ORIGINAL PAPER

The impact of educational interventions on HIV/AIDS prevention in Iranian adolescents: a systematic review study

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Abstract

Introduction: Human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) is one of the most serious health problems and the deadliest infectious disease of the present century. Lack of awareness of HIV in adolescence puts this population at risk. Increasing knowledge, and changing misconceptions and behaviors are the best ways to prevent the disease. In this regard, educational programs have high ability to strongly influence HIV prevention and spreading. This study aimed to investigate the impact of educational interventions on HIV/AIDS prevention among Iranian adolescents.

Material and methods: The present study was a systematic review study. English and Persian-written articles search was conducted from databases, including Scopus, Science Direct, Web of Science, PubMed, and Embase as well as Persian Database of Jihad Publications (SID), Magiran, and Barakat Knowledge Network. Key words used were "Education Program", "AIDS", "Adolescent", "Preventive Education", "Counter, Knowledge", and "Attitude." Of 50 articles on the subject of HIV prevention program in Iranian adolescents, 12 were selected for analysis.

Results: Based on the extracted articles and conceptual content of each paper, the articles were divided into two areas of knowledge and attitude towards HIV, and HIV preventive behaviors. Most of the results of the studies on the investigated subject reported a significant impact of the application of educational interventions on increasing level of knowledge, attitudes, and protective behaviors.

Conclusions: Educational approaches to prevent HIV in Iranian adolescents have a significant impact on the level of their awareness and attitude regarding HIV/AIDS. However, among the problems in the conducted studies, the lack of screening programs and re-evaluation periods are mentioned.

HIV AIDS Rev 2025; 24, 2: 119-125
DOI: https://doi.org/10.5114/hivar/157285

Key words: AIDS/HIV, adolescents, education, prevention, systematic review.

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Article history:
Received: 05.11.2022
Revised: 05.12.2022
Accepted: 08.12.2022?
Available online: 05.05.2025

International Journal of HIV-Related Problems
HIV & AIDS Review

Introduction

All around the world, about 50% of all new human immunodeficiency virus (HIV) cases occur in the age range of 10-24 years. Studies in various countries show that in both school and outside school environments, adolescents and young people are involved in high-risk sexual behaviors [1]. School-based health education has been focused on adolescents since the early 1990s by the World Health Organization (WHO). According to the WHO latest report (2018), 9.36 million people are living with HIV globally. Although the prevalence of the disease in Iran is still lower than globally and in Eastern Mediterranean countries, it has recently been growing. According to the WHO, the Iranian AIDS (acquired immunodeficiency syndrome) population tripled the number, resulting in 2,000 individuals [2]. Although HIV is a crucial medical phenomenon, it is considered a personal behavior, while social and cultural phenomenon is one of the most important risk factors for the disease influencing high-risk sexual activities [3, 4]. When adolescents start engaging in sexual activities, their behaviors will have important consequences for their health and well-being [5]. According to research, nearly 40% of students did not use condoms during their last sexual activities. Approximately, half of all new sexually transmitted infections occur among people aged 15 to 24 years, and the number of HIV/AIDS diagnoses has increased by approximately 60% in individuals aged 15 to 19 years [6].

The results of earlier research also showed that the level of awareness and attitude towards HIV/AIDS among adolescents is visible. Therefore, more coordinated efforts to prevent HIV are needed as well as to improve adolescent sexual health and reduce high-risk sexual behaviors [7]. Adolescents are increasingly at risk of HIV infection through high-risk sexual behaviors, and community-level interventions are crucial to reduce behavioral risk [8]. HIV infection has emerged as a major public health challenge in the new millennium. Currently, the HIV epidemic is spreading rapidly among the youth. Since students are valuable resources for the future of a country, it is essential to provide them with the necessary information [9]. According to the WHO, the most effective way to fight AIDS is health education [10]. In general, extensive research has been conducted around the world using HIV preventive interventions, and these measures have also been carried out in Iranian society [11]. However, there has been no systematic review study in Iran to investigate educational interventions in adolescents who are a sensitive group with high-risk behaviors. Therefore, the current study aimed to examine the impact of educational interventions on HIV/AIDS prevention among Iranian adolescents.

Material and methods

The present study was a systematic review study, using a search in English and Persian databases, including, Google Scholar, Scopus, Science Direct, Web of Science, PubMed, and Embase as well as Persian Database of Academic Jihad Publications (SID), Magiran, and Barakat. In order to search for articles, Persian and English key words were determined by MeSH terms. To access the correct key words, MeSH section designed in the PubMed database was applied, which eventually selected "Education Program", "AIDS", "HIV", "Adolescence", "Preventive Education", "Counseling", "Knowledge", "Attitude", "Behavior", "OR", "AND". No restrictions were employed in English databases to obtain faster access on the subject of the study. PICO method was employed as search strategy. Most of the extracted articles were related to the Google Scholar database. Of the 50 articles found on the study subject, 12 fulfilled research criteria (Figure 1).

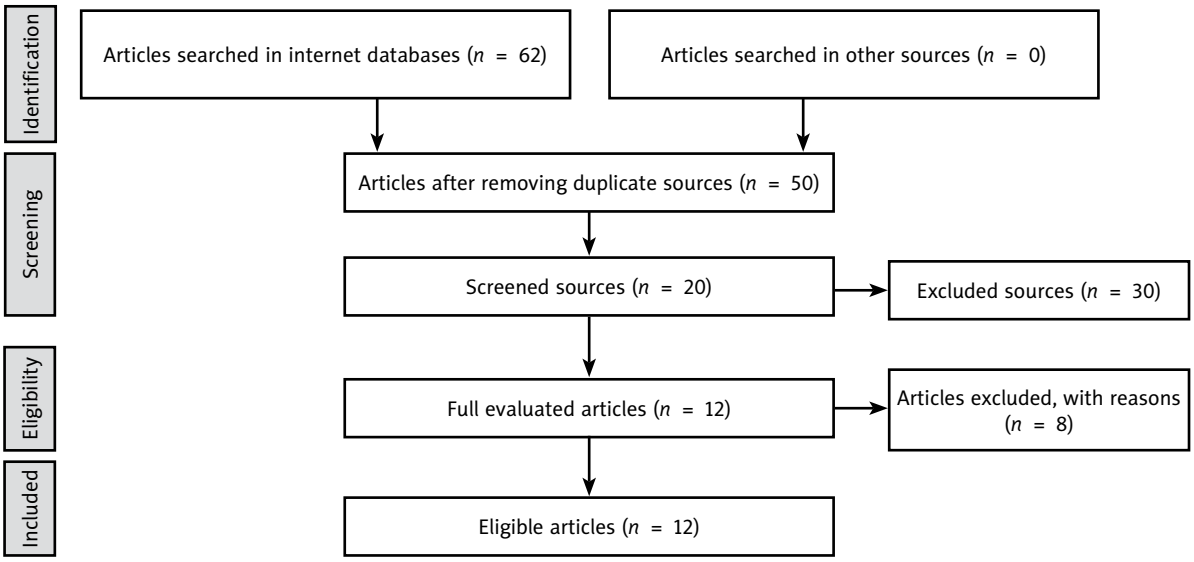

Figure 1. Process of selecting articles

Timeframe of the selected articles ranged from 2010 and 2022. Studies were evaluated on the basis of Cochran quality assessment scale.

Evaluation of the quality of articles

Quality of the selected articles was evaluated by two researchers independently using Newcastle-Ottawa scale (NOS). This scale examines articles in terms of selection process in four parts, including representativeness of the sample and sample size, non-response, measurement tools, and comparability of results. Based on this scale, articles were scored from zero (the weakest study) to 10 (the strongest study), and studies, which scored above 4 were considered quality studies. According to quality results of the examined articles, all the selected papers at this stage had a score higher than 4 (optimal level).

Study selection criteria

Experimental- and semi-experimental studies (clinical trials), with free access to the full text, Persian and English-written studies conducted among Iranian population, and teenagers' age range between 10 and 19 years were the study criteria.

Results

Based on the extracted articles and according to the conceptual content of each paper in the field of HIV preventive education among Iranian teenagers, the articles were divided into two categories of knowledge and attitude towards HIV, and preventive behaviors (Tables 1 and 2).

Knowledge and attitude towards HIV

Extent knowledge and awareness about HIV is one of the key strategies used in prevention and control. All over the world, insufficient knowledge and risky behaviors are the main factors in the spread of infectious diseases. In many countries, specific programs related to behavioral disorders are lacking, especially in developing societies. This may be attributed to social attitudes and misconceptions about sex education, thus exposing adolescents to other sources of unreliable information [12]. Studies showed that misconceptions and lack of awareness about this disease are very common among teenagers, and it is evident that in the fight against this epidemic disease, good quality education is necessary for all children and teenagers, so that their lives, which are endangered due to lack of awareness and fear of this disease, can be saved [13]. In this regard, studies have also been conducted among Iranian teenagers. Aghdasi *et al.* [9] conducted an experimental study investigating the effect of an educational program based on theoretical framework on the attitude of 90 female students in Torbat-Haidaryeh. The results showed that there was no significant difference in attitudes between the test and control groups before the intervention, but after the training, these variables increased significantly in the test group ($p < 0.05$). Education based on a new approach of HIV education and within the framework of the theory of planned behavior, is an effective intervention in improving the attitude towards HIV among students. Another study by Khezri *et al.* [14] demonstrated a significant increase in the attitude and awareness of street children in the intervention group compared with the control group and before the intervention. Follow-up data collected one month later showed that children who received HIV/AIDS intervention, subsequently had more HIV/AIDS knowledge and more favorable attitudes towards HIV/AIDS. The authors stated that improved knowledge and attitude can protect the children from risky behaviors.

Shobeiri *et al.* [15] conducted a semi-experimental study investigating the effect of a counseling program with an AIDS prevention approach on students' knowledge and attitudes. The findings showed that the awareness and attitude immediately and one month after the intervention increased significantly over time compared with that before the intervention. Furthermore, the educational intervention using group counseling method was effectively impacting the awareness and attitude towards AIDS disease of teenage girls in boarding centers. Moreover, Khoshgoftar *et al.* [16] in their study emphasized the effect and efficiency of health belief model in awareness and perceived sensitivity of AIDS, and demonstrated that education based on the health belief model increased the levels of intensity, perceived benefits, and self-efficacy as well as reduced perceived obstacles in female students. However, creating sensitivity in this age group requires long-term intervention.

In addition, studies by Babaei *et al.* [17] and Moghadam *et al.* [10] reported that an educational program can lead to increasing knowledge and improving the attitude of adolescents towards HIV. Although the results of these studies indicated the effect of prevention educational programs on improving the level of knowledge and attitude of teenagers, most of the research determined the impact of education on the level of knowledge and awareness significantly; but the change in attitude require long-term interventions. Awareness and knowledge is considered the lowest level of learning [18], while attitude change is at higher levels of social learning. The adoption of educational methods will be more effective when they are implemented consistently and reflecting educational needs. One of the issues raised in many studies was the lack of screening in teenagers, which can be one of the challenges in Iran's educational system. Although increasing awareness and knowledge is one of the most important factors in preventing diseases, it is not considered a protective factor alone. Awareness will have the most protective role when it leads to improved attitude.

Preventive and protective behaviors against HIV

Health protection behaviors to maintain health and prevent disease received an increasing attention. The strategies

Table 1. Studies conducted in the field of knowledge and attitude

Authors [Ref.]	Year	Type of the study	Number of samples	Independent variable	Dependent variables	Study results
Aghdasi *et al.* [9]	2020	Experimental	90 female students from Torbat Heydarieh	Educational program based on the framework of the theory of planned behavior	Attitude	There was a significant difference between the intervention and control groups after the intervention
Babaei *et al.* [17]	2015	Experimental	330 female students from Tehran	Educational intervention based on the matching method	Awareness, attitude	There was a significant difference between the intervention and control groups after the intervention
Shobeiri *et al.* [15]	2018	Semi-experimental	30 teenage girls living in dormitory welfare centers in Hamadan	Group counseling	Awareness and attitude	Educational intervention by means of group counseling is effective on the knowledge and attitude of AIDS disease among adolescent girls in boarding centers
Moghadam *et al.* [10]	2018	Clinical trial	120 teenagers	Empowerment program	Awareness	There was a significant difference between the intervention and control groups after the intervention
Khazari *et al.* [14]	2019	Semi-experimental	60 street children in southeast Iran	The effect of HIV prevention education	Attitude and awareness	A significant increase was shown in the attitude and awareness of street children in the intervention group compared with the control group and before the intervention
Khoshgoftar *et al.* [16]	2019	Semi-experimental	80 high school female students from Mashhad City	Education based on the health belief model	Awareness, sensitivity, intensity, perceived barriers	There was a significant difference between the intervention and control groups after the intervention

that people use in order to maintain their psycho-social and physical health as well as to deal with and manage behavioral risks and adverse conditions, are often called protective behaviors or, in other words, resilience [19]. These behaviors may include biological and psychological protective factors, or may be socially transmitted and learned, such as when individuals are trained in safe usage. In the face of behavioral diseases, such as HIV, it is very important to pay attention to personal and social protective factors. Studies, which led to the improvement of a person's ability to cope and protect, are of high value. In this regard, Havaei *et al.* [20] conducted a clinical trial investigating the effect of education with protective motivation theory on protective and self-care behaviors among 90 teenagers living in a dormitory. The results of the repeated measurements test showed that the self-care variable changed significantly between before and after the intervention. According to the effects of an educational intervention based on the theory of protective motivation, it was suggested that this model can be used as an educational framework for reproductive and sexual health of adolescents by healthcare workers, schools, and universities as well as holding periodical courses on adolescent' education in the short-term. Moreover, Khalajabadi *et al.* [8] conducted a pilot study, and explored the effect of HIV/AIDS educational intervention on HIV-related behaviors of 586 teenagers. The results of the study revealed that a theory-based educational intervention in the field of HIV/AIDS prevention can significantly protect adolescents from risky behaviors and unsupportive social environment that puts them at a greater risk of HIV. Health policy-makers were advised to consider effective educational programs related to HIV/AIDS prevention behaviors in the school system. A clinical trial by Darabi *et al.* [4] evaluated the educational intervention based on the theory of planned behavior on the level of behavior-

Table 2. Studies conducted in the field of prevention behaviors

Authors	Year	Type of the study	Number of samples	Independent variable	Dependent variables	Study results
Havaei *et al.* [20]	2019	Clinical trial	90 female students living in dormitories of Alborz University of Medical Sciences (age range, 18-19 years old)	Education based on the theory of protective motivation	Protective and self-care behaviors	The results of the research showed a significant increase in protective and self-care behaviors of the intervention group compared with the control group and before the intervention
Pakpur [21]	2012	Semi-experimental	120 male students from Qazvin	Health education based on the theory of planned behavior on AIDS prevention	Refusal skills and risky offers	There was a significant difference between the intervention and control groups after the intervention
Khalaj Abadi *et al.* [8]	2020	Clinical trial	586 teenagers	HIV/AIDS educational intervention	HIV-related behaviors	A significant difference was reported between the intervention and control groups after the intervention
Valizade *et al.* [22]	2016	Experimental	64 male students of the second year of high school	Puberty health education based on the health belief model	Health and preventive behaviors	There was a significant difference between the intervention and control groups after the intervention
Havaei *et al.* [23]	2021	Semi-experimental	200 female students	Counseling program to improve sexual behavior	Self-care behaviors	There was a significant difference between the intervention and control groups after the intervention
Darabi *et al.* [4]	2017	Clinical trial	577 teenage girls	Educational intervention based on the theory of planned behavior	Behavioral control	There was a significant difference between the intervention and control groups after the intervention

al control among 577 adolescent girls. They concluded that theory-based educational intervention in sexual and reproductive health can effectively reduce risky behaviors related to sexual and reproductive health in adolescent girls. Health and education policy-makers were recommended to review current educational programs, substituting them with new and effective educational programs related to sexual and reproductive health in the school system.

In addition to the study by Pakpour *et al.* [21], Valizade *et al.* [22] confirmed the effect of the prevention training program on the promotion of adolescent' protective behaviors. The results of the mentioned studies focused on the impact of high-risk behavior prevention programs on the level of adolescent' protective behaviors. Although most of the studies determined a statistically effective course, a follow-up system was advised.

Discussion

In the present study, the existing studies in the field of HIV prevention educational programs in Iranian teenagers were systematically reviewed. After extracting related texts with proper validity in databases, the number of articles, which were in line with the design of this research was determined (n = 12).

Based on the general content, the studies were allocated into the two categories of awareness and attitude, and protective behaviors. In the concepts related to knowledge and attitude, most of the studies showed that the adoption of educational programs can have a positive and meaningful effect. However, in opinions of the researchers, they recommended to provide long-term interventions with more time intervals. One of the important challenges in this field is the lack of a suitable screening system for adolescents at risk of HIV

in Iranian schools. Due to the cultural context of Iranian society and ineffective attitude of people to the problem of behavioral diseases, provision of screening programs was failing.

In the issue of protective behaviors, the studies also showed that prevention programs can be a factor in promoting protective behaviors. However, most of the studies examined the results from a limited period of time, and did not consider follow-up periods, which was one of the limitations of these studies. Adolescents, as a vulnerable group, face many psycho-social threats in their developmental stages, and the lack of a specific and targeted plan and strategy can confront them with many undesirable issues and challenges. A review of studies reported that teenagers are vulnerable groups to HIV infection due to biological, social, and cultural factors [24, 25]. At the global level, evidence showed that the biggest risk for HIV transmission among adolescents is marital relations; therefore, sexual disease screening is recommended for all sexually active people and adolescents [26]. School-based programs use this opportunity to encourage adolescents and to delay the start of sexual activity. It provides young people with the promotion of healthy sexual behaviors by using condoms and increased utilization of contraceptive methods after starting sexual activity [27]. Sufficient knowledge about HIV and sexual education of adolescents will prevent and reduce the risk of pregnancy, and contracting HIV and sexually transmitted infections [26].

Limitations of the study

One of the limitations of the present study was the small number of experimental and semi-experimental studies among the Iranian population. Also, many investigations were not suitable due to their low quality to be included in the review.

Conclusions

Based on the results of research conducted in the field of HIV prevention education in adolescents, education is shown effective in the awareness, attitude, and effective behavior of adolescents. It is suggested that educational classes on HIV prevention should be held for teenagers in schools. Moreover, it is recommended that education on HIV should be included in textbooks of students and teenagers, so that the necessary knowledge, which is a prerequisite for changing people's beliefs, attitudes, and behaviors about HIV/AIDS, is provided to teenagers.

Disclosures

1. Institutional review board statement: Not applicable.
2. Assistance with the article: None.
3. Financial support and sponsorship: None.
4. Conflicts of interest: None.

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