODS

### 2-1. Study design and participants

This quasi-experimental study was conducted in Darab city, Fars province, Iran. The study population was high school girl students in Darab city, in 2018. The inclusion criteria were: high school girl students in tenth grade, living in Darab and consent to participate in the study, and the exclusion criteria was unwillingness to cooperate during any time of the study, absenteeism in more than two sessions of educational classes and school relocation. This study was approved by the ethics committee of Shiraz University of Medical Sciences with the design number (ID-code: 17993).

### 2-2. Sample size and sampling method

The number of required samples was determined 50 students according to the same study (18), and Pokak formula and considering the error of the first type = 0.01 and the error of the second type 0.05. With the probability of falling samples 70 students were considered for each of the intervention and control groups (Intervention group= 70 people, control group= 70 people).

$$S1=36.95$$

$$S2=25.76$$

$$\mu1=110.1$$

$$\mu2=83.15$$

$$E(\alpha, \beta)=17.8$$

$$n = \frac{(\delta_1^2 + \delta_2^2)}{(\mu_1 - \mu_2)^2} E(\alpha, \beta)$$

In the present study, the sampling method was clustering. Given that Darab Education has just one district, each of the female second-grade high schools in Darab was considered as a cluster, then 4 schools were randomly selected, and two schools

were randomly selected as experimental groups and two schools were considered as control group. Then, according to the sample size, which was 70 students for the experimental group and 70 students for the control group, 35 students were selected from each school (1 or two classes from the tenth grade). The trainer and the participants could not be blinded to the way of allocating individuals to the experimental and control group according to the educational intervention, but the person analyzing the result was unaware of the way of allocating the individuals to the experimental and control groups.

### 2-3. Intervention

**2-3-1. Experimental Group:** Educational intervention was performed based on self-efficacy on health-promoting components (physical activity, stress management, nutrition, health responsibility, interpersonal relationships, and spiritual growth). Of course, in the training, more emphasis was placed on physical activity, stress management and nutrition. The intervention program included four 60-minute sessions for students and two 60-minute sessions for parents about health-promoting behaviors (exercise, stress, nutrition) that were held weekly. In order to provide educational content in the education, the family self-care handbook (3) was used in relation to the healthy lifestyle and the new services package of middle-age people's health of the Ministry of Health (19). Techniques for increasing self-efficacy (success in performance, succession experiences, verbal encouragement, and description of physiological states) were used. The educational program is shown in **Table.1**.

**2-3-2. Control group:** No intervention was done for the control group.

**Table-1:** Goals, education topics, education methods of sessions.

Session	Time	Goal	Education topics	Education methods
First	60 minutes	Promoting awareness and mentioning the success in the performance by the participants	Healthy lifestyle, regular physical activity, healthy nutrition and stress management, health responsibility, interpersonal relationships, spiritual growth were taught. Learners were also asked to share their successful experiences with other participants about health-promoting behaviors.	Lecture and question and answer
Second	60 minutes	Experiences of succession and emulating	To enhance observational learning and modeling, successful individuals with health-promoting behaviors were asked to share their experiences with others. For this purpose, for example, a student who has done stress management himself was invited to talk about his experiences to others as a model and answer the questions of other students in the class.	Lecture, group discussions and question and answer
Third	60 minutes	Verbal encouragement	Learners who participated in the discussion were encouraged verbally in theoretical sessions, and learners were also encouraged in their ability to perform health-promoting behaviors; for learners who were not very successful in performing these behaviors, individual counseling was provided to them. They were asked to adjust their decisions to smaller and more accessible steps, and by successful performing, part of the program was encouraged in the presence of other learners. Also, encouraging text messages were sent to learners who had mobile phone.	Educational video and poster
Fourth	60 minutes	Description of physiological states		Lecture, group discussions and question and answer
Fifth and Sixth	120 minutes	Improving a healthy lifestyle and increasing self-efficacy for parents	In order to receive physiological states that can help learners to increase their sense of self-efficacy, people were allowed to express their thoughts and feelings when following a healthy diet and performing physical activity, stress management methods, health responsibility, good interpersonal relationships, etc. and thus feedback from their status was provided and people who had a problem in this field were consulted free of charge by a senior clinical psychologist to control emotional and physiological moods.	Lecture, group discussions and question and answer

## 2-4. Consequences

### 2-4-1. Health-promoting lifestyle

The Lifestyle Questionnaire (health-promoting lifestyle profile [HPLP II]) was presented based on the Pender Health Promotion Model to determine to what extent individuals perform health-promoting behaviors (2). The scale includes 52 questions whose answers are graded in a 4-point Likert scale (1= never, 2= sometimes, 3= often, 4= permanently). Six subscales of the lifestyle questionnaire are: Health Responsibility (9 Questions), Physical Activity (8 questions), Nutrition (9 Questions), Interpersonal Relationships (9 Questions), Spiritual Growth (9 Questions), and Stress Management (8 Questions). The total score range of

health-promoting behaviors is between (52-208), the score gained by the individual is measured in relation to the median, which is 130, so that the score less than the median (130), is an undesirable lifestyle, and a score higher than the median (130) is a desirable lifestyle. Cronbach's alpha of sub-structures of lifestyle and the total questionnaire was higher than 0.8. (2). The Health-Promoting Lifestyle Questionnaire was completed by the experimental and control groups before and 2 months after the intervention.

### 2-4-2. Self-Efficacy

Sherr et al.'s (1981) Self-Efficacy Beliefs Questionnaire was presented to determine to what extent the individuals have general self-efficacy. This scale has 17 questions,

its answers are graded in a 5-point Likert scale (1= completely disagree, 2= disagree, 3= no idea, 4= agree, and 5= completely agree). In this questionnaire, higher scores indicate strong self-efficacy and lower scores indicate weaker self-efficacy (20). In a study conducted by Peyman et al. to examine the validity of this scale, the scale was performed on 100 students who were in the third year of high school. The correlation was 0.61 (21). Self-efficacy was measured before and 2 months after the intervention by the experimental and control groups.

### 2-5. Data analysis

The data were analyzed by SPSS statistical software version 20.0, so that first, the normality of data was measured by Kolmogorov-Smirnov test. The indicators of frequency, mean and standard deviation (SD) were used to describe data and Paired t-test, Independent t-test and Chi-square

test were used to analyze information. The significance level in all tests was considered to be 0.05.

### 3- RESULTS

Baseline characteristics and contextual information of the subjects is shown in **Table.2**. Chi-square test showed that there was not a significant difference between the experimental and control groups in terms of father's education, mother's and father's occupation, economic status, living with parents and having the disease ( $P > 0.05$ ). The Chi-square test showed that there was a significant difference between the experimental and control groups in terms of mother's education ( $P = 0.01$ ). The T-test showed that there was no significant difference between the experimental and control groups in terms of age ( $P = 0.06$ ).

**Table-2:** Comparison of baseline and contextual characteristics of the participants, n=140.

Variables		Control group	Experimental group	P-value
Age (year)		15.9±0.45	15.74±0.47	0.06
Mother's education	Illiterate	40(57.1)	20(28.6)	0.01
	Secondary school	14(20)	25(35.7)	
	Diploma/ high school	13(18.6)	20(28.6)	
	University	3(4.3)	4(5.7)	
Father's education	Illiterate	20(28.6)	15(21.4)	0.95
	Secondary school	20(28.6)	26(37.1)	
	Diploma/ high school	26(37.1)	24(34.3)	
	University	4(5.7)	4(5.7)	
Mother's occupation	Housewife	65(92.9)	66(94.3)	0.97
	Employment	5(7.1)	4(5.7)	
Father's occupation	Employment	3(4.3)	8(11.4)	0.74
	Free job	64(91.4)	58(82.9)	
	Unemployed	3(4.3)	4(5.7)	
Living	With mother and father	65(92.9)	64(91.4)	0.96
	With father	0	1(1.4)	
	With mother	4(5.7)	3(4.3)	
	With relatives	1(1.4)	2(2.9)	
Economic status	Good	18(25.7)	18(25.7)	0.99
	Medium	44(62.9)	42(60)	
	Bad	8(11.4)	10(14.3)	
Having disease	Yes	6(8.6)	9(12.9)	0.71
	No	64(91.4)	61(87.1)	

The results of the independent T-test showed that no significant difference was observed between the experimental and control groups in terms of nutritional responsibility, interpersonal relationships, stress management, health-promoting behaviors and self-efficacy before educational intervention ( $P > 0.05$ ); while two months after intervention a significant

difference was observed between the experimental and control groups in terms of responsibility, physical activity, nutrition, spirituality, interpersonal relationships, stress management, health promoting behaviors and self-efficacy ( $P < 0.05$ ) (**Table.3**).

**Table-3:** Comparison of health-promoting and self-efficacy components before and after intervention in experimental and control groups, n=140.

Variables	Before intervention		P-value	After intervention		P-value
	Experimental	Control		Experimental	Control	
	Mean± SD	Mean± SD		Mean± SD	Mean± SD	
Responsibility	18.77±4.74	19.82±5.09	0.26	22.92±4.88	19.35±5.79	0.001
Physical activity	16.1±4.58	17.87±4.33	0.02	21.42±3.92	16.51±4.27	0.001
Nutrition	22.62±3.98	23.44±3.78	0.21	28.12±2.83	22.62±3.92	0.01
Spiritual growth	28.77±4.02	28.45±5.42	0.69	29.76±3.60	26.95±5.21	0.001
Interpersonal relationships	22.72±3.71	23.58±4.28	0.20	29.12±2.60	22.94±4.54	0.001
Stress management	21.05±3.97	21.82±4.32	0.27	25.38±2.29	20.85±4.43	0.01
Health-promoting behaviors	129.88±17.70	135.01±19.27	0.1	156.91±14.11	129.25±21.75	0.001
Self-efficacy	46.21±5.85	46.94±5.91	0.13	50.55±7.12	48.88±5.80	0.001

The results of the paired T- test showed that before and after the intervention in the experimental group, a significant difference was observed in the components of responsibility, physical activity,

nutrition, spiritual growth, interpersonal relationships, stress management, health-promoting behaviors and self-efficacy ( $P < 0.05$ ), (**Table.4**).

**Table-4:** Comparison of health-promoting and self-efficacy components before and after intervention in the experimental group, n=140.

Variables	Experimental group		P-value
	Before intervention	After intervention	
	Mean± SD	Mean± SD	
Responsibility	18.77±4.74	22.92±4.88	0.001
Physical activity	16.1±4.58	21.42±3.92	0.001
Nutrition	22.62±3.98	28.12±2.83	0.001
Spiritual growth	28.77±4.02	29.76±3.60	0.001
Interpersonal relationships	22.72±3.71	29.12±2.60	0.001
Stress management	21.05±3.97	25.38±2.29	0.001
Health-promoting behaviors	129.88±17.70	156.91±14.11	0.001
Self-efficacy	46.21±5.85	50.55±7.12	0.001

The results of the paired T-test showed that before and after the intervention in the control group, a significant difference was not observed in the components of

responsibility, physical activity, nutrition, interpersonal relationships, stress management, health-promoting behaviors and self-efficacy ( $P>0.05$ ), (**Table.5**).

**Table-5:** Comparison of health-promoting components before and after intervention in the control group, n=140.

Variables	Control group		P- value
	Before intervention	After intervention	
	Mean± SD	Mean± SD	
Responsibility	19.82±5.09	19.35±5.79	0.24
Physical activity	17.87±4.33	16.51±4.27	0.33
Nutrition	23.44±3.78	22.62±3.92	0.65
Spiritual growth	28.45±5.42	26.95±5.21	0.34
Interpersonal relationships	23.58±4.28	22.94±4.54	0.58
Stress management	21.82±4.32	20.85±4.43	0.06
Health-promoting behaviors	135.01±19.27	129.25±21.75	0.26
Self-efficacy	46.94±5.91	48.88±5.80	0.5

#### 4- DISCUSSION

This study was conducted to investigate the effect of educational intervention based on self-efficacy on health-promoting behaviors in female high school students in Darab, Iran, in 2018. In the present study, lifestyle intervention led to an increase in average self-efficacy in the experimental group compared to the control group. This finding is consistent with the results of studies conducted by Jahani Eftekhari et al. (2017), Hejazi et al. (2017), Madluli et al. (2019), and Packham et al. (2019), (17,22-24). Self-efficacy as an important part of the system refers to a person's perceived ability to perform a task or cope with specific situations, and it plays a key role in the proper performance, optimal mental health activities. Because self-efficacy increases self-control, learning, and effort, it is better to increase related beliefs in high school students. In this study, physical activity in the experimental group was significantly increased compared to the control group after educational intervention. This finding was consistent with the results of studies conducted by Morgan et al. (2016),

Saksvik et al. (2005), Behnam Morad et al. (2018), and Motlagh et al. (2017), (20, 25-27). In the present study, the average nutritional score in the two experimental and control groups was not significantly different before the intervention, but this difference was significant after the intervention. The finding was consistent with the results of studies conducted in Colombia and Thailand (24, 28), and the study of Pirzade et al. (2011), (29). Also, with systematic reviews and meta-analysis conducted by Dean Dudley et al. (2015), and Plotnikoff et al. (2015), (18, 30). In the present study, the average stress management in the two experimental and control groups was not significantly different before the educational intervention, but there was a significant difference between the two groups in terms of the average stress management after the educational intervention. This finding was consistent with the results of a study conducted by Packham et al. (2019) to investigate the effect of educational intervention of physical activity on the health, achievement and self-efficacy of female students in Colombia (24). This finding was consistent with the results of

the study conducted by Behnam Morad et al. (2018), (26). The results of the present study showed that the average spirituality in the two experimental and control groups was not significantly different before the educational intervention, but there was a significant difference between the two groups in terms of average spirituality after the educational intervention. In other words, interventions focused on health-promoting behaviors can promote their spirituality. This finding was consistent with the results of the study conducted by Jahani Eftekhari et al. (2017), and Hassani et al. (2015), (17, 31). The results of the present study showed that the average interpersonal relationships had increased significantly in the experimental group after educational intervention compared to pre-intervention. This finding was consistent with the results of study conducted by Behnam Morad et al. (2018) in Menopausal Women, and Hassani et al. (2015) to investigate the effectiveness of educational intervention on health-promoting behaviors of high school students in Karaj, Iran (26, 31).

The results of the present study showed that the average responsibility had increased significantly in the experimental group after the educational intervention compared to pre-intervention. This finding was consistent with the results of a study conducted by Behnam Moradi et al. (2018), and Hassani et al. (2015) (26, 31). Explaining this finding in accordance with Bandura's theory of social learning, it can be said that people are motivated to perform behaviors that have valuable consequences for them. According to Waltson and Smith, the Health Control Center theory is one of the most effective theories in health psychology. People with internal control and high self-efficacy have more health responsibilities and are more likely to engage in health-oriented behaviors. Therefore, in this study, self-efficacy in the intervention group was

strengthened in the training sessions in order to strengthen the health control center in female students and improve their health, responsibility (26). In the present study, the average health-promoting behaviors in the two experimental and control groups was not significantly different before the intervention, but this difference was significant after the intervention. This finding was consistent with the results of studies of Jahani Eftekhari et al. (2017), and Plotnikoff et al. (2015), (17, 30). The goal of health promotion programs is to encourage healthy behaviors by teaching them, helping them to do them right, and convincing people to change unhealthy habits. In the meantime, motivating people to want change by increasing their sense of self-efficacy and changing health attitudes and beliefs is an important step (26).

#### **4-1. Study Limitations**

One of the limitations of this study is the short-term follow-up of the implemented educational program. Another limitation of the present study is the study of only one section (high school), and one sex.

#### **5- CONCLUSION**

In the present study, educational intervention based on self-efficacy in high-school girl students lead to increased physical activity, improved nutrition, improved interpersonal relationships, spirituality, and stress management. Also, training program lead to increasing the average health-promoting behaviors. Given that students play an important role in community health, and because this group is the future of society and family formation, it is recommended that longer interventions take place to promote lifestyle in specific target groups.

**6- CONFLICT OF INTEREST:** None.

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