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Educational intervention based on the Extended Parallel Process Model in promoting preventive behaviors of arteriosclerosis in female high-school students

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Abstract:

BACKGROUND: Atherosclerosis can develop gradually from early life and remain asymptomatic for a long time; this research was conducted with the aim of determining the effect of educational intervention based on the Extended Parallel Process Model (EPPM) on the promotion of preventive behaviors of atherosclerosis in female students of a high school in Sabzevar city.

MATERIAL AND METHODS: This quasi-experimental study was conducted on female high-school students in Sabzevar city, northeastern Iran, from September 2021 to June 2022. In this study, 170 participants (85 people for the intervention group and 85 people for the control group) were selected using a multi-stage cluster random sampling approach. The tool used was a researcher-made questionnaire with three sections, whose validity and reliability were confirmed. The educational intervention was conducted offline and virtual in "Shad system" in three sessions for the intervention group by sending educational content designed with the methods of lectures, questions and answers, group discussions, sharing vicarious experiences, use of cues to action, and showing educational videos. Before the intervention and 2 months after the intervention, the questionnaire was completed by both intervention and control groups. The obtained data were analyzed by Stata software version 14.

RESULTS: After the educational intervention, there was a significant difference between the intervention and control groups in all the EPPM constructs. Self-efficacy, perceived response efficacy, and knowledge were the most potent predictors of behavior ($P < 0.05$).

CONCLUSION: This study showed that the educational intervention based on the EPPM is effective in promoting the preventive behaviors of arteriosclerosis in female students through improving knowledge, perceived susceptibility, perceived severity, perceived response efficacy, and self-efficacy constructs. It is suggested to pay serious attention to the self-efficacy construct in planning educational interventions based on fear and threat for adolescent girls.

Keywords:

Adolescent, extended parallel process model, atherosclerosis, education, female, students

Introduction

Cardiovascular diseases (CVDs) have become the most important cause of death and disability in the world.[1] Atherosclerosis, recognized as the main pathological process of most CVDs, can develop gradually from early life and remain asymptomatic for a long time.[2] Overall, the global prevalence

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of atherosclerosis in people aged 30 to 79 years in 2020 is estimated to be 27.6%, which is equivalent to 1066.70 million sufferers.[3] The age of CVD in Iran has decreased, and its prevalence has increased. So, it is the first cause of death and the fifth cause of disability in people over 35 years old.[4]

Modifiable behavioral factors such as unhealthy diet, excess weight, physical inactivity, alcohol consumption and smoking, and increased stress are the main risk factors for atherosclerosis.[5] A substantial part of the burden of CVD can be prevented by modifying these behavioral risk factors through preventive strategies.[6] Many unhealthy behavioral habits that are formed in childhood and youth form the basis of long-term behavioral patterns of people in adulthood.[7]

Education based on theoretical frameworks plays a vital role in changing the behavior and improving the health level of teenagers and young people.[8,9] The Extended Parallel Process Model (EPPM) has been used in recent years to prevent diseases and risky behaviors.[10–14] The EPPM constructs include fear, threat (with its two components—perceived severity and perceived susceptibility), efficacy (comprising self-efficacy and response efficacy), and two types of responses (danger control and fear control).[15] The advantage of this model is that it is based on motivational theories that can play an effective role in preventing risky behaviors before or after people encounter the risk factor.[16,17] Based on the EPPM, fear-inducing messages initiate judgment or evaluation of threat and judgment or evaluation of efficiency that can occur after presenting warning messages and ways to deal with it.[18] If people believe that they are at high risk of contacting a disease or facing a health risk, they will be more motivated to deal with that threat, and then the evaluation of the perceived response efficacy of the solutions will begin.[15]

CVD has long been recognized as a male-specific disease, and there is a misconception that CVD is not as severe in women as in men.[19] Epidemiological findings identify CVD as a leading cause of hospitalization and mortality for women, accounting for half of all deaths among women over 50 years of age in developing countries.[20] Due to the large number of teenage female students in high school and also the presence of unhealthy behaviors in girls, which is one of the risk factors of atherosclerosis, irreparable damages are imposed on the society in terms of health and socio-economic aspects.[21] This research was conducted with the aim of determining the effect of educational intervention based on the EPPM on the promotion of preventive behaviors of atherosclerosis in female students of a high school in Sabzevar city.

Material and Methods

Study design and setting

This semi-experimental study was conducted on female high-school students in Sabzevar city, northeastern Iran, from September 2021 to June 2022.

Study participants and sampling

In this study, 150 participants were selected using a multi-stage cluster random sampling approach. To collect data, urban areas were divided into four regions (North, South, East, and West regions) based on the municipal plan. Then, in each cluster, two girls' high schools were randomly selected, and one school was assigned to the intervention group and one school to the control group randomly. Next, one class was randomly selected from the classes of each high school and included in the study, and according to the basis selected for the intervention group, the control group was selected in another school of the same stratify. The sample size was calculated according to Mohsenipouya study,[22] considering a 0.47 effect size, type 1 error (α) 5%, and power 80% and considering the non-response rate of 10% and the required sample size of 160 people (80 people for each group), and finally, 154 participants remained in the study. Furthermore, we did power analysis based on information from previous study[19] using the G*Power software by type of *A priori* method,[23] and the actual power (1-β err prob) was calculated" as 0.8052623.

Data collection tool and technique

Inclusion criteria included female students studying in high school, not suffering from chronic disease, family members not suffering from active cardiovascular disease (which could cause a difference in the level of knowledge and attitude of the participants of the intervention and control groups), and having the ability to use virtual network. Exclusion criteria included failure to complete the written consent form to participate in the research, possibility of transfer from school, and failure to participate in more than one session of the educational program (for people in the intervention group).

The tool used was a researcher-made questionnaire with three sections including demographic information (age, height, weight, marital status, educational level, place of residence, education level of parents, father's occupation, mother's occupation, monthly family income, underlying disease, history of heart disease in the family). The second part was related to knowledge, which included 11 questions about arteriosclerosis that were measured with the options of yes, no, and don't know. The score range was 0–22. The third part of the questionnaire included questions related to the EPPM constructs. The questions of perceived susceptibility to the possibility of atherosclerosis, which included seven

questions, were measured with a 5-option Likert scale, and the score of the questions ranged from 0 to 4. The score range was 0–28. The questions of the perceived severity of the complications and consequences of arteriosclerosis include seven questions that were measured with a 5-point Likert scale, and the score of the questions ranged from 0 to 4. The score range was 0–28. The questions about the perceived response efficacy to the recommended strategies to reduce the incidence of atherosclerosis included six questions that were measured with a 5-option Likert scale, and the score of the questions ranged from 0 to 4. The score range was 0–24. The questions perceived self-efficacy in the ability to apply the recommended strategies to prevent atherosclerosis, which included 11 questions with a 5-option Likert scale, and the score of the questions ranged from 0 to 4. The score range was 0–44. Questions related to the preventive behaviors of arteriosclerosis included 14 questions with a 5-point Likert scale, and the scores of the questions ranged from 0 to 4. The range of scores was 0–56.

The design of the questionnaire was done by using related articles and reliable scientific sources to compile the EPPM constructs and determine the questions. In the qualitative review of face validity, based on the opinions of 10 students with inclusion criteria, changes were made in the questionnaire in terms of appearance, choice of words, and comprehensibility of sentences. In the qualitative method of determining content validity, the questionnaire was given to 10 health education and health promotion specialists, and the necessary changes were made based on their opinions in the use of appropriate words, placement of items in the appropriate place, observance of grammar, and proper scoring. To quantitatively determine content validity, the content validity ratio (CVR) and content validity index (CVI) were calculated. In order to determine the CVR, the health education experts commented on the necessity or non-necessity of each item, and CVR values higher than 0.62 were accepted according to the Lawshe table,[24] and five questions were removed. To determine CVI, the criteria of relevance, clarity, and simplicity of the items were checked by health education experts and values higher than 0.79 were accepted. To measure the reliability of the tool, 30 students with inclusion criteria completed the questionnaire and Cronbach's alpha coefficient was used to determine the internal consistency. The participants at this stage were not selected for the next parts of the research. Usually, the acceptable value of Cronbach's alpha coefficient is higher than 0.70.[25] Cronbach's alpha coefficient was obtained for knowledge, 0.83; perceived susceptibility, 0.72; perceived severity, 0.73; perceived response efficacy, 0.83; perceived self-efficacy, 0.77; and preventive behaviors, 0.73.

After selecting the participants, the objectives of the research were explained to them and the written consent form was completed by the participants for their voluntary and informed participation in this research. Then the people of the intervention and control groups completed the three-part questionnaire. Based on the data obtained in this stage and the use of reliable scientific sources and with the opinion of relevant experts, the educational content was designed based on the EPPM constructs.

Educational intervention program

The educational content included the definition and importance of arteriosclerosis, risk factors, symptoms and complications of the disease, ways of diagnosis and treatment, and preventive behaviors of arteriosclerosis. Then the educational intervention was implemented on the intervention group, while the control group did not receive any education. The educational intervention was conducted offline and virtual in "Shad system" (the official cyber education system of the Ministry of Teaching and Growing of the Islamic Republic of Iran) in three sessions[26] for the intervention group by sending educational content designed with the methods of lectures, questions and answers, group discussions, sharing vicarious experiences, use of cues to action, and showing educational videos [Table 1].

Two months[27] after the completion of the educational intervention, the three-part questionnaire was completed again by both intervention and control groups. In order to comply with ethical considerations, at the end of the study, the control group was given the educational package with the aim of promoting preventive behaviors of atherosclerosis.

Statistical analysis

Data analysis was done using Stata software version 14. At first, the Kolmogorov–Smirnov test was used to check the normality of the data. In the descriptive statistics section, the results were reported in the form of mean, standard deviation, frequency, and percentage.

In the analytical statistics section, to compare the relationship between qualitative variables in different groups, the Chi-square test was used, independent *t*-test was used to compare the mean constructs of EPPM between the intervention and control groups, and the paired *t*-test was used to compare the mean constructs before and after the educational intervention.

ANCOVA test was used after the intervention to control the scores of EPPM constructs between the intervention and control groups before the educational intervention (pre-test). Uni-variable and multi-variable linear regression by the backward method was applied

Table 1: Educational program for the intervention group

Sessions	Objectives	Educational content and methods
First sessions (60 minutes)	Acquaintance of students with arteriosclerosis (improving knowledge)	Topics: Knowledge construct improvement: Knowledge of arteriosclerosis and its importance for health, risk factors of arteriosclerosis, symptoms of arteriosclerosis, how to diagnose and treat arteriosclerosis, methods of arteriosclerosis prevention Training method: lectures with questions and answers Teaching Aids: educational video
Second sessions (60 minutes)	Increasing the perceived susceptibility and perceived severity of students about arteriosclerosis	Topics: Perceived severity construct improvement: Description of physical complications caused by arteriosclerosis, discussion about family and social consequences of atherosclerosis, consultation by health professionals about cardiovascular complications caused by atherosclerosis and ways to prevent it Perceived susceptibility construct improvement: Discussion about the possibility of starting the disease from the young age, strengthening the intention of students for preventive measures against arthrosclerosis Training method: Lectures with questions and answers, group discussion, consultation with health professionals as cues to action Teaching Aids: educational video
Third sessions (60 minutes)	Increasing students' perceived response efficacy and perceived self-efficacy to promote atherosclerosis prevention behaviors	Topics: Perceived response efficacy construct improvement: Expression of vicarious experiences along with showing videos about the complications of arteriosclerosis in order to increase the motivation to deal with risk factors Self-efficacy construct improvement: Building confidence in the ability to prevent arteriosclerosis, breaking the desired behavior into smaller and simpler units, persuading and encouraging students to discuss about behaviors that prevent atherosclerosis Training method: Lectures, group discussion using strategies of vicarious experiences and emotional and physiological states Teaching Aids: Educational video

to examine the association between knowledge, perceived susceptibility, perceived severity, perceived response efficacy, self-efficacy, and family history of cardiovascular disease with behavior. The significance level was considered <0.05.

Ethical consideration

Ethical approval was obtained from the Human Research Ethics Committee at the Sabzevar university of medical sciences (Code IR.MEDSAB.REC.1400.088). The informed consent form for students' participation in this study was signed by their parents/legal guardian(s). Also, all study participants provided written informed consent. Confidentiality and anonymity were ensured. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration.

Results

The results showed that the mean age of the participants was 13.72 ± 1.00, the mothers' education was 35.5% and the fathers' was 33.8% diploma, and 79.2% of the mothers' jobs were housewives. 99.4% of them live in the urban, 39.6% have a family income of less than 20 million I.R. Rial, and 14.9% have a history of cardiovascular disease in the family [Table 2].

On the other hand, the variables of age, weight, height, educational level, parents' education, parents' occupation, place of residence, family income, history of underlying disease in the student, and history of cardiovascular disease in the family were not significantly different in the intervention and control groups ($P > 0.05$, Table 2).

The results showed that the average score of knowledge ($P < 0.001$), perceived sensitivity ($P < 0.001$), perceived severity ($P < 0.001$), self-efficacy ($P < 0.001$), and behavior ($P = 0.021$) in the intervention group before and after the educational intervention compared to the control group had a statistically significant difference, while in the control group, there is no statistically significant difference in the mean of these constructs of the model before and after intervention ($P > 0.05$) [Table 3].

The ANCOVA test was used to compare the means of parallel process model constructs in the two groups after adjusting pre-test as a covariate. Results showed there was a significant difference between the adjusted

Table 2: Comparison of demographic variables in intervention and control groups before educational intervention

Variable	Category	Total (*n*=154)	Intervention group (*n*=73)	Control group (*n*=81)	*P*
Age (yr), mean (SD)	NA	13.72±1.00	13.76±1.03	13.69±0.98	0.60[a]
Height (cm), mean (SD)	NA	156.96±9.55	157.86±8.26	156.15±10.57	0.14[a]
Weight (kg), mean (SD)	NA	49.94±9.05	51.30±9.25	48.72±8.76	0.28[a]
Grade, frequency (percent)	Seventh	50 (32.5)	26 (35.6)	24 (29.6)	0.74[b]
	Eighth	54 (35.1)	25 (34.2)	29 (35.8)	
	Ninth	50 (32.5)	22 (30.1)	28 (34.6)	
Mother's education, frequency (percent)	Illiterate	5 (3.2)	2 (2.7)	3 (3.7)	0.16[b]
	Elementary	42 (27.3)	20 (27.4)	22 (27.2)	
	Secondary	23 (14.9)	10 (13.7)	13 (16)	
	Diploma	54 (35.5)	32 (43.8)	22 (27.2)	
	University	30 (19.5)	9 (12.3)	21 (25.9)	
Father's education, frequency (percent)	Illiterate	3 (1.9)	1 (1.4)	2 (2.5)	0.14[b]
	Elementary	34 (22.1)	12 (16.4)	22 (27.2)	
	Secondary	36 (23.4)	18 (24.7)	18 (22.2)	
	Diploma	52 (33.8)	31 (42.5)	21 (25.9)	
	University	29 (18.8)	11 (15.1)	18 (22.2)	
Mother's occupation, frequency (percent)	Housewife	122 (79.2)	67 (91.8)	62 (76.5)	0.47[b]
	Azad	7 (4.5)	6 (8.2)	3 (3.7)	
	worker	2 (1.3)	0 (0)	2 (2.5)	
	Employee	22 (14.3)	0 (0)	16 (16)	
	Retired	1 (0.6)	0 (0)	1 (1.2)	
Father's occupation, frequency (percent)	Unemployed	5 (3.2)	2 (2.7)	3 (3.7)	0.52[b]
	Azad	89 (57.8)	47 (64.4)	33 (40.7)	
	worker	31 (20.1)	13 (17.8)	27 (33.3)	
	Employee	24 (15.6)	8 (11)	16 (19.8)	
	Retired	5 (3.2)	3 (4.1)	2 (2.5)	
Location, frequency (percent)	Urban	153 (99.4)	73 (100)	80 (98.8)	0.52[c]
	Rural	1 (0.6)	0 (0)	1 (1.2)	
Household income per month, frequency (percent)	Less than twenty million I.R. Rial	61 (39.6)	28 (34.6)	33 (45.2)	0.31[b]
	Twenty to fifty million I.R. Rial	52 (33.8)	28 (34.6)	24 (32.9)	
	More than fifty million I.R. Rial	41 (26.6)	25 (30.9)	16 (21.9)	
Having underlying disease in the student, frequency (percent)	Yes	3 (1.9)	1 (1.4)	2 (2.5)	0.53[C]
	NO	151 (98.1)	72 (98.6)	79 (97.5)	
Family history of cardiovascular disease, frequency (percent)	Yes	23 (14.9)	10 (13.7)	13 (16)	0.43[b]
	NO	131 (85.1)	63 (86.3)	68 (84)	

SD: Standard deviation, NA: Not applicable, [a]Independent *t*-test, [b]Chi-square test, [C]Fisher exact test, Significance level <0.05

means in the groups in the post-test, which confirms the efficiency of the educational intervention in the intervention group [Table 4].

Knowledge, perceived response efficacy, and self-efficacy were associated with behavior ($P < 0.05$). Among them, self-efficacy (standardized B = 0.414, $P < 0.001$), perceived response efficacy (standardized B = 0.269, $P = 0.001$), and knowledge (standardized B = 0.159, $P = 0.049$) were the most potent predictors of behavior. In the multi-variable linear model, we entered knowledge, perceived susceptibility, perceived severity, perceived response efficacy, self-efficacy, and family history of cardiovascular disease with the backward technique. In this model, it was estimated that for one unit increase in the self-efficacy score, the average behavior score increases to 0.409 (adjusted R-squared = 16.6%, $P < 0.001$) [Table 5].

Discussion

Among the EPPM constructs, self-efficacy, perceived response efficacy, and knowledge were the most potent predictors of behavior.

While before the educational intervention there was no significant difference in the knowledge, perceived susceptibility, perceived severity, and perceived response efficacy constructs between the control and intervention groups, after the intervention, the score of these constructs of the intervention group showed a significant difference with the before intervention and also with the control group, which indicated the improvement of these constructs as a result of the educational intervention. These results are in line with the study of Ahmadi Tabatabaei,[28] Ivari,[29] and Mohammadi[30] studies. It seems that the educational

Table 3: Comparison means of parallel process model constructs between control group and intervention group (before and after the intervention)

Variable	Intervention group Mean±SD	Control group Mean±SD	*P**
Knowledge			
Before intervention	15.86±3.07	16.72±2.78	0.069
After intervention	19.65±2.21	16.81±2.64	<0.001
*P***	<0.001	0.502	NA
Perceived susceptibility			
Before intervention	14.64±4.22	14.47±4.31	0.805
After intervention	19.15±3.45	14.60±4.71	<0.001
*P***	<0.001	0.091	NA
Perceived severity			
Before intervention	17.41±4.23	16.45±3.47	0.127
After intervention	21.36±4.00	16.71±3.65	<0.001
*P***	<0.001	0.061	NA
Perceived response efficacy			
Before intervention	18.64±4.09	18.32±3.96	0.620
After intervention	21.10±3.20	18.24±4.10	<0.001
*P***	<0.001	0.590	NA
Self-efficacy			
Before intervention	30.02±7.71	31.12±6.56	0.342
After intervention	34.34±6.95	31.74±6.73	0.020
*P***	<0.001	0.056	NA
Behavior			
Before intervention	29.91±6.06	28.72±5.65	0.210
After intervention	31.09±6.71	27.86±5.80	0.028
*P***	0.021	0.184	NA

SD: Standard deviation, NA: Not applicable, *Independent *t*-test, **Paired *t*-test, Significance level <0.05

Table 4: Comparison means of parallel process model constructs in intervention and control groups after the intervention by adjusting the effect of the score before the intervention (pre-test) using ANCOVA analysis

Variable	Mean square	df	*F*	*P*	Partial Eta Squared
Knowledge					
Before intervention	455.25	1	150.29	<0.001	0.499
Group	422.76	1	139.56	<0.001	0.480
Perceived susceptibility					
Before intervention	1747.81	1	294.96	<0.001	0.661
Group	649.58	1	109.62	<0.001	0.421
Perceived severity					
Before intervention	1484.30	1	304.15	<0.001	0.688
Group	565.14	1	115.80	<0.001	0.434
Perceived response efficacy					
Before intervention	951.36	1	126.58	<0.001	0.456
Group	271.69	1	36.15	<0.001	0.193
Self-efficacy					
Before intervention	5483.57	1	508.48	<0.001	0.771
Group	474.22	1	43.97	<0.001	0.226
Behavior					
Before intervention	1232.15	1	39.50	<0.001	0.207
Group	103.83	1	3.32	0.042	0.121

Adjusted variables: knowledge, perceived susceptibility, perceived severity, perceived response efficacy, self-efficacy, behavior (pre-test)

intervention was able to improve the EPPM constructs in an acceptable manner.

The self-efficacy construct showed a significant improvement in the intervention group after the educational intervention compared to before the intervention and control groups, and Rezaie[31] and Jahani Eftekhari's[32] studies confirm this result. It should be noted that the self-efficacy score also improved in the control group, although this increase was not significant. It seems that the participation of the control group people in the study and facing the questionnaire questions was effective on their perceived self-efficacy.

Among the EPPM constructs, self-efficacy, perceived response efficacy, and knowledge were the most potent predictors of behavior, which is consistent with the results of Ahmadi Tabatabaei,[28] Lotfi Mainbolagh,[33] and Karimiankakolaki's[34] studies. Also, self-efficacy was the strongest predictor of behavior among all constructs. In line with these results, Gerayllo[35] showed that among the constructs of the model, self-efficacy is the strongest predictor of behavior. This can indicate the importance of the self-efficacy construct in improving behavior and behavior modification as well as the need to pay attention to improving the perceived self-efficacy of people in planning educational interventions. In fact, when exposed to threatening messages, adolescents with high self-efficacy show a more appropriate reaction in the face of the possibility of the risk of developing arteriosclerosis, and as a result of the person's belief in the ability to manage the threat and overcome it, the danger control process begins. After self-efficacy, the perceived response efficacy was the most potent predictor of behavior. Hatchell[36] and Heydarabadi[37] studies have introduced self-efficacy and perceived response efficacy as two strong constructs in facilitating the adoption of healthy behavior. Therefore, it should be said that paying attention to efficacy in the design of educational interventions with the aim of improving preventive behavior is very important.

Regarding the behavior, a significant improvement was observed in the intervention group after the educational intervention compared to before the intervention and the control group. This result is consistent with the findings of Karimy,[38] Jasemzadeh,[39] and Heydarabadi[37] studies. Messages containing effective strategies to deal with the threat, along with fear-motivational content, will play a decisive role in modifying behavior.

In Termeh Zonouzy's[40] study, the educational intervention based on the EPPM led to the improvement of behavioral intention, while it was not effective in improving the behavior. In justifying these contradictory

Table 5: Factors affecting behavior using univariable and multivariable linear regression models. Model based on 154 observations, adjusted R^2=16.6% for final model, P=0.001

Variable	Univariable				Multivariable			
	B	SE	Standardized Coefficients Beta	*P***	*B*	SE	Standardized Coefficients Beta	*P***
Knowledge	0.356	0.179	0.159	0.049	-	-	-	-
Perceived susceptibility	0.140	0.109	0.103	0.202	-	-	-	
Perceived severity	0.206	0.114	0.145	0.072	-	-	-	-
Perceived response efficacy	0.430	0.125	0.269	0.001	-	-	-	-
Self-efficacy	0.378	0.067	0.414	<0.001	0.373	0.067	0.409	<0.001
Family history of cardiovascular disease, Yes/No	2.055	1.42	0.116	0.152	2.23	1.29	0.124	0.088

"- ": Not applicable, *Univariable linear regression, **Multivariable linear regressions, significance level <0.05. Variables entered in the multivariable model: knowledge, perceived susceptibility, perceived severity, perceived response efficacy, self-efficacy, family history of cardiovascular disease

results, it should be noted that there are several factors that influence the effectiveness of fear appeals, including social norms, perceived threat level, and perceived response effectiveness. On the other hand, behavior modification requires sufficient time and follow-up to achieve the desired behavior.

Limitation and recommendation

Data collection 2 months after the intervention was one of the limitations of this study, while ensuring the deployment of stable behavior requires long-term follow-up. Also, the behavior has been investigated by the self-report method and the observation of people's behavior has not been done objectively.

Suggestions

It is suggested to pay serious attention to the self-efficacy construct in planning educational interventions based on fear and threat for adolescent girls.

Conclusion

The results of the study showed that the educational intervention based on the EPPM is effective in promoting the preventive behaviors of arteriosclerosis in female students through improving knowledge, perceived susceptibility, perceived severity, perceived response efficacy, and self-efficacy constructs. Also, self-efficacy and perceived response efficacy constructs showed the greatest ability to influence behavior.

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This study was approved by the ethics committee of Sabzevar University of Medical Sciences (Code IR.MEDSAB.REC.1400.088). All participants signed the consent form before beginning the study.

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Conflicts of interest

There are no conflicts of interest.

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