

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_271_19

The effect of self-care education regarding high-risk behaviors of acquired immune deficiency syndrome and smoking on knowledge and attitude of adolescent girls: An experimental study to health promotion

Forogh Borandegi, Fatemeh Rahmanian¹, Zahra Yazdanpanahi¹, Azar Nematollahi¹

Abstract:

BACKGROUND: The vulnerability of the youth to acquired immune deficiency syndrome (AIDS) and smoking is one of the most important public health issues around the world. Adequate knowledge about AIDS and smoking is a powerful tool for promoting positive attitudes and safe behaviors.

OBJECTIVE: This study aimed to determine the effect of self-care education on AIDS and smoking on the level of adolescents' knowledge and health attitude.

MATERIALS AND METHODS: This experimental study was conducted in the academic year of 2017–2018, and the participants were selected using randomized cluster sampling. These participants included 220 female students of the third grade of middle school in Isfahan (105 in the intervention group and 115 in the control group). Data were collected using a demographic questionnaire; a researcher-made questionnaire on knowledge about AIDS, knowledge about smoking, and attitudes toward smoking; and a standard questionnaire on students' attitude toward AIDS. After completing the pretest, the intervention group performed two training sessions and completed the posttest 1 month later. One month after completing the pretest, the control group completed the posttest and did not receive an intervention. Finally, the data were analyzed using descriptive statistics, statistical tests, and statistical software SPSS version 22.

RESULTS: The results showed that despite the similarity between the two groups at the beginning of the study, after self-care education, the knowledge level of AIDS ($P < 0.001$) and attitude toward AIDS ($P < 0.001$) and the knowledge level of smoking ($P < 0.001$) and attitude toward smoking ($P < 0.001$) in the intervention group were significantly higher than the control group. In intragroup analysis, it was also observed that the difference between the scores before and after was only significant in the intervention group.

CONCLUSION: It seems that education can promote the level of knowledge and attitude of adolescents toward AIDS.

Keywords:

Acquired immune deficiency syndrome, attitude, health promotion, knowledge, self-care

Student Research
Committee, Shiraz
University of Medical
Sciences, Shiraz, Iran,
¹Department of Midwifery,
School of Nursing
and Midwifery, Shiraz
University of Medical
Sciences, Shiraz, Iran

Address for correspondence:

Ms. Azar Nematollahi,
Department of Midwifery,
School of Nursing
and Midwifery, Shiraz
University of Medical
Sciences, Shiraz, Iran.
E-mail: nematolah@sums.ac.ir

Received: 19-05-2019
Accepted: 03-10-2019

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Borandegi F, Rahmanian F, Yazdanpanahi Z, Nematollahi A. The effect of self-care education regarding high-risk behaviors of acquired immune deficiency syndrome and smoking on knowledge and attitude of adolescent girls: An experimental study to health promotion. *J Edu Health Promot* 2020;9:7.

Introduction

Adolescence is a critical stage in life that provides a basis for health in adulthood.^[1] The changes in adolescence have health consequence not only in adolescence but also over the life course.^[2]

Due to their unhealthy behaviors, adolescents are exposed to health risks.^[3]

According to the World Health Organization constitution, "... The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being." Healthy people should maintain their health through self-care; moreover, through self-care, an individual can remain healthy into their seventh, eighth, and ninth decades.^[4]

More than half of noncommunicable diseases are due to health-related behaviors in adolescence.^[5] For example, the use of tobacco, sexually transmitted infections including HIV, bad exercise habits, and poor nutrition can cause illness or early death.^[6]

In addition, self-care is the most important form of primary care in developed and developing countries.^[7] The Declaration of Alma-Ata, the International Conference on Primary Health Care in 1978, stated that "The people have the right and duty to participate individually and collectively in the planning and implementation of their health care."^[4] In this context, self-care means attracting individuals to participate actively which is accompanied by a sense of responsibility to maintain their health and well-being.^[8]

Self-care is a mass movement and indicates that illness should be prevented from the starting point of maintaining health through lifestyles and self-care should be an international priority.^[8] Self-care is a key concept in health promotion and refers to people's decisions and actions to adapt to a health problem or to improve health.^[7] The most important target group of self-care education is youths and adolescents. Self-care in health has many elements such as proper nutrition, adequate physical activity, and avoidance of high-risk behaviors such as smoking and acquired immune deficiency syndrome (AIDS);^[4] moreover, improving lifestyle behaviors can prevent or reduce the occurrence of chronic diseases. Therefore, strategies seem to be essential to foster a healthy lifestyle in society.^[9] Effective school health programs can be one of the most cost-effective investments of a nation that can simultaneously improve education and health.^[10]

All around the world, more than 40% of new AIDS infections occur among young people aged 15–

25 years.^[11] According to the United Nations Population Fund, every 14 s a young person aged 15–24 years is infected with HIV.^[12] According to the World Health Organization, by 2020, the AIDS infection rate in Iran will reach 10%.^[13]

The vulnerability of young people to AIDS is one of the most important public health issues around the world. While many factors contribute to increasing the vulnerability to AIDS, research has identified a lack of knowledge as one of the important issues. Knowledge, attitude, and good behavior regarding HIV are some of the cornerstones in the fight against this disease. Adequate knowledge about AIDS is a powerful tool for promoting positive attitudes and safe behaviors.^[11] Various studies such as the study of Ramezan and Rostami in Tehran,^[14] the study of Baghianimoghadam *et al.* in Yazd,^[15] and the study of Babaei *et al.* in Mazandaran^[16] suggest that the level of knowledge and attitude of high school students about AIDS is not desirable.

There is a high correlation between having wrong information about HIV and HIV infection, and it is also associated with high rates of high-risk behaviors.^[17] School-based HIV/AIDS education programs may be an effective way to prevent the spread of HIV among adolescents. These trainings can be the cornerstone of the prevention of AIDS among young people.^[18]

There is ample evidence that school social atmosphere affects patterns of substance use and antisocial and destructive behaviors.^[19] One way to tackle tobacco use is information and education. To change the behavior, we need education.^[20] Young people should be equipped with the appropriate knowledge, skills, and tools in a safe and secure environment.^[21] A review of school-based tobacco prevention training programs has shown a significant reduction in smoking cessation. The evaluation of this school-based tobacco prevention program in India showed that students exposed to prevention programs were significantly less likely to be future smokers.^[22] The school environment has been accepted as an ideal setting in which to intervene with the youth. This is because a variety of students from different socioeconomic backgrounds attend school, and they are in an age range in which most people initiate cigarette smoking.^[22] Since youths and adolescents are at risk for their health, self-care education can prevent future problems. If we consider adolescence as the riskiest part of an individual's life and we properly examine the mental health of the adolescents, we can easily take an effective step to reduce the risks of this period.^[23] Today, midwifery, as a health-care provider, plays a key role in educating and preparing this vulnerable population in school health programs. Therefore, considering the importance of the period of adolescence and adolescent

vulnerability and the benefits of self-care, and that school is the only social institution available to adolescents, we aim to evaluate the impact of self-care education on high-risk behaviors of AIDS and smoking on promoting adolescent girls' health knowledge and attitude in middle school Isfahan.

Materials and Methods

This is an experimental study with IRCT20180411039270N1 code. A total of 220 female students (115 in the control group and 105 in the intervention group) of the third grade of middle school aged 14–15 years. They were studying in the academic year of 2017–2018, and all study participants will sign an informed consent for participation in the study. Samples were selected by multistage random cluster sampling. To do so, from the six regions of Isfahan, regions 1 and 4 were randomly selected. The reason why these two different areas are chosen is that we want to prevent transition of information from intervention group to control group. Then, from the junior high schools of each region, one school was randomly selected. then, one of them was randomly selected as the intervention group and other was selected as the control group using the drawing method. The exclusion criteria included unwillingness to continue the study, the failure to complete the questionnaires at all stages of research, and absenteeism in a study session. Inclusion criteria included having written informed consent, being 14–15 years old, and being at the third grade of junior high school. Finally, twenty individuals from the intervention group and four individuals from the control group were excluded.

Data collection tools included a demographic questionnaire for students and a knowledge and attitude questionnaire on AIDS and smoking.

The researcher-made questionnaire on knowledge about smoking and AIDS consisted of ten questions based on four-choice answers, and their scores ranged from 0 to 10. The researcher-made questionnaire on attitude toward smoking consisted of 11 questions whose responses were rated on a five-point Likert scale from 1 (strongly agree) to 5 (strongly disagree). The researcher-made questionnaire on attitude toward AIDS consisted of 11 questions whose responses were rated on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The content and face validity of the knowledge and attitude questionnaires toward AIDS and smoking were confirmed.

A questionnaire consisting of three parts was used to collect information. The first part of the questionnaire included demographic information. The second part was a researcher-made questionnaire which included 10

questions about knowledge about AIDS. To confirm its validity, the questionnaire was prepared in accordance with valid sources and books and other questionnaires found in this field. Subsequently, the questionnaire was given to ten professors from the Faculty of Nursing and Midwifery to examine it in terms of grammar, ambiguity and interpretability, placement of phrases as well as nonrepeatability. Moreover, in coordination with the supervisors, the necessary corrections were made. The test–retest was used to measure the reliability of the questions. To do so, 25 junior high school students who did not participate in the study took the test in two stages. Therefore, for each question, depending on its type, kappa coefficient and weighted kappa coefficient were used. Deming regression was used to evaluate the whole reliability, and the results of this analysis indicated that the questions were appropriate. The third part was Mazloumi's standard questionnaire of assessing students' attitude toward AIDS. The validity of this questionnaire was reviewed and approved in Mazloumi and Abbasi's study^[24] using several specialists in the field of infectious diseases and health education. To measure reliability, Cronbach's alpha was used to confirm the internal consistency of the questionnaire. The reliability of this questionnaire was calculated 0.80 with Cronbach's alpha method. When the informed consent form was signed by students and their parents, in the control group, three ninth-grade classes completed the pretest questionnaire. One month later, they completed the posttest questionnaire. To observe ethical considerations, after the completion of the study, the participants of the control group were provided with an educational pamphlet.

After completing the informed consent form by students and their parents, the intervention group entered three educational sessions. These sessions were held in the form of giving lectures and providing a training brochure which lasted 3 days for each of the three classes. The participants completed the pretest before the start of the training sessions, and 1 month later, they completed the posttest.

In the first session, the researcher and the participants were getting acquainted and the importance of the study and its goals were expressed. Moreover, in this session, the process of doing the study was explained and the participants were assured about the confidentiality of information. They were asked to accurately explain to parents, and informed consent forms were given to them to complete at home. The phone number was also given to students in case their parents have any questions regarding the informed consent form. The time of the next meeting was set. In the second session, after completing the pretest, training on the cause of AIDS, its symptoms and its complications in the body, the ways

of AIDS transmission, the ways of its prevention and treatment, and its diagnostic method were discussed and participants were provided with an educational brochure. In the third session, after completing the pretest on knowledge and attitude toward smoking, education on the substances and elements in cigarettes and their side effects were given; moreover, they were provided with personal behavioral skills to prevent smoking.

Confounding factors were controlled. To do so, during this, the interval between pretest and posttest, no training camps, educational campaigns, films, or lectures should be held. Furthermore, other confounding factors, including parental occupation and education, were examined, so as they were not statistically significant and were assumed to be similar.

Data analysis was performed using descriptive statistical methods, independent *t*-test, and paired *t*-test, with a significance level of 0.05. Data were analyzed using SPSS software version 22 from IBM company.

Results

In this study, from 105 eligible participants in the intervention group, after the exclusion, 85 individuals, and from 115 eligible participants in the control group, after the exclusion, 111 individuals completed the study. In terms of the demographic characteristics of the gender, all participants were girls and their age range was between 14 and 15 years. The Mann–Whitney test showed that there was no statistically significant difference between their parents’ occupations and the levels of education in the intervention and control groups ($P < 0.001$) and they were assumed equal. The results are summarized in Table 1.

The Mann–Whitney test showed that the fathers of the participants in both the groups did not differ significantly in terms of occupation ($P < 0.001$). Therefore, the fathers of the participants in the control and intervention groups had the same occupation.

The results of independent *t*-test showed that AIDS knowledge score based on self-care had no significant difference between the two groups before intervention ($P = 0.709$). However, there is a significant difference after the intervention, which indicates the impact of intervention on the level of knowledge of individuals. Furthermore, the difference in the observed changes in the two groups is significant. In intragroup analysis, it is also observed that the difference in scores before and after is only significant in the intervention group [Table 2].

Table 1: Frequently distribution occupations and the levels of education in the intervention and control groups

Variable	Group		P
	Experimental, n (%)	Control, n (%)	
Father's job			
Worker	16 (18.8)	22 (19.8)	<0.001
Employee	39 (45.8)	35 (31.6)	<0.001
Self-employed	27 (31.7)	53 (47.7)	<0.001
Retired	3 (3.7)	1 (0.9)	<0.001
Mother's job			
Homemaker	67 (78.8)	18 (21.2)	<0.001
Employed	85 (76.5)	26 (23.5)	<0.001
Father's literacy			
Guidance school	17 (20)	21 (18.9)	<0.001
High school and diploma	28 (32.9)	33 (29.7)	<0.001
University	40 (47.1)	57 (51.4)	<0.001
Mother's literacy			
Guidance school	7 (8.23)	13 (11.7)	<0.001
High school and diploma	23 (27.07)	34 (30.6)	<0.001
University	55 (64.75)	64 (57.7)	<0.001

In addition, the results of independent *t*-test showed that there was no statistically significant difference between the two groups in the attitude toward AIDS before the study ($P = 0.90$); however, after the intervention, there was a significant difference between the two groups ($P < 0.001$), which indicates the effect of intervention on the level of attitude. In intragroup analysis, it is also observed that the difference in scores before and after is only significant in the intervention group [Table 2].

In addition, the results of independent *t*-test showed that there was no statistically significant difference between the two groups in knowledge toward smoking based on self-care ($P = 0.235$), but the difference between the two groups was significant after intervention ($P < 0.001$) indicating the impact of the intervention on the level of knowledge of individuals. In intragroup analysis, paired *t*-test also showed that the difference between pre- and postscores was significant only in the intervention group [Table 3].

Moreover, the results of independent *t*-test showed that there was no statistically significant difference between the two groups in attitude toward smoking based on self-care before the study ($P = 0.344$), but after intervention, there was a significant difference between the two groups ($P < 0.001$), which indicates the effect of intervention on the level of attitude of individuals. In intragroup analysis, paired *t*-test also showed that the difference between pre- and postscores was significant only in the intervention group [Table 3].

Pearson’s correlation coefficient was used to determine whether the attitudes of individuals had changed as

Table 2: Comparison of mean knowledge and attitude toward AIDS based on self-care in intervention and control groups

Variable	Group		Statistical index	P
	Experimental (n=85)	Control (n=111)		
Knowledge				
Before the intervention	5.41±1.26	4.60±1.06	0.37	0.709
After the intervention	8.36±1.39	4.56±0.94	22.71	<0.001
Changes over 1 month	3.82±1.64	0.68±0.03-	22.36	<0.001
Statistical index	21.47	0.55		
P	<0.001	<0.581		
Attitude				
Before the intervention	36.94±5.74	38.27±5.15	1.7	0.090
After the intervention	49.47±3.44	38.51±4.38	18.94	<0.001
Changes over 1 month	12.52±5.4	0.24±2.4	21.29	<0.001
Statistical index	21.36	1.05		
P	<0.001	0.295		

Table 3: Comparison of mean knowledge and attitude toward smoking based on self-care in intervention and control groups

Variable	Group		Statistical index	P ^a
	Experimental (n=85)	Control (n=111)		
Knowledge				
Before the intervention	4.21±1.02	4.39±1.11	1.19	0.235
After the intervention	8.75±1.28	4.46±0.94	26.9	<0.001
Changes over 1 month	4.45±1.36	0.07±0.77	28.9	<0.001
Statistical index	30.6	0.98		
P	<0.001	<0.327		
Attitude				
Before the intervention	37.6±4.95	38.24±4.50	0.94	0.344
After the intervention	50.11±3.04	38.52±3.84	22.82	<0.001
Changes over 1 month	12.51±4.51	0.27±2.53	24.06	<0.001
Statistical index	25.56	1.16		
P ^b	<0.001	0.247		

^aIndependent t-test, ^bt-test paired

their awareness increased, and the results of this analysis are summarized in Table 4. Based on the probability values obtained, all correlations are meaningful. In fact, it can be said that there is a positive and significant correlation between attitude and awareness scores, and as the level of awareness increases, the level of attitude also increases.

Discussion

This study examines the effect of self-care education on AIDS and smoking knowledge and attitude, and its difference with other studies is that education has not been based on self-care.

The ever-increasing need for saving efficiency of health service demands a change toward more affordable, integrated, and sustainable care. Empowering people through self-care can reduce medical referrals. Moreover, it can reduce costs and time and be used more often where there is a greater need for improved therapeutic outcomes. In fact, on the one hand, individuals find

the ability to take responsibility for their own health, and on the other hand, providing self-care information has increased the knowledge and confidence of those attending self-care training programs.^[25]

The International Self-Care Foundation (ISF) has developed seven pillars of self-care that cover a wide range of self-care activities. The fifth pillar includes avoiding smoking, quitting smoking, and having safe sex. The ISF proposes that if a person has health motivation in health behavior, he or she may initiate other healthy behaviors. Therefore, the tendency to engage in risky behaviors will reduce.^[26]

In this study, 196 persons were studied after falling. Of 105 persons in the intervention group, 15 persons were excluded from the study due to absenteeism and 5 persons due to failure to complete posttest. Finally, the data of 85 individuals were analyzed. Of 115 persons in the control group, 4 were excluded due to missing the posttest session, and finally, the data of 111 persons were analyzed.

Table 4: Correlation of attitude domains with knowledge domains

Scope of attitude	Correlation coefficient	P
AIDS	0.752	<0.001
Cigarette	0.791	<0.001

The results showed that mothers and fathers of the two groups had no significant difference in education and occupation ($P > 0.001$). The level of education and occupation of mothers and fathers of the control and intervention groups were similar.

The results of this study indicated a significant increase in the posttest score of knowledge and attitude toward AIDS in the intervention group compared to the pretest and control group. In other words, educational intervention had a positive effect on improving students' knowledge and attitudes toward AIDS.

Peyman *et al.* (2015) in a study which aimed at investigating educational intervention on knowledge, attitude and behavior related to AIDS on 60 high school female students found out that the level of knowledge and attitude of students in intervention group after educational interventions significantly improved.^[27] The results of this study are in line with the present study. The reason for this consistency can be as follow: both studies were school-based ones, and the teaching method was similar, including lectures, questions and answers, and educational pamphlets. However, our training was based on self-care. The results of the study by Ali *et al.* in Khartoum, Sudan, on 400 students showed that school peer education is an effective approach to inform students of unsafe sexual behavior with regard to HIV/AIDS and it enables significant improvements to be made with regard to the knowledge, attitudes, and practices of the students toward HIV infection issues,^[28] which is consistent with the results of this study.

The study of Kyrychenko *et al.* in Ukraine on 200 high school students also showed that the intervention had a significant effect on the level of knowledge and attitude of the students in the intervention group compared to the control group,^[29] which is consistent with the results of this study. However, in the Kyrychenko *et al.*'s study, the training was conducted in six sessions lasting 45–60 min each, and various educational methods were used including role play, activity in small groups, and participation in open discussion.

The study of Barss *et al.* (2009) in Saudi Arabia conducted to determine the impact of peer education on 1503 male and female students of the 12th grade showed that education had a significant effect on improving students' knowledge and attitudes.^[30] In the Barss's study, the intervention

group consisted of both male and female sexes, and the training was conducted by the trained last-year medical students by PowerPoint and during two 45-min sessions.

In addition, Huang *et al.* (2008) conducted a study in China to determine the impact of peer-based education of AIDS prevention on knowledge, attitudes, and behavior of 3068 junior high school students. The results showed that education had a significant effect on improving knowledge and attitude of students^[31] In Huang *et al.*'s study, the training was conducted through the classmates selected for training.

The study of Cartagena *et al.* (2006) in Mongolia aimed to determine the impact of the 3-year AIDS prevention program on 1367 undergraduate students. It showed that the program also had a significant effect on the level of knowledge and attitude of the intervention group^[32] and the results are consistent with the results of the current study.

The Tuchinda *et al.*'s study on 899 high school students in Thailand showed that training significantly improved students' knowledge. However, it had no significant effect on students' attitude toward AIDS, which is inconsistent with the present study, and perhaps, the reason for the inconsistency is due to the differences regarding demographic, cultural, and geographical conditions.^[33]

The study of Cole *et al.* in the United States was conducted to determine the effect of education on the knowledge and attitude of 132 high school students of the ninth grade. The results showed that the intervention had no significant effect on the knowledge and attitude of the intervention group compared to the control group,^[34] which is inconsistent with the present study. In the Cole *et al.*'s study, the raining was conducted in the form of a school health program and was conducted using be active in self-education (BASE).

Jayakrishnan *et al.* (2016), in the village of Kerala, India, conducted a study to assess the prevalence of alcohol and tobacco use among adolescent schoolchildren and the effectiveness of anti-tobacco education programs in school on increasing adolescent knowledge. They showed that the mean scores of knowledge of the participants after the educational programs were higher than before the intervention. This increase was statistically significant in students who had not used tobacco before the intervention. However, in the smoking group, this difference was not significant,^[35] which is consistent with the results of the present study. The difference is that the prevalence of consumption was also examined in this study, and the sample size was 1114 students. From this study, it can be concluded that

before starting smoking, training will be more effective for prevention and it is more difficult to make changes in cigarette smokers later. This confirms the importance of starting education to prevent smoking in adolescence. In the present study, the importance of adolescence and the design and planning of these trainings were emphasized.

The Nakkash's study in Lebanon, which aimed to investigate educational intervention on the prevention of water-pipe smoking and on changes in knowledge, attitude, and behavior of 1279 fifth- and sixth-grade students, showed that after ten training sessions, the level of knowledge of the intervention group was significantly higher than that of the control group. Moreover, education had a positive effect on students' attitude.^[36] This is consistent with the present study, except that the sample size was higher in their study and was also based on social cognitive theory.

A study conducted by Haresaku *et al.* in Japan, which aimed to examine the impact of a training program on smoking attitudes and behavior on 580 dental students with a 3-year follow-up, showed that educational intervention was more likely to prevent smoking than cause quitting smoking. In addition, the improvement in the attitudes of nonsmokers was greater than smokers.^[37] The results of their study are in line with the present study, except that their study group was university students. On the other hand, as we can see, the impact of this study was greater on nonsmokers and on prevention. This indicates that starting educational interventions in adolescence is more effective than other life periods because adolescents are in the age range of starting smoking.^[22]

The first step in changing the behavior of a subject is to have enough knowledge about it, because having enough knowledge is a prerequisite for changing beliefs and behaviors. Due to the fact that a large percentage of adolescents and young people are at schools, AIDS prevention and nonsmoking education in schools are of utmost importance.^[38]

Education not only provides an opportunity to offer information but also reduces the wrong attitudes and behaviors in communicating with the people affected. Negative attitudes toward people living with AIDS represent the disgrace of the AIDS community. This is the cause of discriminatory behaviors, and affected individuals may be excluded from the family, friends, and community. The social stigma of AIDS will negatively affect the individuals so that they will not refer for counseling, testing, and receiving treatment. It is difficult to change some of these beliefs and attitudes.^[30] Although our short-term educational intervention has reduced some negative attitudes toward affected people, these interventions need to be implemented more widely.

One of the weaknesses of this study was the limited number of training sessions, because for the lasting impact of behavioral training, it is better to train continuously and during the regular program.

The researchers hope that the results of this study will be used in intervention strategies to improve students' knowledge and attitudes and to prevent AIDS and cigarette smoking, and they also hope that well-designed educational programs similar to those described may be implemented in schools.

One of the limitations of our study was that the behavior was not reviewed, and our study was an intervention based on students' knowledge and attitude; our main result was the increase in students' knowledge and attitude. Although improving knowledge and attitudes about AIDS and smoking is important in preventing AIDS and smoking, it is not clear whether changing knowledge and attitudes is sufficient to change behavior.

Another limitation of the study was that we did not follow up the long-term effects of the educational intervention, and future studies should be conducted to examine the effectiveness of the intervention over a longer period. One of the strengths of this intervention, which could justify an increase in mean scores in the intervention group compared to the control group, was the possibility of active communication and interaction between the intervention group members and the trainer. On the other hand, the use of educational pamphlets provided the students with continuous access to educational content.

Conclusion

The results of this study showed that the level of knowledge and attitude of students in the intervention group after the self-care education on AIDS was significantly higher than the control group.

It seems that self-care education promotes the level of adolescent health knowledge and attitude about AIDS.

Acknowledgment

This article is derived from the master's thesis of Forough Borandegi with the code number 96-15953. In this way, I would like to thank the Deputy of Research of Shiraz University of Medical Sciences financially supporting the research and all those who helped us in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Savage A, Februhartanty J, Worsley A. Adolescent women as a key target population for community nutrition education programs in Indonesia. *Asia Pac J Clin Nutr* 2017;26:484-93.
2. World Health Organization. Adolescence: A Period Needing Special Attention. Recognizing Adolescents Apps. World Health Organization; 2014. <http://int/adolescent/seconddecade/section2/page1/recognizing-adolescencehtml>. [Last accessed on 2018 Apr 10].
3. Low WY, Lee YK, Samy AL. Non-communicable diseases in the Asia-Pacific region: Prevalence, risk factors and community-based prevention. *Int J Occup Med Environ Health* 2015;28:20-6.
4. Webber D, Guo Z, Mann S. The responsibilities of the healthy: A 'Manifesto' for self-care. *Self Care J* 2015;6:2-9.
5. World Health Organization. The World Health Report 2002: Reducing Risks, Promoting Healthy Life: World Health Organization; 2002.
6. Adolescent Health; [Internet] 2018. Available from: http://www.who.int/topics/adolescent_health/en/.
7. Parham M, Rasooli A, Safaeipour R, Mohebi S. Assessment of effects of self-caring on diabetic patients in Qom diabetes association 2013. *Journal of sabzevar university of medical sciences*. 2014;21(3):473-84.
8. Yiangou G. Valuing self-care. *Self Care J* 2011;2:41-54.
9. Plotnikoff RC, Costigan SA, Williams RL, Hutchesson MJ, Kennedy SG, Robards SL, *et al.* Effectiveness of interventions targeting physical activity, nutrition and healthy weight for university and college students: A systematic review and meta-analysis. *Int J Behav Nutr Phys Act* 2015;12:45.
10. School Health and Youth Health Promotion 2014; [Internet] 2014. Available from: http://www.who.int/school_youth_health/en/.
11. Nubed CK, Akoachere JTK. Knowledge, attitudes and practices regarding HIV/AIDS among senior secondary school students in Fako division, South West region, Cameroon. *BMC Public Health* 2016;16:847.
12. Silva RA, Nelson AR, Duarte FH, Prado NC, Holanda JR, Costa DA. Adolescent students knowledge about transmission, prevention and risky behavior related to STD/HIV/AIDS. *Rev Pesqui* 2016;8:5054-61.
13. Zareban I, Heydarnia AR, Rakhshani F, Jabari H, Abd EM. Efficacy of AIDS prevention training program on knowledge, attitude and practice of Chabahar sailors, Iran. 2006; *Zahedan journal of research in medical sciences (tabib-e-shargh)*. 2006;8(1):29-36.
14. Ramezan KA, Rostami S. Evaluations of the rate of awareness and attitude of high school students in Tehran government schools towards AIDS. 2003. *Journal of shahid sadoughi university of medical sciences and health services*. 2003;11(1):38-41.
15. Baghianimoghadam MH, Forghani H, Zolghadr R, Rahaei Z, Khani P. Peer-led versus teacher-led AIDS education for female high-school students in Yazd, Islamic republic of Iran. *East Mediterr Health J* 2012;18:353-7.
16. Babaei F, Kheradmand M, Hosseini SJ. Effect of school-based education program about hiv/aids on the knowledge of students. 2009; *Journal of mazandaran university of medical sciences* 2009;19(70):91-2.
17. Ugarte WJ, Högberg U, Valladares E, Essén B. Assessing knowledge, attitudes, and behaviors related to HIV and AIDS in Nicaragua: A community-level perspective. *Sex Reprod Healthc* 2013;4:37-44.
18. Menna T, Ali A, Worku A. Effects of peer education intervention on HIV/AIDS related sexual behaviors of secondary school students in Addis Ababa, Ethiopia: A quasi-experimental study. *Reprod Health* 2015;12:84.
19. Patton GC, Bond L, Carlin JB, Thomas L, Butler H, Glover S, *et al.* Promoting social inclusion in schools: A group-randomized trial of effects on student health risk behavior and well-being. *Am J Public Health* 2006;96:1582-7.
20. Department of Health MoHaMEoi; 2018. Available from: <http://health.behdasht.gov.ir/page/newsarchive>.
21. Chisholm MA, Ricci JF, Taylor AT. Implementation and evaluation of an HIV/AIDS intervention program to improve student attitudes toward providing care. *Am J Pharm Educ* 1999;63:72-7.
22. Cole AG, Qian W, Leatherdale ST. Changing the smoking trajectory: Evaluating the impact of school-based tobacco interventions on changes to susceptibility to future smoking. *Int J Environ Res Public Health* 2017;14. pii: E1182.
23. Empowering Teenagers and Youth for Self-Care; 2016.
24. Mazloui MS, Abbasi SM. Knowledge and attitude survey of high school students of Yazd province of Iran about HIV/AIDS. *Zahedan journal of research in medical sciences (tabib-e-shargh)* 2006;8(1):53-63.
25. Bishop J. Factors influencing GP provision of self-care information for minor illnesses: A qualitative study-selfcare journal. *Self Care J* 2018;8(4):35-52.
26. International Self-Care Foundation. The seven pillars of self-care [Internet]. 2016 [Available from: <https://isfglobal.org/seven-pillars-self-care-framework/>].
27. Peyman N, Jangi M. The effect of educational intervention on knowledge, attitude and performance of high school girl students about AIDS. *Int J Pediatr* 2015;3:833-9.
28. Ali MHM, Osman OB, Ibrahim MAM, Ahmed WAM. The effect of AIDS peer health education on knowledge, attitudes, and practices of secondary school students in Khartoum, Sudan. *AIMS Public Health* 2015;2:718-26.
29. Kyrychenko P, Kohler C, Sathiakumar N. Evaluation of a school-based HIV/AIDS educational intervention in Ukraine. *J Adolesc Health* 2006;39:900-7.
30. Bars P, Grivna M, Ganczak M, Bernsen R, Al-Maskari F, El Agab H, *et al.* Effects of a rapid peer-based HIV/AIDS educational intervention on knowledge and attitudes of high school students in a high-income Arab country. *J Acquir Immune Defic Syndr* 2009;52:86-98.
31. Huang H, Ye X, Cai Y, Shen L, Xu G, Shi R, *et al.* Study on peer-led school-based HIV/AIDS prevention among youths in a medium-sized city in China. *Int J STD AIDS* 2008;19:342-6.
32. Cartagena RG, Veugelers PJ, Kipp W, Magigav K, Laing LM. Effectiveness of an HIV prevention program for secondary school students in Mongolia. *J Adolesc Health* 2006;39:925.e9-16.
33. Tuchinda S, Chotpitayasunondh T, Teeraratkul A. Knowledge, attitudes, and practices of senior high school students regarding human immunodeficiency virus infection. *J Med Assoc Thai* 1998;81:130-5.
34. Cole BP, Nelson TD, Steele RG. An evaluation of a peer-based HIV/AIDS education program as implemented in a suburban high school setting. *J HIV AIDS Prev Child Youth* 2008;9:84-96.
35. Jayakrishnan R, Geetha S, Mohanan Nair JK, Thomas G, Sebastian P. Tobacco and alcohol use and the impact of school based antitobacco education for knowledge enhancement among adolescent students of rural Kerala, India. *J Addict* 2016;2016:9570517.
36. Nakkash R, Lotfi T, Bteddini D, Haddad P, Najm H, Jbara L, *et al.* A randomized controlled trial of a theory-informed school-based intervention to prevent waterpipe tobacco smoking: Changes in knowledge, attitude, and behaviors in 6th and 7th graders in Lebanon. *Int J Environ Res Public Health* 2018;15. pii: E1839.
37. Haresaku S, Hanioka T, Yamamoto M, Ojima M. Impact of a tobacco curriculum on smoking behaviour and attitudes toward smoking in dental students in Japan: A three-year follow-up study. *Int Dent J* 2010;60:99-105.
38. Olley BO, Ephraim-Oluwanuga O, Lasebikan VO, Gureje O. Attitudes towards community based residential care for people living with HIV/AIDS in Nigeria. *Afr J Med Med Sci* 2006;35 Suppl:103-8.