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ORIGINAL ARTICLE

Knowledge, Attitudes and Behaviors of Medical School Students About HPV, HPV Vaccine and Cervical Cancer: A Survey Study in a Medical School

Tıp Fakültesi Öğrencilerinin HPV, HPV Aşısı ve Rahim Ağzı Kanseri Hakkında Bilgi, Tutum ve Davranışları: Bir Tıp Fakültesinde Anket Çalışması

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ABSTRACT

Objective: This study aimed to determine the knowledge, attitudes and behaviors of students in a medical school about HPV, HPV vaccine and cervical cancer.
Methods: The research was carried out among the students of Selcuk University Faculty of Medicine in April 2022. The universe of the study consisted of all medical school students and it was conducted with 125 volunteers who accepted the study. Participants were asked questions about HPV, HPV vaccine and cervical cancer.
Results: One-hundred twenty five students participated in the study. The mean age was 20,89±2,339 (range 18-31). Of the 125 participants, 50,4% (n: 63) were female and 49,6% (n: 62) were male, and 74,4% (n: 93) were preclinical (1-2-3th grade) students, and 25,6% (n = 32) were clinical (4-5-6th grade) students. Majority of the respondents [86.4% (n=108)] reported that they did not have enough knowledge about HPV, HPV vaccine and diseases caused by HPV.
Conclusion: As the result of the study, even medical school students were not fully informed about HPV, HPV vaccine, and cervical cancer. It is vital for a healthier generation to provide medical students, who will be the pioneers of the future health sector, educate the public on health and guide health policies, with adequate training on HPV and HPV vaccines.

Keywords: HPV, HPV vaccine, Cervical Cancer, Survey, Student

ÖZ

Amaç: Bu çalışma, bir tıp fakültesinde öğrencilerin, HPV, HPV aşısı ve serviks kanseriyle ilgili bilgi, tutum ve davranışlarını belirlemeyi amaçladı.
Yöntem: Araştırma nisan 2022'de Selçuk Üniversitesi Tıp Fakültesi öğrencilerinde yapıldı. Çalışmanın evrenini tüm tıp fakültesi öğrencileri oluşturdu ve çalışmayı kabul eden 125 gönüllüyle çalışma yapıldı. Katılımcılara HPV, HPV aşısı ve serviks kanseriyle ilgili sorular yönlendirildi.
Bulgular: Araştırmaya yüz yirmi beş öğrenci katılmıştır. Yaş ortalaması 20,89±2,339 (dağılım 18-31) idi. 125 katılımcının %50,4'ü (n:63) kadın, %49,6'sı (n:62) erkek ve %74,4'ü (n:93) preklinik (1-2-3. sınıf) öğrencisiydi ve %25,6'sı (n=32) klinik (4-5-6. sınıf) öğrencisiydi. Ankete katılanların çoğunluğu [%86,4 (n=108)] HPV, HPV aşısı ve HPV'nin neden olduğu hastalıklar hakkında yeterli bilgiye sahip olmadığını bildirdi.
Sonuç: Araştırma sonucunda tıp fakültesi öğrencilerinin bile HPV, HPV aşısı ve rahim ağzı kanseri hakkında tam olarak bilgi sahibi olmadıkları ortaya çıktı. Geleceğin sağlık sektörünün öncüleri olacak, halkı sağlık konusunda eğitecek ve sağlık politikalarına yön verecek tıp öğrencilerine HPV ve HPV aşısı konusunda yeterli eğitim verilmesi daha sağlıklı bir nesiller için son derece önemlidir.

Anahtar Kelimeler: HPV, HPV aşısı, Servikal kanser, Anket, Öğrenci

Introduction

Cervical cancer is the most common type of cancer in women after breast, colorectal and lung cancer. According to Globocan 2020 data, it ranks fourth among deaths caused by cancer worldwide (1). According to Türkiye Cancer Statistics-2017, which is the most updated data for our country, the incidence of cervical cancer is 4.3 per 100.000. Cervical cancer ranks ninth among female cancers. Although this cancer, the main cause of which is HPV, is seen at a low frequency in our country, it is reported that HPV-related cancers are responsible for 1% of male cancers and 5–10% of female cancers in the analyses conducted by the International Agency for Research on Cancer. Similarly, when the data of our country is examined, it is estimated that HPV-related cancers affect women more and that HPV-related cancers are approximately 5 times higher in women than in men (2). There are many risk factors for cervical cancer. These are as follows:

human papilloma virus (HPV) infections, advanced age, first sexual experience before the age of 18, low socioeconomic level, multiple sexual partners, high parity number, early pregnancy, long-term use of exogenous hormones, smoking, insufficient fruit and vegetable consumption, sexually transmitted infections such as chlamydia, chronic immunosuppression, and family history of cervical cancer. HPV infection ranks first among cervical cancer risk factors (3).

There are more than 100 HPV types, of which at least 14 are defined as high-risk HPV subtypes. HPV 16 and HPV 18 cause 70% of cervical carcinomas and precancerous cervical lesions (4). Cervical cancer can be prevented or detected early with regular screening tests. Papanicolaou (PAP) smears, liquid-based screening, and the HPV DNA test are used as screening methods.

There are also vaccines for the most common cancer-causing types of HPV. The World Health Organization (WHO) recommends two doses of the HPV vaccine for girls aged 9–14 years (5). Various cancer screening programs and HPV vaccine applications are available in many countries around the world. Decreases in cervical cancer incidence and mortality rates have been reported in countries where HPV vaccination and cervical cancer screening are widespread (6). In Turkey, women between the ages of 30 and 65 are screened for cervical cancer by performing smear and HPV-DNA tests every five years through family physicians and Cancer Early Diagnosis, Screening, and Education Centers (KETEM) within the scope of the cancer screening program. However, HPV vaccine is not included in the national immunization program (7).

In order for health professionals providing health services to have knowledge about vaccines and to take an active role in informing the public, their own attitudes and behaviors must first change. For this reason, it is important to develop positive attitudes and behaviors towards HPV vaccine, especially in health education students. All health personnel should have up-to-date information on HPV vaccines, support HPV vaccines, discuss existing misconceptions and beliefs of individuals, and recommend appropriate individuals and groups to be vaccinated (8, 9).

The aim of this study is to examine the knowledge, attitudes, and behaviors of medical school students regarding cervical cancer, HPV, and HPV vaccination.

Material and Methods

The research was applied to the 1st, 2nd, 3rd, 4th, 5th, and 6th medical students at Selcuk University in April–May 2022. The study's scope was intended to reach the entire universe, not just a sample. This cross-sectional study was approved by the decision numbered 2022/170 of the non-interventional clinical research ethics committee of the Selcuk University Faculty of Medicine. The research data were collected using a questionnaire designed after a review of the relevant literature. The data questionnaire consists of 30 questions with four parts as follows: demographic characteristics, knowledge, attitude, and behavior regarding HPV, HPV vaccine, and cervical cancer.

Analyses were made using the IBM SPSS Statistics 23 package program. While evaluating the study data, frequencies (number, percentage) for categorical variables and descriptive statistics (mean, standard deviation, median, minimum, and maximum) for numerical variables are given.

Results

One hundred twenty-five students participated in the study. The mean age was 20.89±2.339 (range 18-31). Of the 125 participants, 50.4% (n = 63) were female and 49.6% (n = 62) were male (table 1), and 74.4% (n = 93) were preclinical (1-2-3rd year) students and 25.6% (n = 32) were clinical (4-5-6th year) students.

Some of the distributions of the answers about the knowledge level of the participants regarding HPV are shown in Table 1, and knowledge, attitudes, and behavior levels regarding the HPV vaccine are shown in Table 2, and knowledge levels regarding cervical cancer are shown in Table 3.

Apart from the findings given in the tables, it is necessary to mention here some remarkable findings. The majority of the respondents [86.4% (n = 108)] reported that they did not have enough knowledge about HPV, HPV vaccine, and diseases caused by HPV.

The participants in the research were asked to evaluate the lectures they had received in medical school about HPV. It was wondered whether the students considered the lectures as sufficient or not. In order to reflect objective results, those who did not receive lectures on this subject were asked not to answer these questions. Finally, 56 students answered the related questions. While 38 of these 56 students evaluated the lectures they received at the medical school on HPV as partially sufficient, 10 of them evaluated them as sufficient, and 8 of them as insufficient.

Through the same perspective, the students were asked to evaluate the education they received in medical school on HPV vaccination. Thirty-eight of 54 students who responded said that the lecture they received on this subject was partially sufficient, 8 of them evaluated these lectures as sufficient, and 8 of them evaluated these lectures as insufficient.

Table 1. Knowledge level of HPV

	n	%
In your opinion, which of the following is/are the transmission route of HPV? (more than one option can be ticked) (n=125)	123	98.4
Sexually transmitted	71	56.8
Contamination with bodily fluids	56	44.8
Contamination from toilets	23	18.4
Transmission through the respiratory tract		
HPV infection may disappear without treatment		
True	14	11.2
False	69	55.2
No idea	42	33.6
People infected with HPV can transmit the virus without showing any signs of illness.	92	73.6
True	16	12.8
False	17	13.6
No idea		
In your opinion, what are the methods of protection from HPV?		
getting vaccinated	117	93.6
Kondom use	107	85.6
Monogamy	101	80.8
Is condom use the most reliable method used to prevent HPV transmission?	42	33.6
True	51	40.8
False	32	25.6
No idea		
Is the risk of being infected with HPV related to the number of sexual partners?	113	90.4
True	6	4.8
False	6	4.8
No idea		
There is no risk of HPV transmission in a married and monogamous individual.		
True	3	2.4
False	110	88
No idea	12	9.6
Which of the following diseases do you think HPV can cause? (more than one option can be ticked)		
A) Genital Warts	93	
B) Cervical Cancer	92	
C) Vulvar cancer	64	
D) Vaginal cancer	69	
E) Oropharyngeal cancers	44	
F)Anal cancer	47	
G) Nasopharyngeal cancer	31	
H) Ovarian cancer	58	
I) Undecided/No idea	29	

Table 2. Knowledge, attitudes and behaviors regarding HPV vaccine

	n	%
Have you been vaccinated with the HPV vaccine?		
Yes	9	7.2
No	115	92
No answer	1	0.8
If you have not been vaccinated with the HPV vaccine, would you like to be vaccinated?		
Yes	59	47.2
No	18	14.4
Undecided	40	32
No answer	8	6.4
If you have not been vaccinated with the HPV vaccine, what is the reason?		
Since I haven't got enough knowledge about this subject	55	44
Because the vaccine is expensive	17	13.6
I don't think the vaccine is necessary for me	17	13.6
Since I have a male gender	10	8
The others…	16	12.8
No answer	10	8
Would the state coverage of the HPV vaccine affect your decision to get vaccinated?		
Yes	94	75.2
No	27	21.6
No answer	4	3.2
Would you advise your patients/relatives to be vaccinated with HPV vaccine?	79	63.2
Yes	6	4.8
No	40	32
Undecided		
Who do you think should inform the public about the HPV vaccine? (more than one option can be ticked)		
General practitioners/ family physicians	99	79.2
Specialist physicians	97	77.6
Academical healthcare providers	76	60.8
Nurses	47	37.6
Other allied health personnels	46	36.8
In your opinion, when / at what age should people be vaccinated with the HPV vaccine?		
Between 12-26 years old	56	44.8
Before the first sexual intercourse	47	37.6
When the menstrual cycle begins	17	13.6
50 years and older	2	1.6
30 years and older	1	0.8
No answer	2	1.6
In your opinion, which of the following disease/diseases does the HPV vaccine protect against? (more than one option can be ticked)		
A) Cervical Cancer	88	70.4
B) Genital Warts	86	68.8
C) Vulvar cancer	59	47.2
D) Vaginal cancer	67	53.6
E) Oropharyngeal cancers	39	31.2
F)Anal cancer	47	37.6
G) Nasopharyngeal cancer	29	23.2
H) Ovarian cancer	50	40
I) Undecided/No idea	29	23.2

Table 3. Knowledge Level of Cervical Cancer

	n	%
Have you heard of cervical cancer before? If yes, where did you hear it? (n=125)	50	40
I heard it in lectures at university	13	10.4
heard in pre-college schools	23	18.4
TV/social media	9	7.2
relatives/friends	29	23.2
I did not hear	1	0.8
No answer		
HPV is the most important etiological risk factor for cervical cancer	58	46.4
True	16	12.8
False	49	39.2
No idea	2	1.6
No answer		
Having a family history of cervical cancer is a risk factor for the development of cervical cancer		
True	78	62.4
False	13	10.4
No idea	33	26.4
No answer	1	0.8
In early stage cervical cancers, approximately 90-100% cure is obtained with treatments		
True	64	51.2
False	16	12.8
No idea	44	35.2
No answer	1	0.8
Which of the following is a symptom of cervical cancer		
A) Irregular blood spotting or light bleeding between menstrual periods	14	11.2
B) Pain during sexual intercourse	4	3.2
C) Fatigue, weight loss, loss of appetite	4	3.2
D) Pain while urinating	1	0.8
E) All	88	70.4
F) None	10	8
No answer	4	3.2
Which of the following is a risk factor for cervical cancer other than HPV?		
A) First sexual intercourse at an early age (before the age of 16)	6	4.8
B) Presence of more than one sexual partner	25	20
C) Use of birth control pills for more than 5 years	5	4
D) Suppression of the immune system	6	4.8
E) All	68	54.4
F) None	9	7.2
No answer	6	4.8

Discussion

Cervical cancer is the fourth most common female malignancy worldwide and is a major global health problem. According to Globocan 2020 data, it ranks fourth among deaths caused by cancer worldwide (1). The incidence and mortality rates of cervical cancer vary among countries. In high-income countries, both the incidence and mortality rates of cervical cancer are lower than in low-income countries. The reason for this is that cancer screening rates and HPV vaccination rates are higher in developed countries. As a result, cervical cancer is a major public health issue, particularly in low-income countries (10). Cervical cancer is mostly detected more frequently in middle-aged women. When considering the United States' (US) data, the median age of cervical cancer at diagnosis is 50 years, and just 2.5 percent of cases were diagnosed in people aged 85 years or older. In the US, in the years between 2015 and 2019, the percentages of new cases of cervical cancer by age group are as follows: in girls under the age of 20, it was 0.1%; it increased to 14.4% in women aged 20 to 34; and it peaked at 55.8% in women aged 35 to 54. The median age at death was 59. Hysterectomy and age-adjusted data suggest that the highest cervical cancer death rates are in older women, and some clinicians continue to screen women with an extended life expectancy up to 74 years (11–13).

Almost all cases of cervical cancer are caused by HPV. Other risk factors are as follows: early onset of sexual activity; multiple sexual partners; a sexual partner with multiple sexual partners; history of sexually transmitted infections; history of vulvar or vaginal squamous intraepithelial neoplasia or cancer; early age at first birth; immunosuppression; low socioeconomic status; oral contraceptive use; smoking; family history of cervical cancer (3). In the presented study, 23.2% of the participants mentioned that they did not hear about cervical cancer. The majority of the cohort heard about cervical cancer; 40% of them heard it from lectures at the university. The level of knowledge of the students about cervical cancer was not bad, with some shortcomings. But as a striking result, less than half of the participants in the study knew that HPV was the biggest risk factor for developing cervical cancer.

Early cervical cancer is frequently asymptomatic, underscoring the importance of screening. In asymptomatic patients, cervical cancer may be discovered as a result of cervical cancer screening or incidentally if a visible lesion is discovered upon pelvic examination. The most common symptoms at presentation are irregular or heavy vaginal bleeding and postcoital bleeding. Advanced disease may present with pelvic or lower back pain, which may radiate along the posterior side of the lower extremities. Bowel or urinary symptoms, such as pressure-related complaints, hematuria, hematochezia, or the vaginal passage of urine or stool, are uncommon and suggest advanced disease. In the presented study, students mostly gave the right answers to the questions about the symptoms of cervical cancer.

Human papillomavirus (HPV) is a sexually transmitted pathogen that causes anogenital and oropharyngeal disease in males and females. Persistent viral infections with high-risk HPV genotypes cause virtually all cancers of the cervix. The high-risk HPV genotypes (or "types") 16 and 18 cause approximately 70 percent of all cervical cancers worldwide, and type 31, 33, 45, 52, and 58 cause an additional 20 percent. HPV type 16 and 18 also cause nearly 90 percent of anal cancers

and a significant proportion of oropharyngeal cancer, vulvar and vaginal cancer, and penile cancer. HPV type 6 and 11 cause approximately 90 percent of anogenital warts (14). In the current study, almost all of the students (98.4%) have stated correctly that the most common way of transmission of HPV is through sexual transmission. Additionally, most of the participants (73.6%) have stated truely that people can transmit this virus without showing any signs of illness. To the question of which diseases HPV is associated with, the majority of the participants have stated genital warts and cervical cancer, while vulvar, vaginal, anal, and oropharyngeal cancers have been specified by a minority of the participants. Furthermore, 48 people chose the option that HPV could also cause ovarian cancer, which was the wrong answer.

Global incidence and mortality rates depend upon the presence of screening programs for cervical precancer and cancer and of human papillomavirus (HPV) vaccination, which are most likely available in resource-rich countries. Three different vaccines, which vary in the number of HPV types they contain and target, have been clinically developed, although not all are available in all locations:

-HPV quadrivalent vaccine (Gardasil) targets HPV types 6, 11, 16, and 18.

-HPV 9-valent vaccine (Gardasil 9) targets the same HPV type as the quadrivalent vaccine (6, 11, 16, and 18) as well as types 31, 33, 45, 52, and 58.

-HPV bivalent (Cervarix) targets HPV type 16 and 18.

These are all prophylactic vaccines, designed to prevent initial HPV infection and subsequent HPV-associated lesions. In the United States, only the 9-valent vaccine is available, and it is specifically approved for the prevention of cervical, vulvar, vaginal, anal, oropharyngeal, and other head and neck cancers, anogenital precancerous and dysplastic lesions, and genital warts in females, and for the prevention of anal, oropharyngeal, and other head and neck cancers, anal precancerous and dysplastic lesions, and genital warts in males (15).

HPV vaccines may protect women from cancers of the cervix, vulva, and vagina; men from penile cancer; and they greatly reduce the risk of developing oropharyngeal, anal cancers, and genital warts, in both sexes. HPV vaccination is recommended to start at the age of 11 or 12 but may be administered as early as 9 years of age and through 26 years of age if not previously vaccinated (16). For adults 27 years of age and older, people who have not previously been vaccinated with HPV can also benefit from HPVvaccination by reducing the future risk of HPV exposure if they have a new sexual partner and have had no or limited sexual intercourse before (17).

94 (75.2%) people stated that they would have been vaccinated if the vaccine had been paid for by the state. 79 (63.2%) of the participants stated that they would recommend the vaccine to their patients, which was a low rate, but it should be taken into account that the majority of the participants were preclinical students. Almost all of the participants were between the ages of 18 and 25, which is the recommended age to be vaccinated against HPV, and only nine (7.3%) of the students were vaccinated, which is a very low rate. In other studies conducted in our country, this rate was similar to ours (18, 19). In the trial conducted by Cesmeci et al., they appraised the knowledge, opinions, and behaviors of senior medical students regarding HPV infection and vaccine. In that trial, when the knowledge levels of the participants were examined, the best-known topic was that HPV induces cervical cancer in the majority of cases. Dissimilar to our trial, the relationship between economic status and vaccination was also evaluated. There was a significant difference between the economic status of the participants, who did not get vaccinated and did not recommend the HPV vaccine to their male patients, and their gender. In consequence, even though the HPV knowledge levels of the participants were higher, the vaccination rates were pretty low. Although there are differences on the basis of race, gender, and country, it has been reported in many trials that the awareness of HPV infection among university students is not high (20).

In the present study, regarding vaccination willingness, most of the students stated that they were not vaccinated due to not having enough knowledge regarding HPV vaccination, as similar to many other studies (21).

A few points should be mentioned: first, the younger people of today, who will be the parents of tomorrow, need to be aware of HPV and its potential risks; second, it is strongly recommend to raise awareness of today's medical students, who will be the health practitioners and educators of the future and who will educate the public,about HPV and vaccination and HPV-related cancers.

The fact that the study was conducted at a single faculty, and the insufficient number of (especially clinical students) participants, deserves to be mentioned as the limitations of the study.

Conclusion

Today, many life-threatening HPV-related cancers can be prevented with effective vaccination programs. Governments' support for vaccination programs is critical in this regard. As a result of the study, even medical school students were not fully informed about HPV, the HPV vaccine, and cervical cancer. Raising awareness of HPV-related diseases in medical students, who will be the future pioneers of healthcare, educating the public on health and guiding health policies, is critical; they require adequate training on HPV and the HPV vaccine.

As a general recommendation, not only medical students but also all health personnel should have up-to-date information on HPV vaccines, support HPV vaccines, discuss existing misconceptions and beliefs of individuals, and recommend appropriate individuals and groups to be vaccinated. It is advised to incorporate HPV-releated diseases, and the HPV vaccination in the medical curriculum and to provide regular internal and inter-institutional trainings on this subject due to its undeniable importance today.

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