Protection of adolescent girls from sexually transmitted diseases: Results of awareness training

Adölesan kızların cinsel yolla bulaşan hastalıklardan korunması: Farkındalık eğitimi sonuçları

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Abstract

Aim: Sexually transmitted diseases pose a substantial public health concern and economic challenge in developing countries, exhibiting a disproportionate impact on women. The objective of this study was to assess the knowledge level of high school girls regarding sexually transmitted diseases and to examine the impact of educational interventions on the enhancement of their understanding.

Methods: The study's sample population comprised 131 students enrolled in the 10th and 11th grades of a girls' high school. Data were collected through the administration of a 'Personal Information Form' and a 'Information Form on Sexually Transmitted Diseases'. These data were collected prior to and following a training program on sexually transmitted diseases scheduled for May 2023.

Results: The mean age of the students participating in the study was 16.24±0.75. The mean total score of the Information Form on Sexually Transmitted Diseases' was 19.17±3.05 before the training and 22.9±2.74 after the training. It was determined that there was a statistically significant positive difference in the correct answers of some questions asked to measure the level of knowledge about sexually transmitted diseases after the training. These questions measured the level of knowledge about 'protection by vaccination', 'the risk of transmission of two sexual diseases together', 'affecting infants and can also be seen in children', 'transmission by skin contact', 'risk of multiple partners', 'causing infertility', 'easy transmission from the toilet bowl', 'adequacy of condom use for protection', 'risk of oral contact', 'risk of shared injector' and 'risk of transmission outside the sexual route'.

Conclusion: The findings of this study show that the inadequate knowledge of adolescent girls about sexually transmitted diseases increases with the education provided. To increase young people's level of knowledge about sexually transmitted diseases and to ensure their access to reliable sources of information, it is recommended that sexual health training, which will be designed taking into account the results of this and similar studies, should be included in high school and university curricula.

Keywords: Adolescent; health education; sexually transmitted diseases; students

Öz

Amaç: Cinsel yolla bulaşan hastalıklar, gelişmekte olan ülkelerde önemli bir halk sağlığı sorunu ve ekonomik yüke neden olmakta ve özellikle kadınlar üzerinde orantısız bir etki oluşturmaktadır. Bu araştırmayla, lisede öğrenim gören kızların cinsel yolla bulaşan hastalıklar konusundaki bilgi düzeylerinin belirlenmesi ve verilen eğitimle bilgi düzeyinde meydana gelen değişikliğin incelenmesi amaçlanmıştır.

Yöntemler: Araştırmanın örneklemini bir kız lisesinin 10. ve 11. sınıflarında öğrenim gören 131 öğrenci oluşturdu. Veriler, Mayıs 2023'te planlanan bir eğitimin öncesinde ve sonrasında 'Kişisel Bilgi Formu' ve 'Cinsel Yolla Bulaşan Hastalıklara İlişkin Bilgi Formu' kullanılarak toplandı.

Bulgular: Araştırmaya katılan öğrencilerin yaş ortalaması 16.24±0.75'tir. Cinsel Yolla Bulaşan Hastalıklar Bilgi Formunun toplam puan ortalaması eğitim öncesinde 19,17±3,05 iken eğitim sonrasında 22,9±2,74 olarak belirlendi. Formun bazı sorularının eğitim sonundaki doğru cevaplarında istatistiksel olarak pozitif yönde anlamlı düzeyde fark olduğu belirlendi. Bu sorular; 'aşı ile korunma', 'iki cinsel hastalığın birlikte bulaşma riski', 'bebekleri etkileme ve çocuklarda da görülebilme', 'deri teması ile bulaşma', 'çoklu partner riski', 'kısırlığa neden olma', 'klozetten kolay bulaşma', 'korunmak için kondom kullanımının yeterliliği', 'oral temas riski', 'ortak enjektör riski' ve 'cinsel yol dışında bulaşma riski' ile ilgili bilgi düzeyini ölçen sorulardır.

Sonuçlar: Bu araştırmanın bulguları, ergenlik çağındaki kızların cinsel yolla bulaşan hastalıklara ilişkin yetersiz olan bilgi düzeylerinin verilen eğitimle arttığını göstermektedir. Gençlerin cinsel yolla bulaşan hastalıklar konusundaki bilgi düzeylerini artırmak ve güvenilir bilgi kaynaklarına erişimlerini sağlamak için bu ve benzer araştırma sonuçlarının da dikkate alınarak tasarlanacak cinsel sağlık eğitimlerinin lise ve üniversite müfredatlarına dahil edilmesi önerilmektedir.

Anahtar Sözcükler: Adölesan; cinsel yolla bulaşan hastalıklar; öğrenciler; sağlık eğitimi

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INTRODUCTION

The prevalence of sexually transmitted diseases (STDs) has been on the rise worldwide, primarily due to the inadequacy of screening strategies and the complexity of treatment approaches. This phenomenon has led to a significant burden on healthcare systems (1,2). In recent years, STDs have affected individuals of all ages in both developed and developing countries, and they are considered a major public health threat, particularly among young people (3-5).

The majority of immunodeficiency virus (HIV) infections in the world are concentrated in the 15-24 age range, especially as a result of unprotected sexual intercourse (6). Adolescence is a period when curiosity, experience, and the desire to learn are at the forefront. This situation may increase the likelihood of engaging in risky behaviors and encountering various problems that will affect life due to inadequate sexual knowledge (7,8) and may also be seen as an opportunity for education (9). The increased risk of transmission, especially in early adulthood, and the potential to lead to complications affecting reproductive health, increase the importance of the subject.

One of the most effective ways to reduce the prevalence of sexually transmitted infections is to provide individuals with the knowledge and skills to prevent them. Despite available communication opportunities, in many communities, young people's knowledge about diseases is often inaccurate or incomplete. Moreover, parents may also have low levels of knowledge or may be reluctant to engage in reproductive health discourse with their children (10,11). It is the duty of physicians, nurses and educators to educate young people about the negative consequences of sexual desire leading to sexual activity (12). In this context, it is very important to select the most appropriate sources of information and develop strategies to increase awareness (13). Provision of sexual health information by health professionals is welcomed by adolescents, educators and parents.

Studies conducted on university-age youth in Turkey show that the level of knowledge about sexual health and infectious diseases is low, and there are regional differences (14). Formal education by physicians, nurses, and midwives in schools or family health centers is recommended to reduce the incidence of STDs (15). Studies have also reported that young people need sexual education at the secondary education level and perceive traditional structures as the most important obstacle (16). Lack of awareness about infections related to reproductive health and underestimation of possible risk may lead to the adoption of inappropriate behaviors. The potential for stigmatization and the effect of wrong attitudes resulting from incomplete information indicate that more importance should be given to sexual education in early adolescence (17).

According to global statistics published by the Joint United Nations Programme on HIV (Human Immunodeficiency Virus)/AIDS (acquired immunodeficiency syndrome) diseases (UNAIDS), 54% of people living with HIV worldwide are women and girls. The prevalence of HIV infection among young women is three times higher than among young men (18). Given that other STDs that are under-reported in women are not included in the above statistics, it is clear that women need to be educated about STDs, especially during schooling. In addition, adolescents are a population group that tends to underuse reproductive health services due to a number of factors, including concerns about confidentiality, difficulties in accessing services, financial constraints, and trust issues. Adolescent girls' knowledge about STDs may vary depending on a number of factors, including biological, cultural, social, and economic changes (19). Identification of these factors will guide the screening and educational interventions to be planned.

The aim of this study was to evaluate the level of knowledge of high school girls about sexually transmitted diseases and to examine the changes in the level of knowledge with the education provided.

Within the scope of the aim of the study, answers to the following research questions were sought;

1. "Do female high school students have sufficient knowledge about sexually transmitted diseases?

2. "Is STD education given by a specialized health professional to female high school students effective in increasing their level of knowledge about the transmission routes, prevention routes, and complications of sexually transmitted diseases?"

MATERIAL AND METHODS

Participants and procedures

This research is a quasi-experimental study using a one-group pretest-posttest design.

Place and time of the study

The study was conducted in a public girls' high school in Istanbul in May 2023.

Population and sample of the study

The population of the study consists of 10th and 11th-grade students studying in a girls' high school in the city centre of Istanbul in the spring semester of the 2022-2023 academic year. No sampling calculation was used in the study, and the aim was to reach all students (210) studying in 10th and 11th grades. The study was completed with 131 female students who were in school on the days of the study and whose parents and themselves gave consent to participate in the study. After the study was completed, a post-hoc power analysis was performed to determine the adequacy of the sample size. According to the power analysis, the total sample was found to be adequate with an effect size of 1.07, 99.6% power and a margin of error of 0.05% (20).

Inclusion criteria

- In the academic year 2022-2023, students in the 10th and 11th grades of a public girls' high school in Istanbul,
- Informed consent form signed by the family,
- Students who signed the informed consent form were included in the study.

Data collection and data tools

The data were collected with a 'Personal Information Form' consisting of 26 questions and the 'Information Form on Sexually Transmitted Diseases'. It took students an average of 7-8 minutes to answer the survey questions presented in Table 1.

Personal Information Form: It consists of 5 questions aiming to determine the socio-demographic characteristics of the participants.

Information Form on Sexually Transmitted Diseases: The form, which was created by the researchers in line with the literature, consists of 21 questions questioning the level of knowledge about sexually transmitted diseases. Nineteen of the questions consisted of yes-no and two of them consisted of multiple-choice propositions. The 'Information Form on Sexually Transmitted Diseases' was administered to the participants as a pretest just before the face-to-face training via an online survey on a cell phone. Afterwards, the participants were given two separate face-to-face trainings on Sexually Transmitted Diseases in the meeting room of the school, lasting an average of 40 minutes. The content of the Sexually Transmitted Diseases training was based on the training modules prepared by the Ministry of National Education for Vocational High Schools of Health and the website of the General Directorate of Public Health.

The content of this training given by an infectious diseases specialist, included common sexually transmitted diseases, including bacterial vaginosis, candidiasis, trichomoniasis, gonorrhea, syphilis, HIV, genital herpes, HPV (human papillomavirus) and AIDS diseases (21). Symptoms, transmission risks, prevention methods and treatment options associated with each infection were discussed in the training. Immediately after the training, the 'Information Form on Sexually Transmitted Diseases' was re-administered to the volunteers via an online questionnaire to assess their level of knowledge about STDs. In addition, three items were added to the questionnaire at the end of the training to assess the participants' feelings and thoughts about the training. Correct answers to the questions were given 1 point, and 1 point was given for each correct answer in the multiple-choice questions 17 and 20, from which more than one option could be selected. The maximum total score that can be obtained from the information form is 28.

Data evaluation

Data analysis was performed using the Statistical Package for the Social Sciences software for Windows, version 25.0 (SPSS Inc., Chicago, IL, USA). Percentage and frequency values were presented for categorical variables; arithmetic mean and standard deviation values were presented for quantitative variables. Chi-square test was used for comparisons between two qualitative variables. Comparisons between the total

number of correct answers before and after the training were analyzed using paired sample t-tests. Type I error rate was accepted as 0.05 in the study.

Limitations of the study

This research was planned as a pilot study in a single girls' school in Istanbul. One of the limitations of this study is that the participants were only female students due to the preferred school type. The findings obtained from this study cannot be generalized to the whole society due to the limited sample representation.

The ethical dimension of the study

This study was conducted in accordance with the principles of the Declaration of Helsinki, and approval of ethics (date: 22.09.2023, decision no: 22/592-2023) was obtained from the University of Health Science Hamidiye Scientific Research Ethics Committee and the institution where the study was conducted before starting the study. The purpose, duration, plan, how and where the data would be used, and what was expected from them were explained to the students and their parents through an informed consent form prepared in line with the Declaration of Helsinki. Written informed consent was obtained from both students and parents in line with the principle of voluntariness.

RESULTS

In this study, in which the effectiveness of the education given to high school students about sexually transmitted diseases was examined, it was determined that the mean age of the participants was 16.24±0.75 years, and 125 of them (95.4%) had not received any education about STDs before. According to the questionnaire administered before the training (Table 2), 38% of the participants thought that they could be protected from STDs by vaccination. 22.2% of the participants stated that they did not know that STDs could cause any damage in infants, and 40% did not know that children could also get STDs. 57% of the participants think that STDs can be easily transmitted from toilet bowls, and 80% of the participants think that protection from STDs with condoms is not enough. It was determined that 74.8% of the participants knew that STDs can be transmitted through the use of shared syringes, 41% knew that STDs can be transmitted through non-sexual routes, 94.6% knew that healthy-looking people can also get STDs, and 74% knew that STDs can cause infertility.

The difference between the correct answers of the propositions before and after the training was analyzed and presented in Table 2. Accordingly, a statistically significant positive difference was observed in the correct answers given to the questions related to 'protection with vaccination', 'risk of transmission of two sexual diseases together', 'affecting infants and can also be seen in children', 'transmission by skin contact', 'risk of multiple partners', 'causing infertility', 'easy transmission from the toilet bowl', 'adequacy of condom use for protection', 'risk of oral contact', 'risk of shared injector' and 'risk of transmission other than sexual route' after the training. While there was an increase in the number of correct answers given to the question 'Which body fluids can transmit STDs', it was observed that the answers related to 'from whom STD information should be obtained' changed to 'Specialist/Health Personnel' after the training.

Participants' feelings and thoughts about education are given in Table 3. According to this, the participants' 97.7% stated that the training was useful, and 41 (31.3%) stated that they felt confident about protection because they were informed about STDs. The mean total score was 19.17±3.05 before the training and 22.9±2.74 after the training ($p<0.001$).

DISCUSSION AND CONCLUSION

The impact of sexually transmitted infections on young people is alarming due to their high sex drive, low education, and sexual experience (3). It is of critical importance to determine the level of sexual health knowledge for the sexually active group, to increase STD knowledge, and to design programs that will enable them to acquire safe sexual behaviors (11). Determining the current knowledge levels of young people on sexual health issues will guide the creation of the content and level of these programs. In this context, according to the results of the knowledge level test applied before the training in this study, it was determined that almost all of the participants had partially sufficient basic knowledge about STDs, although they

Table 1. Questionnaire Content

STD knowledge	1	Sexually transmitted diseases can also occur in seemingly healthy people
	2	Someone with a sexually transmitted disease may also have another sexually transmitted disease at the same time
	3	Sexually transmitted disease is only transmitted through sexual contact
	4	All sexually transmitted diseases are easily treatable
	5	Sexually transmitted diseases can also be seen in children
	6*	Write the names of sexually transmitted diseases you know
Protection	7	People with intact genital organs do not have sexually transmitted diseases
	8	Birth control pills protect against sexually transmitted diseases
	9	Sexually transmitted diseases can be prevented by vaccination
	10	Monogamy is enough to protect against sexually transmitted diseases
	11	Using a condom during sexual intercourse is sufficient to protect against sexual diseases
Transmission routes	12	Sexually transmitted diseases can be transmitted through shared syringes
	13	Door handles and toilet bowls can transmit sexually transmitted diseases
	14	People infected with sexually transmitted diseases are mostly teenagers or young adults
	15	The risk of contracting a sexually transmitted disease increases in the presence of multiple partners
	16	Close skin and mucous membrane contact without sexual contact can cause sexually transmitted diseases
	17	STDs can be transmitted by oral contact
	18**	Which body fluids transmit sexually transmitted diseases?
Complication	19	Babies born to mothers with sexually transmitted diseases may have developmental abnormalities and serious illnesses
	20	STDs can cause infertility
Emotion thought	21**	From which source do you think information about sexually transmitted diseases can be obtained more reliably and accurately?
	22	I have received education on STDs before.
	23**	Please rate your feelings about learning about sexually transmitted diseases
	24	The sexually transmitted diseases education I received included information that I would need
	25**	Please rate your opinion about participating in this education that includes information about sexual contact.

*: Open-ended question, **: Multiple choice question, STD: Sexually Transmitted Diseas

had not received a similar training before. However, it is seen that they have inaccurate and incomplete information about complications, transmission routes and prevention. It is important to raise awareness of young people about the potential complications of STDs across the lifespan, including their impact on infants and children, in order to dispel the notion that the risks of STDs are limited to a single individual. In this study, it is seen that the knowledge level of the participants on the topics of transmission through skin contact, transmission through toilet bowl or shared syringes, contraceptive pills, vaccination and condom protection, which were asked to evaluate their level of knowledge about the transmission routes of STDs, was not sufficient. These findings support the findings of other studies showing that young people do not have sufficient knowledge about the symptoms, complications, transmission routes, use of common objects, condom use and risk groups of STDs (22-26).

According to the results of this research, 80% of the participants stated that condoms did not provide protection against STDs, while 38% stated that it was

Table 2. Comparison of responses before and after education (n=131)

Questions	False	Right	p
1. Sexually transmitted diseases can also occur in seemingly healthy people			
False	2 (28,6)	5 (71,4)	1
Right	6 (4,8)	118 (95,2)	
2. Someone with a sexually transmitted disease may also have another sexually transmitted disease at the same time			
False	2 (8,7)	21 (91,3)	0,013*
Right	7 (6,5)	101 (93,5)	
3. Sexually transmitted disease is only transmitted through sexual contact			
False	9 (16,7)	45 (83,3)	<0,001*
Right	11 (14,3)	66 (85,7)	
4. All sexually transmitted diseases are easily treatable			
False	1 (7,1)	13 (92,9)	0,263
Right	7 (6)	110 (94)	
5. Sexually transmitted disease can also be seen in children			
False	9 (17)	44 (83)	<0,001*
Right	7 (9)	71 (91)	
7. People with intact genital organs do not have sexually transmitted diseases			
False	4 (20)	16 (80)	0,711
Right	13 (11,7)	98 (88,3)	
8. Birth control pills protect against sexually transmitted diseases			
False	8 (30,8)	18 (69,2)	0,871
Right	20 (19)	85 (81)	
9. Sexually transmitted diseases can be prevented by vaccination			
False	26 (32,1)	55 (67,9)	<0,001*
Right	13 (26)	37 (74)	
10. Monogamy is enough to protect against sexually transmitted diseases			
False	8 (34,8)	15 (65,2)	0,307
Right	9 (8,3)	99 (91,7)	
11. Using a condom during sexual intercourse is sufficient to protect against sexual diseases			
False	17 (16,2)	88 (83,8)	<0,001*
Right	7 (26,9)	19 (73,1)	
12. Sexually transmitted diseases can be transmitted through shared syringes			
False	3 (9,1)	30 (90,9)	<0,001*
Right	4 (4,1)	94 (95,9)	
13. Door handles and toilet bowls can transmit sexually transmitted diseases			
False	56 (74,7)	19 (25,3)	0,012*
Right	39 (69,6)	17 (30,4)	
14. People infected with sexually transmitted diseases are mostly teenagers or young adults			
False	9 (19,1)	38 (80,9)	<0,001*
Right	7 (8,3)	77 (91,7)	
15. The risk of contracting a sexually transmitted disease increases in the presence of multiple partners			
False	1 (10)	9 (90)	0,021*
Right	1 (0,8)	120 (99,2)	
16. Close skin and mucous membrane contact without sexual contact can cause sexually transmitted diseases			
False	8 (13,8)	50 (86,2)	<0,001*
Right	9 (12,3)	64 (87,7)	
17. STDs can be transmitted by oral contact			
False	7 (15,6)	38 (84,4)	<0,001*
Right	5 (5,8)	81 (94,2)	
19. Babies born to mothers with sexually transmitted diseases may have developmental abnormalities and serious illnesses			
False	3 (10,3)	26 (89,7)	<0,001*
Right	5 (4,9)	97 (95,1)	
20. STDs can cause infertility			
False	6 (17,6)	28 (82,4)	<0,001*
Right	6 (6,2)	91 (93,8)	

p<0,05, STD: Sexually Transmitted Disease

Table 3. Feelings and thoughts about education (n=131)

Questions	f (%)	f (%)
From which source do you think information about sexually transmitted diseases can be obtained more reliably and accurately?	**Before Training**	**After Training**
Family	11(8.4)	5(3.8)
Friends	2(1.5)	1(0.8)
Social Media-Internet	3(2.3)	6(4.5)
Scientific Publications-Books	12(9.1)	9(6.9)
Teacher/Lecturer	5(3.8)	5(3.8)
Health personnel/ Specialists	98(74.9)	105(80.2)
I have received education on STDs before		
No	125 (95,4)	
Yes	6 (4,6)	
Your feelings about learning about sexually transmitted diseases;		
I didn't feel anything	19 (14,5)	
It made me uncomfortable	11 (8,4)	
I was worried I might get sick.	9 (6,9)	
I felt safe in terms of protection because I was informed.	41 (31,3)	
It created awareness in me	51 (38,9)	
The sexually transmitted diseases education I received included information that I would need.		
No	19 (14,5)	
Yes	112 (85,5)	
My thoughts about participating in this training, which included information about sexual contact:		
It was useful, I was bored	35 (26,7)	
Useful, I am satisfied	93 (71)	
It was useless, I didn't understand	3 (2,3)	
It was useless, I realized	0	
Age	16,24±0,75	

p<0,05, STD: Sexually Transmitted Disease

possible to protect against STDs with vaccination. This may be explained by the fact that the participants did not have sufficient knowledge about the transmission routes of diseases and sexual health. In the literature, the knowledge rates of young people in early adolescence about condom use vary between 12% and 81% (11,23), and the knowledge rates about protection with vaccination vary between 23.4% and 40% (1,27). University students are more knowledgeable about the protective effect of vaccination in the prevention of STDs, but young people need more information about HBV prophylaxis or HPV vaccines screened before marriage (64.2%) (11). In the study conducted by Sieving et al. (2019), it was reported that there was a decrease in condom use among young people; it was mostly used to protect against pregnancy rather than to protect against STDs, and condoms were not used when oral contraceptives were used. In the educational contents planned for STDs, it should be emphasized that condom use is effective in protection from both pregnancy and STDs (27).

The knowledge levels of the participants included in this study regarding STDs were re-evaluated at the end of the training. The difference between the correct answers of the propositions before and after the training was analyzed and the results are given in Table 2. Accordingly, it is seen that the number of correct answers on the topics of risk of co-infection of two sexual diseases, transmission routes, infants and children, protection with vaccination, disadvantaged groups,

importance of condoms and complications, and thus the total mean score of the questionnaire increased significantly at the end of the training. These results show that the training increased the participants' level of awareness about STDs, thus, the training was effective. These results support the results of similar studies evaluating the effectiveness of sexual health education for high school students (28-32). In the literature, there are studies indicating a decrease in the prevalence of AIDS among adolescents receiving sexual behavior support. Trainings planned for this purpose are designed with various models such as sexual health education, sexual health services, and creating a safe and supportive environment (33,34). In Japan, STD prevention courses for young people aged 15-16 years were included in the high school curriculum based on the assumption that schools are reliable sources of information (10). Peer education and brochure-based expert training were defined as other effective methods. It has been discussed that psychological counselors in schools can also provide education on sexual health (35). Similarly, in Africa, school-based sexual health interventions involving active participation in the prevention of STDs and HIV have been presented as an effective approach (36). In China, it was reported that sexual knowledge and attitudes of adolescents increased following the implementation of an internet-based sexuality education program, and these positive results continued for at least one year after the intervention (37).

Table 3 shows the feelings and thoughts of the participants regarding the training on STDs. Accordingly, 75% of the participants stated that they preferred to receive information on sexual health from health personnel or experts, 85.5% stated that the content of the training was sufficient, and 71% found the training useful. This result is similar to the satisfaction results in the STD education intervention conducted by Zizza et al. (2021) among young people aged 15-24 years (30).

It has been reported that sexual experience in Turkey falls in the 14-17 age group and young people's sources of information on STDs and AIDS transmission include television, newspapers, parents, teachers, books, health experts, the internet and friends (19). However, it is also a fact that the media, especially the internet and television, may cause exposure to sexual stimuli and misinformation. In studies conducted in women in different countries, transmission of the virus from mother to child, asymptomatic transmission and lack of information about infections such as HPV and HSV have been reported (38,39). Young people tend to be timid about discussing sexuality with their parents. Parents can influence the formation of sexual values and beliefs (40). Providing education on sexual health issues by clinicians facilitates communication between parents and adolescents and prevents early sexual initiation and unprotected sexual intercourse. These trainings also reduce the number of sexual partners and the incidence of STDs. All these positive effects were also reported in a study evaluating the effects of sexual education given in schools (41). It was found that young girls who constituted the sample of this study preferred to receive information about STDs from health professionals such as doctors, nurses and specialists rather than their teachers (27). Factors such as young people's confidence that they will receive accurate information from health professionals, being the people they will receive service from when they get sick, being able to ask questions easily and professionalism may be effective in the emergence of this result.

In conclusion, in this study, in which the effectiveness of STD education given to students in a girls' high school was evaluated, it was determined that the knowledge level of the participants increased after the education. Increasing treatment costs and psychological and pathological damage caused by STDs increase the importance of preventing STDs. In this context, it is recommended that the main topics of sexual health training should not only focus on reproduction, but also include prevention of STDs as much as possible. It is thought that repetition of trainings and intermittent evaluations may increase the effect of knowledge and risk perception into behavior. The establishment of adolescent outpatient clinics in health services may also contribute to the solution. It is thought that the findings obtained from this study will guide the design of school-based education programs.

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Conflict-of-interest and financial disclosure

The authors declare that they have no conflict of interest to disclose. The authors also declare that they did not receive any financial support for the study.

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