



## Comparison of the effect of two educational methods, education by adults and education by peers, on the awareness of high school students in Mashhad city, in the characteristics, transmission and prevention of AIDS

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### Abstract

**Background & Aims:** AIDS is a disease for which there is currently no effective vaccine and basic treatment, the only way to fight AIDS is to prevent infection, which is possible with health education. This study was conducted with the aim of comparing the effect of two types of AIDS prevention, educational interventions by peer and adult groups on awareness and behavior among high school students in Mashhad.

**Materials & Methods:** This interventional study was performed to compare two methods of education via peers against education by adults about awareness towards HIV/AIDS among high school students of Mashhad city in 2014- 2015. The studied groups included three groups of peer education, adult education, and control. Examining the level of knowledge and attitude of the subject was conducted through a questionnaire of the designated researcher, whose validity and reliability were tested again in a pilot.

**Results:** The initial awareness of students was evaluated at about 28%. The most important source of information was television. In enhancing the level of awareness post-intervention in different areas of the peer and adult intervention groups, there was significant difference compared to the control. However, no significant difference was found between the two genders when comparing the peer and adult groups.

**Conclusion:** The peers' good understanding of the social and cultural environment of the target group would improve social norms and healthy behaviors, which are among the advantages of this method. The results can be used for the educational planning of students because it shows the level of knowledge of students at the pre-university level and the educational needs of students for appropriate educational planning.

**Keywords:** Adults, AIDS, Awareness, Peer education, Prevention

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## Introduction

In the latest definition of the World Health Organization (WHO), "health is the complete physical, mental and social well being and not only the absence of disease and disability" (1). Since the axis of sustainable development is a healthy human being, today's societies want to create a suitable platform for production and the necessary acceleration to achieve all-round development, and this is not possible except in a society that has the necessary education to promote human health (2).

Education is considered as a purposeful process to facilitate learning, during which experiences that affect people's understanding of social, cultural, and physical environments are transferred (3). The purpose of education in peer groups is to develop and improve the awareness, and performance of peers, which takes place as a result of the learning process (4). Health education is implemented with the aim of changing unsanitary behaviors and habits and fixing them through increasing people's health knowledge and promoting health as a social value (5). Health education can be done in different ways and in different situations, methods such as the use of mass media, teachers and professors, counselors, doctors, and in situations such as workplaces, hospitals, schools, clinics, etc (6).

Modern education includes three methods: adult, peer, and group methods (7). Adult education is a process organized in order to create awareness, knowledge, and skills in people by adults, and is generally used in classrooms and lectures (7). Peer-based health education is a type of education in which peer groups, in addition to receiving information and various health concepts, learn active teaching skills to present content to other peers (7). Teenage educators that are involved in peer education activities often transfer information more easily since they have common areas (age, gender, etc.) with their audience in the group, and essentially authority and dominance by the group members is very low while intergroup interaction and sympathy are very remarkable (8).

AIDS is one of the major problems of the humanity worldwide. Both the incidence and mortality resulting from AIDS have had a growing trend for several years, but since 1996 they have been decreasing. The major reason for this has been the collaborations done on health education (9). One of the prominent features of this type of education is that teenagers listen to the words of their peers, and due to the high interaction in these groups, peers will easily be able to raise their problems in the group and experience real situations and combine science and practice (10). However, HIV/AIDS peer education is more than just WHO literature. Because of this popularity, global efforts to better understand and improve the process and impact of peer education in HIV/AIDS prevention, care, and support have also increased (11). A few examples of these efforts are presented below. In relation to AIDS, which is one of the most important global debates today, some studies have shown that teenagers have introduced their friends and classmates as the right people to receive such information about AIDS. A study conducted in 2013 on 1,385 Tehrani teenagers, aged 15-18 showed that friends were considered the most popular people with 16.3% to obtain information about sexual relations and sexual hygiene (12). At World HIV Federations, education for HIV prevention is crucial and is widely used by national societies around the world to work with youth and other vulnerable and directly affected populations. (13). Since AIDS is a social and cultural problem which ensues economic issues, and currently it has no effective vaccine or essential treatment, thus the only way to fight AIDS is prevention from infection. Prevention is the goal of health education, and through risk detection and assessment as well as providing information, high-risk behaviors can be corrected (14).

Meanwhile, more than half of patients infected with AIDS worldwide are youth and teenagers (15). These individuals are very vulnerable to contracting the virus; thus, education of AIDS prevention methods is the most important solution for preventing infection with the virus among the youth (16). The best time and place for education on prevention from high-risk sexual and

nonsexual behaviors, as well as enhancing the level of awareness for improving behaviors and having a better life are during these ages and in schools. Numerous studies have shown a relationship between the level of people's awareness as a prerequisite for their health performance and behaviors (17-19). Furthermore, numerous studies have confirmed the different effects of various educational methods on changes in the level of awareness (20, 21).

A primary goal is to focus on the prevention of this disease; health service providers should play a major role in providing advice and preventive information. It is important for people to know that AIDS prevention does not require counseling skills and extensive psychological interventions. Each method requires an effective cost; the method with the lowest cost and the highest return should be applied for prevention, and by spending money on education in young age groups, high effectiveness is observed (22).

One of the most important components of education is teaching students at home and school and raising their awareness and attitude to improve their behavior and help them lead a better life. Treatment and medical education in Iran, and studying and knowing the most effective educational method in order to improve awareness and improve life skills in adolescents and AIDS prevention behaviors are prioritized (23).

In Iran, starting AIDS prevention educational programs in schools among adolescents is one of the important programs of the Ministry of Education and the Ministry of Health, Treatment and Medical Education. This study aimed to compare the effect of two types of AIDS prevention educational interventions by peer groups and adults on awareness in, high school students (male and female) in Mashhad.

## Materials & Methods

This study was conducted as an intervention study with the aim of comparing two methods of education by adults about awareness towards HIV/AIDS among high school students of Mashhad city in 2014- 2015. The studied population in this research consisted of high

school students across Mashhad city who were chosen through stratified-randomized sampling.

Considering that in the present study, the education was done in a classroom, the sample size was considered equal to the number of students in a class, which are usually around 30 people. By considering two groups of male and female students and the possibility of attrition, a total of 60 people in each group were included in the study.

The inclusion criteria included the following: 1) working students studying in day high schools of Mashhad 2) willingness to participate in the study. Furthermore, not attending the training sessions regularly was considered as an exit criterion. For selecting the groups, after collaboration with the organization of education in Mashhad city and justifying the authorities, the students were randomly chosen from among six high schools (three female and three male high schools) in district 6 of Mashhad education (a district which has a diverse population in terms of socioeconomic classes). Then, the high schools were assigned randomly into three groups of two high schools (one female and one male) (peer education, adult education, and control groups). The two groups received education for two hours, while the control group received no educational intervention.

For educating the peers, from among students in the peer intervention classes, two female students and two male students were chosen who participated in the justification training sessions. Adult education was done by two residents of social medicine (one person in the group of female students and one person in the group of male students). The control group did not receive any education or special intervention. The level of awareness of the three groups was measured and compared before intervention and after completing the educational course (intervention) (pretest and posttest).

The data collection method was conducted in the field using a questionnaire tool. Educational content included information level determined by the healthcare system of the country for high school students, which was extracted from leaflets, booklets, as well as

published educational pamphlets. Examining the level of knowledge of the subjects was done based on a researcher-made questionnaire, the reliability and validity of which was accepted by the researchers. The questions posed, included the level of awareness of students regarding the routes of AIDS transmission as well as methods of personal protection against transmission of this disease. The questionnaire created by the researcher included 9 true/false questions in the feature section, 14 yes/no questions in the transmission ways section, and 15 lesson/false questions in the prevention section. The correct option was given a score of 1 and the incorrect option was given a score of zero, and the sum of the scores showed the overall score of each part.

After collecting the design information and their initial review, the data was recorded in SPSS statistical software. Frequency, mean, standard deviation, graphs and statistical tables were used to describe the data and characteristics of the three groups. To compare the changes in awareness in each group before and after the comparison, the paired t-test or Wilcoxon test was used according to the variable distribution, and to compare the level of awareness between the two groups at the beginning and at the end, and to compare them in two groups, the t-test or Mann Whitney test was used according to the variable distribution. To compare the changes among the three groups, ANOVA or the non-parametric test and its equivalent according to variable distribution were used. Chi-square test was used to compare the qualitative variables in the two groups. In all calculations,  $p < 0.05$  was considered as a significant level.

## Results

The mean age of the studied subjects, father's age, mother's age, and father's income were studied totally and across the studied groups (Table 1). When comparing the mean age of the students, there was no significant difference between the three groups ( $p = 0.47$ ). The difference between the two genders was not significant either ( $p = 0.7$ ). When comparing the mean

father's ages of students, no significant difference was found between the three groups ( $p = 0.08$ ). However, when comparing the mean mother's age of students, a significant difference was found between the three groups ( $p = 0.02$ ). When comparing the mean students' father income, no significant difference was found between the three groups ( $p = 0.09$ ). The frequency distribution of the father's occupation in the educational groups showed that the jobs of most fathers were freelancers (54.9%) and employees (42.5%). The highest frequency in mother's occupation belonged to housewives (74.1%) followed by employees (19.6%).

In investigating previous information of students about AIDS, based on self-expression, overall 129 (81.6%) had previous information, while 29 (18.4%) had no previous information. When comparing the students regarding their previous information about AIDS, no significant difference was observed in the three studied groups ( $p = 0.47$ ).

In inspecting the sources of acquiring preliminary information by students, television (16%) had the highest percentage mentioned as the source, followed by school (9%), newspapers (7.6%), friends and others (2.1%), family, posters (1.4%), and by visiting a physician (1.4%). In the information sources, two sources and more than two sources accounted for 32.4% and 26.2%, respectively, of the total frequency percentage of preliminary information sources of students.

In examining the evaluation of students about their level of information, 3.1% considered their basic information level as very high, 7.6% as high, 52.5% as average, 29.7% as low, and 8.9% as very low. The highest frequency percentage was found in the average level of information. When comparing the students' assessment regarding their level of information about AIDS, there was a significant difference in the three studied groups ( $p = 0.01$ ).

In assessing to what extent the students consider this level of information sufficient for protection and prevention from AIDS, overall 11 (7%) evaluated it as very high, 33 (21%) high, 63 (40.1%) average, 36

(22.9%) low, and 14 (8.9%) very low. The evaluation of most subjects about their level of information for prevention was average, while 28% considered this awareness as sufficient (high and very high). When comparing the students regarding their level of information about prevention and protection, no significant difference was observed in the three studied groups ( $p = 0.42$ ).

In evaluating the level of quality of presented educations so far, overall 12 (7.6%) assessed as high, 58 (36.7%) as average, 49 (31%) as low, and 39 (24.7%) as very low. When comparing the students' assessment level of presented information, no significant difference was found between the three studied groups ( $p = 0.63$ ).

The students were asked about the useful sources of information regarding AIDS, and watching films was mentioned as the most useful source (44.2%). The mean changes of students' information score showed no significant difference in the three studied areas regarding the two genders. The mean changes of students' information score showed no significant difference in the three studied areas across various levels of students' father/mother education level.

There was no significant correlation between students' mother/father occupation and changes in the information level of students. There was no significant relationship between father/mother education level as well as household income of students and changes in their information score in the three areas examined (Table 1). In analyzing the data in Table 2 and examining the percentage of scores of information related to the disease features, no significant difference was observed in the mean scores pre- and post-intervention between the three groups ( $p = 0.001$ ). When comparing the changes (Diff) between pre- and post-intervention information using Kruskal-Wallis test, the difference in both adult and peer groups was significant ( $p = 0.01$ ) ( $p = 0.02$ ), respectively, while it was insignificant in the control group ( $p = 0.74$ ). When using the post hoc Dunnett T3 test, the difference of adults and control was insignificant ( $p = 0.24$ ), while that of peer and control

was significant ( $p = 0.001$ ). The difference between adults and peers was again significant ( $p = 0.01$ ), where it had a better response in the peer education.

In exploring the mean difference of scores related to the route of disease transmission, the mean pre-scores did not differ significantly between the three groups ( $p = 0.18$ ). However, post intervention, the mean percentage of scores of the three groups differed significantly ( $p = 0.001$ ). The mean difference between pre and post intervention was significant in both the adult and peer groups (both  $p = 0.001$ ). However, the difference in the pre- and post-intervention was not significant in the control group ( $p = 0.94$ ). Furthermore, the mean difference of scores of this domain post-intervention was significant among the three intervention groups ( $p < 0.001$ ). In the performed post hoc, the mean difference in the adult and peer groups was not significant ( $p = 0.839$ ), while the difference of the adult and control groups ( $p < 0.001$ ) and that of peer and control groups ( $p = 0.001$ ) was significant.

In examining the percentage of scores related to method of prevention, the mean pre-scores did not differ significantly between the three groups ( $p = 0.32$ ). However, in post intervention, the mean percentage of scores of the three groups differed significantly ( $p = 0.001$ ). When comparing the changes (Diff) between pre and post intervention information using ANOVA test, the difference between pre- and post-intervention was significant in both the adult and peer groups (both  $p = 0.001$ ). However, the difference in the pre- and post-intervention was not significant in the control group ( $p = 0.75$ ). In the performed post hoc, the mean difference in the adult and peer groups was not significant ( $p = 0.93$ ), while the difference of the adult and control groups ( $p < 0.02$ ) and that of peer and control groups ( $p = 0.01$ ) was significant (Table 2).

As seen in Table 3, it is seen that there is no significant correlation between students' mother/father occupation with changes in the students' information (Table 3).

**Table 1.** Mean and frequency distribution of demographic and socioeconomic characteristics of studied students

Educational group		Adult	Peer	Control	Total	<i>p</i> value
Student's age (year)		16.83 ± 0.50	16.90 ± 0.56	16.93 ± 0.58	16.89 ± 0.54	0.47
Student's gender	Female	29 (52.7)	23 (53.5)	29 (48.3)	81 (51.5)	0.700
	Male	26 (47.3)	20 (46.5)	31 (51.7)	77 (43.7)	
Father's age (year)		48.82 ± 4.84	47.42 ± 6.91	47.54 ± 6.91	47.99 ± 5.86	0.08
Mother's age (year)		43.18 ± 4.92	40.82 ± 5.30	41.43 ± 5.53	41.94 ± 5.30	0.02

**Table 2.** Mean percentage of scores of information related to feature, area of disease transmission routes, and area of preventing the disease pre- and post-intervention as well as pre-post changes

Part of questioner	Studied groups	Before	After	Differences	<i>p</i> value
Feature	Adult	89.10 ± 10.88	92.93 ± 11.81	3.83 ± 10.70	0.02***
	Peer	73.47 ± 17.45	88.41 ± 11.88	15.38 ± 19.41	<0.001***
	Control	83.45 ± 14.87	83.54 ± 16.13	-0.20 ± 14.69	0.74****
	<i>p</i> value	<0.001**	<0.001**	<0.001**	
Area of disease transmission routes	Adult	80.75 ± 11.95	91.82 ± 6.03	9.21 ± 12.57	<0.001***
	Peer	77.10 ± 13.82	88.79 ± 12.29	11.29 ± 11.25	<0.001***
	Control	81.23 ± 15.18	81.53 ± 13.07	-0.48 ± 13.14	0.940***
	<i>p</i> value	0.18*	<0.001***	0.04*	
Area of preventing the disease	Adult	68.79 ± 12.97	80.35 ± 13.66	10.36 ± 13.92	<0.001***
	Peer	63.61 ± 20.88	74.86 ± 15.81	9.77 ± 12.09	<0.001***
	Control	68.95 ± 16.42	69.09 ± 17.01	0.68 ± 15/10	0.75***
	<i>p</i> value	0.32*	0.001*	0.001*	

\*\* Kruskal-Wallis Test

\*\*\* paired t-test

**Table 3.** The average changes in the scores of each area after the intervention by gender in the three intervention groups

Reach of disease	Features	Transmission	Prevention	Gender
	5.63 ± 16.68	7.03 ± 13.98	7.94 ± 14.80	Female
	4.07 ± 14.74	5.50 ± 12.80	5.14 ± 13.5	Male
<b>P value</b>	<b>**0.51</b>	<b>**0.36</b>	<b>*0.28</b>	

\*t-test

\*\*Mann-Whitney Test

## Discussion

Out of a total of 158 students, 81 (51.3%) were female and 76 (48.7%) were male. In the adult education group, of all the students taught by adults there were 55 people (8.34%), of whom 29 (52.7%) were female and 26 (47.3%) were male. And in the peer education group, 43 (27.2%) of all students who were taught by peers, 23 (53.5%) were female and 20 (46.5%) were male. Of all the students, 60 (38%) were in the control group without any education, of which 29 (48.3%) were female, and 31 (51.7%) were male. There was no significant difference in gender distribution between the three groups with the chi-square test. In the present study, which compared the effect of two different educational methods (peer and adult) with each other and the control group in relation to AIDS in high school students, the study of students' initial knowledge about AIDS was such that only 28% of the students had enough knowledge, however, this level of knowledge did not seem very desirable.

Several studies have shown the relationship between people's level of awareness as a prerequisite for their health functions and behaviors (18, 24, 25). Also, several studies have confirmed the different effects of different educational methods on changes in the level of awareness (26, 27).

In the study of Delsuz et al., this level of awareness was reported to be high, which is not consistent with the results of this study (28). In the study of Mihanpour et al., the awareness score was statistically significant in terms of age, level of education, and employment status (29). Furthermore, a study in America found that the level of awareness of Asian students was less than that of American and African students living in America

(30). In a study conducted in sub-Saharan Africa in 2019, the results showed that media exposure is not a significant predictor of HIV/AIDS practices, but it is a significant predictor of HIV/AIDS knowledge. And HIV/AIDS knowledge significantly predicted both HIV/AIDS attitude and practice. HIV/AIDS attitude also significantly predicted HIV/AIDS practice (30), the results of these studies are somewhat consistent with our study.

In this study, 42.2% of students considered watching movies and television the most informative method for obtaining information about AIDS. In many other studies in Iran, Brazil and America, television plays an important role in obtaining information about AIDS (8, 31, 32).

This study and many others have identified the role of television as an important source of awareness. Based on the results of this study, the role of family and the doctor in informing the students was reported to be low. As a result, the school was only responsible for 9% of the educational contribution. This issue has been confirmed in the study of Mahmoudi et al. (32). In Price et al.'s study, school played the least role in students' awareness (33). In another study in Brazil, the role of teachers was reported as 9.9% (34), and the results of these studies are in line with the results of our study. Despite the significant role that school, educators, and family can play in raising awareness and providing information, the insufficient role of these important sources in our study and other studies may be due to specific cultural and social conditions, and the inability to express all specific aspects of disease transmission and prevention. AIDS is caused by social restrictions.

In the present study, a significant difference was observed in the level of awareness before and after the educational intervention, which indicates the effect of the educational program. Rose, Sophus et al.'s study revealed that health education has been effective in improving the level of awareness of the people studied (35). Esmailzadeh et al.'s study in Shiraz (36), has confirmed that the implementation of the health education program has had an impact on the awareness and performance of the research units.

In this study, the average changes in the information level before and after training in the intervention groups (peer training and adult training) were significantly higher than the average score changes before and after the control group. This significant increase in the intervention group was expected to a large extent and indicated the positive effect of the training sessions in increasing the level of awareness and attitude. These findings were in agreement with the results of studies by Yazdanpanah et al. in Khuzestan, (38), Esmailzadeh et al. in Shiraz (37), and Jeihooni et al. in Fasa (39).

Regarding the impact of different educational methods, in the field of disease characteristics, the educational intervention was effective in people between the knowledge level in both adult and adult education groups, but it did not have a significant effect in the control group. The difference between the same age and adult education groups was also significant. The increase in the percentage of correct answers in the peer education group was significantly more than the adult education group. Esmailzadeh's study has also confirmed the same results (36).

In the field of disease transmission, educational intervention has been significantly effective in both peer and adult groups. The increase in the percentage of correct answers in the peer group was more than the adult group, but there was no significant difference. No change was observed in the control group. These findings confirm that the passage of time without educational intervention does not cause any change in the level of students' knowledge. Nigussie et al.'s study confirmed an increase in the level of knowledge of the

studied subjects after training compared to before (37). In the field of disease prevention, the educational intervention has had a significant effect in both the adult education group and the peer education group.

## Conclusion

In sum, the results of these studies indicated the clear and significant effect of education in increasing the awareness of students in three areas compared to the control group. Also, the greater effect of educational intervention by peers on increasing information and awareness in the areas of disease characteristics, transmission and prevention. AIDS was among the studied groups.

The educational approach of the peer group is one of the effective strategies to change behavior. It uses all the five senses in the activities carried out, the thinking power and creativity of people increases, and the all-round participation of people is observed in the stages of planning, implementation and even evaluation of educational methods. Peer education allows learning values and norms to be expressed better. As a result, a problem-solving group with high energy to succeed in the program is created.

This approach is an effective strategy in the prevention of AIDS, and it also increases people's self-confidence and generally develops the psychological and social aspects of adults. In this method, sensitive information is more easily transmitted between people of the same age. Some of the advantages of this method include Peers' deep understanding of the social environment and culture of the target group, improvement of social norms and values that support positive attitudes and healthy behaviors, and the involvement of teenagers in designing programs related to themselves.

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### Conflict of interests

The authors declare they have no conflict of interest in this study.

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### Data availability

The raw data supporting the conclusions of this article are available from the authors upon reasonable request.

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