

# The Influence of a Prevention Education Program for High-Risk Sexual Behaviors on Sexual Knowledge and Sexual Attitude of Female undergraduate Students

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## ABSTRACT

**Background & aim:** Prevention of high-risk sexual behaviors due to its prevalence among young people is an important health concern. Because of the importance of promoting young people's sexual health, the present study was conducted to investigate the effect of training high-risk sexual behaviors prevention through an educational package on sexual knowledge and attitude of students.

**Methods:** This quasi-experimental study with a two-group pretest-posttest design was performed on 200 eligible female undergraduate students of Mashhad University of Medical Sciences, Mashhad, Iran in 2016. The subjects were randomly divided into two groups of intervention and control group. In the intervention group, the participants received a prevention education program through a training package. Students' sexual knowledge and attitude were assessed using self-structured sexual knowledge and attitude questionnaires before and two weeks after the training. Paired and independent t-test, Mann-Whitney, Wilcoxon and Chi-square tests was used to analyze data by SPSS (version 16).

**Results:** Sexual knowledge mean score of intervention group was significantly higher compared to the control group (29.29±1.14 vs 14.41±4.21, P=0.005) after training. Mean score of students' sexual attitude although increased after training in intervention group compared to the control group (139.39±13.17 vs 133.01±9.79), but this difference was not significant (P=0.081).

**Conclusion:** The students' sexual knowledge was increased through using sexual training package as prevention education program. This method is recommended for sexual education and counseling of students to prevent high-risk sexual behaviors and promote community health.

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## Introduction

Today, the prevalence of high-risk behaviors, especially among adolescents and young people, has become one of the most important concerns of human societies and has been growing in the world over the past three decades (1, 2). Some high-risk sexual behaviors, such as having multiple sexual partners, unusual sexual intercourse (anal and oral sex), using alcohol, drugs or psychedelics before sex, homosexuality

and unprotected homosexual sexual contact is associated with increased risk of spreading AIDS and other sexually transmitted diseases (3). High-risk sexual behaviors are one of the most important risk factors that expose individuals and society to dangerous infectious diseases such as AIDS, viral hepatitis and sexually transmitted diseases (2). Statistics show that these diseases are increasing so that there were

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only two common sexually transmitted diseases in 1960, while now the number of these diseases has reached to more than 25 (4).

Studies show that only 17% of young people who are sexually active use contraceptive methods, while more than half a million young people aged 19 to 24 years worldwide are infected with a sexually transmitted disease every day (5). In addition to the increase in sexually transmitted diseases, the incidence of AIDS through high-risk sexual behaviors has also significantly increased. The AIDS Prevention Center announced in March 2009 that high-risk sexual behaviors account for 36.8% of new cases of AIDS (6). On the other hand, insufficient awareness of young people about these behaviors and not modifying their sexual attitudes is associated with increasing high-risk behaviors and sexual deviations, the occurrence of various sexual disorders and unwanted pregnancies (7). In the study of Mina Sadat Hashemi et al., most participants did not have accurate and sufficient information about sexually transmitted diseases, methods of transmission and self-protection; they reported that lack of awareness and limited information about the disease are the reasons for engaging in unprotected sex and not using condoms (8).

In expressing the importance of sexual training, it is necessary to pay attention to the fact that achieving three goals of the Millennium Development Goal (Goal 3: gender justice and women's empowerment, Goal 5: reducing maternal mortality and public access to reproductive health, and Goal 6: fight against AIDS) is directly related to sexual training and is one of the key strategies in achieving these goals (9). In this regard, the World Health Organization (WHO) in 2004 emphasized that sexual training programs are needed as a preventative measure, both for those who had not yet started sexual activity and for those who had started it (10, 11). Comprehensive appropriate sexual training can be the cornerstone of efforts to acquire healthy sexual habits and prevent sexually transmitted diseases that delay the onset of sexual intercourse, reduce the number of sexual partners, reduce high-risk sexual activity and increase the use of contraceptives (12). However, since sexual issues are taboo in Iran, there is not enough education for people before

marriage and the existing information gap is mainly filled by receiving information from unreliable sources and non-experts, which makes it possible to assess the validity of information for recipients (13, 14).

It has been believed that the first step in the field of sexual education is to educate and improve the level of information and knowledge related to sexual health (15). Training interventions can successfully reduce sexual anxiety (16). So far, various educational methods have been used to train learners (17). Face-to-face training is currently the main training method used (13, 18, 19). Face-to-face training has limitations such as gender, time, place, economic and class capacity constraints (20, 21). With increasing population, this method, this method cannot meet the needs of all people for education; therefore, a strategy must be found that makes education accessible to all at the lowest cost. Virtual education is an appropriate response to this need, which is one of the undeniable benefits of this training method (22, 23).

This study was performed to investigate the effect of training to prevent high-risk sexual behaviors through a training package on sexual knowledge and attitude of female students in Mashhad University of Medical Sciences, Mashhad, Iran.

## Materials and Methods

The present study was a quasi-experimental study with two-group pretest-posttest design. The study population included all undergraduate students of the faculties of the Mashhad University of Medical Sciences, Mashhad, Iran, who were eligible for the study. A total of 200 single and eligible female undergraduate students participated in this study in 2016. Inclusion criteria were: undergraduate student, being single, having age of 18-25 years and having no history of participation in similar training courses. Exclusion criteria were: student unwillingness to cooperate with the researcher and no participating in the post-test measurement.

A pilot study was used to determine the sample size. Thus, 10 people in both intervention and control groups were selected and sexual attitude score was determined in the

final stage (after the intervention). The results in the pilot phase were as follows:

Training package: 139.14±34.22

Control: 125.19±10.85

$$n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 \times (S_1^2 + S_2^2)}{(\bar{X}_1 - \bar{X}_2)^2}$$

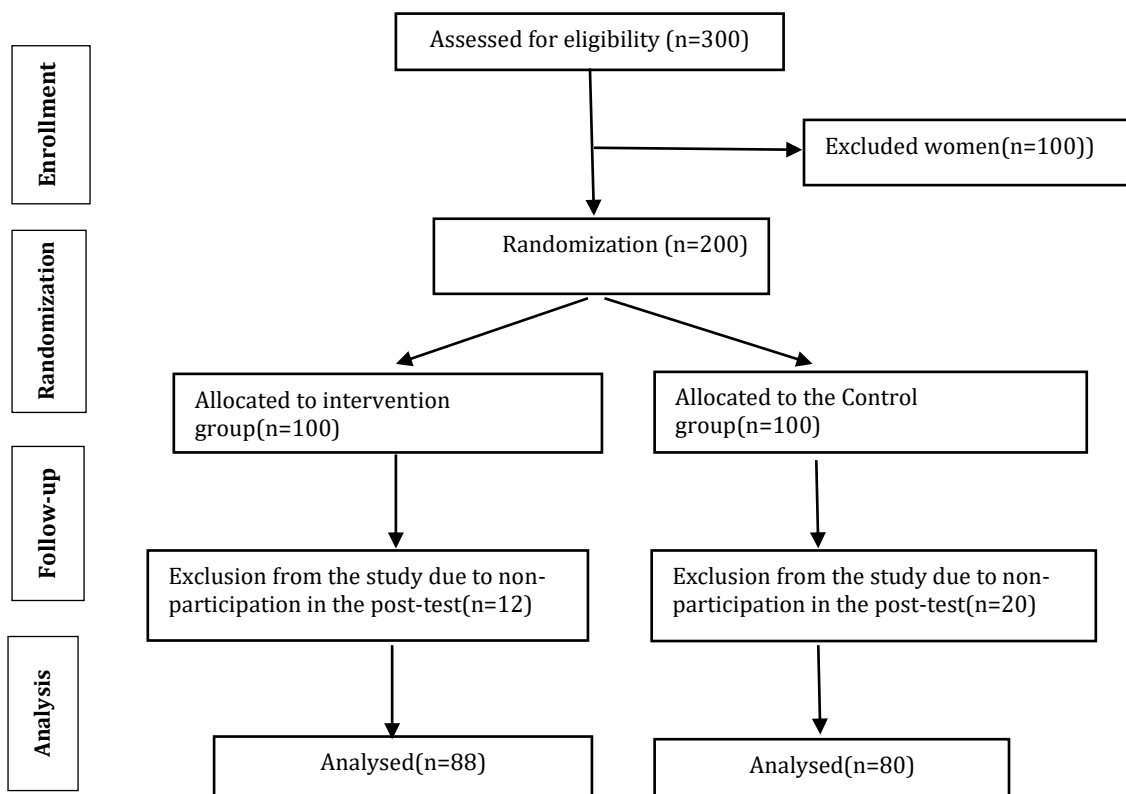
Then, the sample size was obtained by using the formula of comparing means with a test confidence level of 95% and test power of 80%. Considering the sample loss, the sample size at the beginning of the work was considered 100 people in each group, which finally 168 people remained in the study (80 in the control group and 88 in the training package group) (Figure 1).

To do sampling, two faculties of health and paramedical sciences were randomly selected from the research community, based on the

lottery. The researcher considered the faculty of health for the control group and the paramedical faculty for the intervention group (to avoid data contamination). Then, among the courses in each faculty, one course was randomly selected for sampling. The researcher then randomly selected the subjects using a table of random numbers from the list of students and explained the objective and process of the research via email and asked them to respond if they wished to take part in the study.

Then, during a one hour and half session, the researcher explained the purpose and method of the research and obtained informed consent from the students, asking them to complete a demographic questionnaire and the questionnaires of assessing sexual knowledge and attitude.

Figure 1. The CONSORT flow diagram of intervention in the two groups



After that, the subjects in the intervention group received a training package including a training booklet and a multimedia CD. The content of the training program included: 1. Definition of high-risk sexual behavior, 2. Definition, symptoms and prevention methods

of sexually transmitted diseases and AIDS 3. The role of unprotected sex and unusual sexual intercourse and multiple sexual partners with the incidence of diseases, health status and related complications, and 4. Sexual protection when having sex.

**Table 1.** The content of training sessions

Session	Title of training
Session 1	Familiarity with high-risk sexual behavior, sexually transmitted diseases and the concept of STDs
Session 2	Gonorrhea as one sexually transmitted disease
Session 3	Chlamydia
Session 4	Syphilis
Session 5	Hepatitis
Session 6	Herpes
Session 7	Genital Warts
Session 8	Unspecified urinary tract infection
Session 9	AIDS
Session 10	Familiarity with unusual sexual intercourse and its complications
Session 11	Retraining of seven common symptoms in most sexually transmitted diseases determined by the Ministry of Health
Session 12	Safe sex and methods of sexual protection
Session 13	Training of using condoms
Session 14	Training the skill of saying no

The educational content was prepared by the researcher in 14 sessions: Session 1: Introduction to high-risk sexual behavior, sexually transmitted diseases and the concept of STDs.

Sessions 2 to 9: Introducing a sexually transmitted disease in each session. Session 10: Familiarity with unusual sexual intercourse and its complications. Session 11: Re-training of the seven symptoms determined by the Ministry of Health, which are common in most sexually transmitted diseases, to summarize and remind. Session 12: Safe sex and methods of sexual protection. Session 13: Training of condom use. Session 14: Training the skill of saying no (Table 1).

Data collection tools included a demographic and educational profile form and a questionnaire to assess sexual knowledge and attitude. These tools were researcher-made. The demographic information form was used to measure the variables which their effects were considered in this study and contained 49 questions about age, living conditions, education and occupation of parents, living conditions of

parents, adherence to religious precepts, trusted people in the family, number of close friends, family and school counselors talk about topics such as the consequences of girl-boy friendship, consequences of sexual relations, hymen, AIDS and sexually transmitted diseases and contraceptive methods, sources of sexual information and the level of satisfaction with them, the level of thinking about sex, the intensity of sexual arousal in different ways, masturbating, having a romantic relationship and the limits of this relationship, using condom, smoking and hookah and alcohol and satisfying with them.

The sexual knowledge assessment questionnaire assessed students' information about high-risk sexual behaviors and their consequences, sexually transmitted diseases and their symptoms, and sexual restraint, and consisted of 31 three-choice questions. Each question was given a score. The total score of the questionnaire was 31. A score of 0-10 showed poor knowledge, 11-20 moderate knowledge and 21-31 good knowledge. The

sexual attitude assessment questionnaire consisted of 31 questions, which were identified with 6 points Likert scale: strongly agree, agree, relatively agree, relatively disagree, disagree and strongly disagree. Scoring to the positive questions was so that the score 6 was given to completely agree and the score of 0 to completely disagree, and in the negative questions, the score of 0 was given to completely agree and the score of 6 to completely disagree. The highest score was 186 and the lowest score was 31. The score of 31-82 was considered poor, 83-134 as moderate and 135-186 as good. The validity of all tools was determined by content validity by ten professors of Mashhad School of Nursing and Midwifery and their reliability was determined by calculating the Cronbach's alpha coefficient (sexual knowledge assessment questionnaire:  $\alpha = 0.76$ , sexual attitude assessment questionnaire:  $\alpha = 0.7$ ). The mentioned tools were used to evaluate the students of the two groups before and two weeks after the intervention.

The sexual knowledge and attitude of students in the control group were evaluated before and two weeks later without receiving training and compared with the intervention group. So that two weeks after the training in the intervention group, both groups were simultaneously retested to assess students' knowledge and attitudes about high-risk sexual

behaviors, as pre-test. Data were analyzed by SPSS software (version 16) and paired t-test, independent t-test, Mann-Whitney, Wilcoxon and Chi-square tests.  $P < 0.05$  was considered statistically significant.

## Results

A total of 168 students participated in this study. The mean age in the training package group was  $20.11 \pm 1.723$  years and in the control group was  $20.51 \pm 1.58$  years ( $P = 0.092$ ). Grade point average of academic grades in the training package group was  $16.87 \pm 2.11$  and in the control group was  $16.69 \pm 1.55$ . The educational level of most mothers was elementary and most fathers had diploma. Also, most mothers were housewives and most fathers had free work ( $P = 0.182$ ).

The students in both groups felt more intimate with their mothers than other family members. The students of the two groups stated that although their mother is the most trusted member of the family to express their private issues, but in the case of sexual problems, they choose their friends to talk about their problems, and the reason for this is that they feel more comfortable with them. According to the findings, students' use of the Internet to obtain sexual information was much higher than using books.

**Table 2.** Students' sexual knowledge score in pre-test and post-test

Variable	Sexual knowledge score	Before intervention	After intervention	Paired t-test
Training package	Mean $\pm$ SD	14.36 $\pm$ 3.64	29.29 $\pm$ 1.14	$P < 0.001$
Control	Mean $\pm$ SD	14.4 $\pm$ 4.05	14.4 $\pm$ 41.21	$P = 0.909$
<b>Independent t-test</b>		$P = 0.133$	$P = 0.005$	

The subjects in the two groups were completely homogeneous in terms of underlying and confounding variables and the effect of all these variables on the research findings was considered.

The mean score of students' sexual knowledge in the group using training package had significant increased after the post-test intervention ( $p < 0.001$ ), but the mean score of sexual knowledge of the students in the control group had no significant difference between the

pre-test and post-test ( $P = 0.909$ ). Also, despite the lack of differences between the two groups in the pre-test ( $P = 0.133$ ), in the post-test, the sexual knowledge of students had significantly increased in training package group compared to the control group ( $P = 0.005$ ) (Table 2).

Before the intervention, in the training package group, 12% of students had poor knowledge, 82% had moderate knowledge and 6% had good knowledge. While after the

intervention, 100% of the students had good knowledge.

Also, although the mean score of students' sexual attitude had increased in the training package group after the intervention in the post-

test, this difference was not statistically significant ( $P = 0.089$ ). The mean score of sexual attitude in the control group was not significantly different in pre-test and post-test ( $P = 0.3$ ) (Table 3).

**Table 3.** Students' sexual attitude score in pre-test and post-test

Variable	Sexual attitude score	Before intervention	After intervention	Wilcoxon test
Training package	Mean±SD	134.66 ±12.65	139.39 ±13.17	P=0.089
Control	Mean±SD	133.10 ±5.7	133.9 ±01.79	P=0.329
<b>Mann-Whitney test</b>		P=0.477	P=0.081	

## Discussion

The present study was performed aimed to evaluate the effect of "training package" virtual education on prevention of high-risk sexual behaviors. According to the results, training package increased the students' sexual knowledge, while it did not affect their sexual attitude. According to the results of this study, the level of sexual knowledge of students in both control and intervention groups (before training) was moderate. Students' knowledge of sexual issues is low and there is high statistic of problems such as premarital sexual relations, unwanted pregnancy and miscarriage and sexually transmitted diseases in the community (24). In a study in Iran, students had moderate information about reproductive health and almost half of them did not have basic information about reproductive health (25).

Comprehensive sexual training improves teachers' knowledge of sexual and fertility health. Students who have received counseling from trained teachers are more likely to use contraception and delay sexual activity (26). Studies show that comprehensive sexual training programs are effective in preventing sexual disorders, increasing healthy sexual behavior, observing health, mental health, family health, and achieving appropriate sexual identity (11). Receiving knowledge and acquisition of skills to prevent high-risk behaviors in schools and universities can reduce high-risk sexual behaviors and effectively help maintain youth health (27). Providing sexual training in schools significantly reduces the prevalence of high-risk sexual behaviors and increases students' knowledge and perception

of various types of sexual dysfunctions and diseases (28).

A meta-analytical study of the impact of sexual training programs in different countries of the world has shown that most of these programs are successful (28). Adolescent sexual education using a training package has a significant effect on students' social self-efficacy as well as their sexual risk (29). An online sexual training program reduces the risk of AIDS and increases healthy sexual behaviors (30).

The study on "The effect of high-risk behaviors prevention training program on the knowledge and attitude of health educators in Khorramabad primary schools in 2005" was conducted on all health instructors in Khorramabad primary schools. The training program was held as a workshop in two sessions with lectures and questions and answers, group discussions, face-to-face training, presentation of educational booklets, pamphlets and posters. The results showed that the designed health training program was effective in promoting the level of awareness and changing or creating a positive attitude in the subjects (2). The results of our study also showed that training had increased sexual awareness, so that the knowledge score of students improved from moderate score before the intervention to good score after the intervention. Also, although training increased and improved students' sexual attitudes, it was not significantly effective.

In the study which used a mobile application for sexual training of the students, the results showed an improvement in students' sexual knowledge and attitude after receiving education (31). Since the mobile phone is

private and there was possibility of storing a large amount of information without fear of disclosing such information, it makes easy to access and use this information. While the training booklet cannot always be carried easily, it is also not possible to use the training CD anytime and anywhere. Also, the positive attitude of people towards the mobile phone and its high attractiveness leads to a better acceptance of the content received through the mobile phone. Mobile phone increases the possibility of reviewing the content for accepting changes in attitudes of the individual. Therefore, in the field of educational sciences, it is suggested to adopt more active training methods in educating students (31, 32).

Numerous studies have been conducted on the provision of training and knowledge and its relationship with changing attitudes, showing the importance of training factor in creating a positive and correct attitude towards sexual issues. Sexual training, if given timely and appropriate, can play a role in preventing inappropriate sexual motivations, promoting healthy sexual behavior, reducing sexual problems, and preventing sexual problems (11). In fact, the training booklet and multimedia CD were both e-learning techniques that were examined. According to previous studies, the effectiveness of these trainings is very desirable for adult audiences and those who have deprived from school for various reasons, and the production of educational content appropriate to these people helps the learning process of them. Independent study of training issues in the form of booklets or brochures is as useful as books, and can be effective if well prepared. A wide range of goals is practical and achievable with the visual-auditory self-learning package method (such as CD). Because this method is accompanied by sound, image and objective observation, as a result, learning stimuli increase (33).

Trainings on how to start contraceptive pills, how to distance taking contraceptive pills, taking action when forgetting to take the pill, preference of vasectomy to tubectomy, interval between injection of contraceptive ampoules and duration of IUD effect using training booklets increased people's knowledge (34).

A study was conducted aimed to develop multimedia CDs for pain control by the patient and to measure its effects on pain knowledge and pain relief in patients undergoing surgery. The content of the multimedia CD included: steps before admission, training pain, definition of pain control by the patient, nursing care methods and questions and answers. The results showed a statistically significant difference between the two groups; the subjects in the intervention group had better knowledge about pain and also the use of pain relieving devices by the patient. Their results were consistent with the results of the present study (35). Considering that the usefulness of sexual health training in preventing and reducing high-risk sexual behaviors has been proven in various studies, and due to the increasing number of these behaviors, it is recommended that training programs be written with content appropriate to the needs of the community and be designed properly and made available to the public, especially young people and students who are at risk.

One of the limitations of this study was the possibility of exchanging educational content between students in two groups of intervention and control. To manage it, the duration of the training course was considered as short as possible and all students were asked not to transfer the content to others and cooperate with the researcher to achieve real results. Another possible limitation was the participation of most high-risk individuals in the study, which we tried to control it by randomly selecting samples. Providing training services will improve people's knowledge and attitude, improve sexual health, reduce physical and mental complications related to high-risk sexual behaviors and reduce sexually transmitted diseases, which will increase community health and reduce treatment costs in clinical wards. Considering that young people currently receive unreliable information through various sites and social networks, providing scientific and appropriate training programs for the target group will be a good alternative.

According to the findings of the present study, which shows the effectiveness of training on improving sexual knowledge and attitude of individuals, further research can be performed

using the same training method in various fields, including the effect of high-risk sexual behavior prevention training on sexual knowledge and attitude of married men and women and the effect of high-risk sexual behavior prevention training on sexual function and attitude of married men and women.

## Conclusion

Using sexual training package is significantly effective on promoting students' sexual knowledge. According to the present study, it was found that students' knowledge and attitudes about sexual health and high-risk sexual behaviors are low, and due to the consequences of high-risk sexual behavior for the individual and society, therefore, sexual health training can help improve students' sexual knowledge and attitude and promote community health. Obviously, receiving timely complete and correct training can help youth to know how to have proper sexual intercourse and prevent possible consequences and related diseases, and provide sexual self-control and safe sex and therefore promote community health.

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## Conflicts of interest

Authors declared no conflicts of interest.

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