

Determining the Knowledge Levels of University Students About HPV and HPV Vaccine

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Abstract

Objective: The purpose of this study is to determine the knowledge levels of university students about human papillomavirus (HPV) and the HPV vaccine.

Methods: This descriptive study was conducted with 802 university students staying in the student dormitory of a foundation university on the Anatolian Side of İstanbul. The data of the study were collected using the “Student Information Form” and the “Human Papilloma Virus Knowledge Scale”.

Results: 16.5% of the participants had previous sexual experience, 5.1% had genital wart problems before, 15.8% had the HPV vaccine, the total score average of the “HPV Knowledge Scale” was 10.142 ± 7.364 (Min:0-Max:33). When the sub-dimension mean scores are examined, the “general HPV knowledge” sub-dimension mean score is 6.657 ± 4.276 , the “HPV screening test knowledge” sub-dimension mean score is 1.029 ± 1.316 , the “general HPV vaccine knowledge” sub-dimension mean score is 1.591 ± 1.737 , the “current HPV knowledge” sub-dimension mean score is 1.591 ± 1.737 . The mean score of the “information about vaccination program” subscale was found to be 0.865 ± 1.240 .

Conclusion: In this study, the level of knowledge about HPV and HPV vaccine among university students is quite low, and it is seen that this situation may affect general health awareness and protective behaviors.

Keywords: Human Papillomavirus, Nursing, Prevention, Student

Öz

Üniversite Öğrencilerinin HPV ve HPV Aşısı Hakkındaki Bilgi Düzeylerinin Belirlenmesi

Amaç: Bu çalışmanın amacı, üniversite öğrencilerinin human papillomavirüs (HPV) ve HPV aşısı hakkındaki bilgi düzeylerinin belirlenmesidir.

Yöntem: Tanımlayıcı nitelikteki bu çalışma, İstanbul Anadolu Yakası'ndaki bir vakıf üniversitesinin öğrenci yurdunda kalan 802 üniversite öğrencisi ile yürütülmüştür. Çalışmanın verileri “Öğrenci Bilgi Formu” ve “Human Papilloma Virüsü Bilgi Ölçeği” kullanılarak toplanmıştır.

Bulgular: Katılımcıların %16,5'i daha önce cinsel deneyim yaşadığını ve %5,1'i daha önce genital siğil sorunu yaşadığını ve %15,8'i HPV aşısı yaptırdığını belirtti. “HPV Bilgi Ölçeği” toplam puan ortalaması $10,142 \pm 7,364$ (min.0-maks.33) idi. Alt boyut puan ortalamaları incelendiğinde, “genel HPV bilgisi” alt boyut puan ortalaması 6.657 ± 4.276 , “HPV tarama testi bilgisi” alt boyut puan ortalaması 1.029 ± 1.316 , “genel HPV aşısı bilgisi” alt boyut puan ortalaması 1.591 ± 1.737 , “mevcut HPV bilgisi” alt boyut puan ortalaması 1.591 ± 1.737 olarak bulunmuştur. “Aşılama programı hakkında bilgi” alt ölçeğinin puan ortalaması 0.865 ± 1.240 olarak bulunmuştur.

Sonuç: Bu çalışmada üniversite öğrencileri arasında HPV ve HPV aşısı hakkında bilgi düzeyi oldukça düşük olup, bu durumun genel sağlık farkındalığını ve koruyucu davranışları etkileyebileceği görülmektedir.

Anahtar Kelimeler: Hemşirelik, Human Papillomavirüs, Öğrenci, Ölleme

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INTRODUCTION

Human papillomavirus (HPV), one of the main causes of sexually transmitted diseases, is a small, non-enveloped DNA virus belonging to the papillomaviridae family, with more than 200 types identified. HPV is a sexually transmitted virus that can cause warts and some cancers (Mavundza et al., 2021; Egawa & Doorbar, 2017). HPV viruses survive in certain areas of the body. The places where they can live in the body are stated as “squamous epithelial cells, skin surface, cervix, vulva, anus, gland penis, mouth and throat area” (Hathaway, 2012; Eroğlu et al., 2011). It is stated that having many sexual partners, early coitus, having another sexually transmitted disease, immunosuppression and low socioeconomic status increase the risk of contracting HPV (Selçuk & Yanikkerem, 2018). HPV spreads in young sexually active women, and in the research it was said that it reached its peak value between the ages of 20-25 (Ayazöz & Çadırcı, 2020; Sanjose et al., 2018). When cancer statistics are examined in the literature, HPV is accepted as the etiological agent in 99.7% of cases for cervical cancer, which ranks fourth in women in the world and ninth in Türkiye. The majority of HPV consists of HPV types 16 and type 18, with a rate of 70% (Çeşmeci et al, 2015). The mortality rate from cervical cancer in the world is reported to be 6.9% (Park et al., 2015). It has been reported by the World Health Organization that 604,000 new cases of cervical cancer will be diagnosed and 342,000 deaths will occur in 2020 (WHO, 2022). In Turkey, in 2022, the incidence of cervical cancer in the last five years was reported to be 7,163, anus cancer to be 666, and penile cancer to be 70 (Globocan, 2022).

Vaccines are the important in preventing HPV infections, but vaccination programs for protection against HPV are not available in many countries in the world. Among the countries where the HPV vaccine is included in the national vaccination program are countries such as “Austria, Belgium, France, Germany, Italy, Portugal” (Başar et al, 2019; Kunt İşgüder et al, 2017). Food and Drug Administration has approved three effective and safe HPV vaccines that prevent infections caused by the most common high-risk HPV genotypes: quadrivalent (4vHPV, Gardasil, Merck), bivalent (2vHPV, Cervarix, GlaxoSmithKline), and nine-valent (9vHPV, Gardasil 9, Merck) (Food and Drug Administration, 2018).

It is stated that the rate of HPV vaccination among university students in Turkey is very low and that they do not have sufficient information about HPV and the HPV vaccine (Demir Bozkurt & Özdemir, 2023; Aynacı & Güksu, 2019; Turhan et al, 2019; Gözüksosyal, 2019). For this reason, the misinformation that exists in society about HPV infection and vaccine needs to be identified and corrected.

Nurses are professionals who play a role in health education for individuals, families, and communities. Determining the level of knowledge about HPV and the HPV vaccine among university students can help nurses identify gaps in knowledge. Nurses, by correcting students’ incomplete and incorrect information about HPV and the HPV vaccine, can contribute to increasing HPV awareness and promoting vaccination. By providing information to university students on topics such as the transmission routes of HPV, screening methods, and prevention through vaccination, nurses can contribute to the prevention of potential infections and serious diseases like cancer. This study aims to determine the level of knowledge about HPV and the HPV vaccine among university students living in dormitories at a foundation university in Istanbul, and it is particularly noteworthy for using a large-scale sample focused on the student population.

METHODS

Study Design

The research was conducted as descriptive study.

Research Questions

What are the scores of university students on the “Human Papilloma Virus (HPV) Knowledge Scale” and its subscales?

Is there a statistically significant difference between the scores of the “Human Papilloma Virus (HPV) Knowledge Scale” and its subscales according to the descriptive characteristics of university students?

Variables of the Study

Dependent variables of the study: Human papilloma virus (HPV) information scale

Independent variables of the research: Introductory characteristics of students (age, gender, place of residence, economic situation, smoking status, age of first menstrual period, etc.).

Settings of the Study

This research was conducted on students staying in the dormitory of a foundation university on the Anatolian side of Istanbul between June and December 2022.

Population of the Study

The population of this research consisted of a total of 2230 students, 530 men and 1700 women, living in the dormitory of a foundation university. The sample

size of the study was determined as a minimum of 328 students, with 95% reliability and ± 0.05 margin of error, taking into account the sample size table (<https://www.calculator.io/sample-size-calculator>). The inclusion criteria for the study were as follows: being over 18 years of age and volunteering to participate in the research. The sample of the study consisted of 802 students who met the criteria for inclusion in the study population and were selected by convenience sampling method.

Data Collection

The data was collected in the dormitory between June and December 2022 infirmary where the students stayed, using the face-to-face interview method, and it took approximately 15 minutes to fill out the data collection form.

Data Collection Tools

Data collection tools consisted of two parts: "Student Information Form" and "Human Papilloma Virus (HPV) Information Scale".

Student Information Form: The student information form prepared by the researcher consists of 33 questions, including age, gender, place of residence, economic situation, smoking status, age of first menstrual period and questions about women's health.

Human Papilloma Virus (Hpv) Information Scale: The scale was developed by Waller et al. (2013), and its Turkish validity and reliability study was conducted by Demir Bozkurt and Özdemir in 2019. The scale consists of 33 items and four sub-dimensions. These sub-dimensions are: "general HPV knowledge", "HPV screening test knowledge", "general HPV vaccine knowledge" and "information about the current HPV vaccination program" sub-dimensions. In the scale, each correct answer is scored with "1", while incorrect answers are scored as "1" and "I don't know" statements are scored with "0". The total score obtained from the scale is between 0-33, and a high score indicates a high level of knowledge about HPV, HPV screening tests and HPV vaccine. Demir Bozkurt and Özdemir found the Cronbach alpha value of the scale to be 0.96 (Demir Bozkurt & Özdemir, 2023). In this study, the Cronbach alpha value of the scale was found to be high as 0.865.

Ethics Considerations

Ethics committee approval was received for this research from İstanbul Medipol University Non-Invasive Clinical Research Ethics Committee (10840098-772.02-3057). Written permission was obtained from the Student Dormitory Directorate where the research was conducted.

Permission was received via e-mail from Demir Bozkurt & Özdemir (2023), who conducted the Turkish validity and reliability studies of the 'HPV Knowledge Scale' we used in the study. Permission was obtained from the students participating in the research through an informed consent form. In addition, it was explained to all students participating in the research that they could withdraw from the research in line with the purpose, content and wishes of the research, and that the information received would remain confidential.

Data Analysis

The data obtained in the study were evaluated on a computer using the SPSS 22.0 statistical program. Frequency and percentage analyzes were used to determine the descriptive characteristics of the students participating in the research, and mean and standard deviation statistics were used to examine the scale. Kurtosis and Skewness values were examined to determine whether the research variables showed normal distribution. It was determined that the variables showed normal distribution. Parametric methods were used to analyze the data. T-test and one-way analysis of variance (ANOVA) analyzes were used to examine the differences in scale levels according to the students' descriptive characteristics.

Limitations of the Study

The study has a descriptive and cross-sectional design, with data collected at a single point in time. Therefore, causal relationships, such as the impact of knowledge about HPV and the HPV vaccine on individuals' preventive behaviors, cannot be inferred. The sample is based solely on students residing in the dormitories of a foundation university in İstanbul. This limits the generalizability of the findings to other university populations, particularly those from different regions, universities, or socioeconomic backgrounds.

RESULTS

Information about the students' descriptive characteristics is given in Table 1. Average age of students 20.820 ± 1.471 (Min=18; Max=27). It was observed that 46 (5.7%) of them had a pap smear test and 127 of them (15.8%) had received the HPV vaccine. It was determined that 132 of the students (16.5%) had previous sexual experience. It was determined that 41 (5.1%) of the students had a "history of genital warts".

Information about the students' mean scores of the HPV Knowledge Scale total and sub-dimensions is presented in Table 2. The mean score for participants' knowledge in the "general HPV knowledge" subscale was 6.657 ± 4.276 , the mean score for "HPV screening test knowledge" was

1.029 ± 1.316, the mean score for “general HPV vaccine knowledge” was 1.591 ± 1.737, and the mean score for “information about the current HPV vaccination program” subscale was 0.865 ± 1.240. The total score for the HPV knowledge scale was 10.142 ± 7.364.

Table 1. Distribution of students according to descriptive characteristics (n=802)

		n	%
Gender	Male	124	15.5
	Female	678	84.5
Marital Status	Single	792	98.8
	Married	10	1.2
Economic Level	Poor	23	2.9
	Middle	500	62.3
	Rich	279	34.8
Smoking status	Yes	542	67.6
	No	260	32.4
Status of having a Pap smear test	Yes	46	5.7
	No	756	94.3
HPV vaccination status	Yes	127	15.8
	No	675	84.2
Have no previous sexual experience	Yes	132	16.5
	No	670	83.5
Previous occurrence of warts in the genital area	Yes	41	5.1
	No	761	94.9
Thinking that you are at risk for HPV	Yes	50	6.2
	No	752	93.8

HPV: Human papillomavirus

The results of the analysis performed to examine the differentiation of HPV knowledge scores according to

descriptive characteristics are presented in Table 3. HPV knowledge scale total and subdimensions scores of men were found to be lower than women’s scores (p<.05). HPV knowledge scale total and subdimensions scores of those who had a pap smear test were found to be higher than the scores of those who did not have a pap smear (p<0.05). It was observed that the total HPV knowledge scale total and subdimensions scores of those who received the HPV vaccine were higher than the scores of those who did not receive the HPV vaccine (p<.05). HPV knowledge scale total and subdimensions scores of those who thought they were at risk for HPV were found to be higher than the scores of those who did not think they were risky (p<.05) (Table 3).

It was found that the students’ HPV knowledge scale total and subscale scores did not differ significantly according to marital status, smoking status, economic status, sexual experience, and presence of warts in the genital area (p>.05) (Table 3).

Table 2. HPV knowledge scale total score and subdimension mean score (n=802)

HPV Knowledge Scale	Mean	Standard deviation	Minimum	Maximum
General HPV knowledge	6.657	4.276	0.000	15.000
HPV screening test knowledge	1.029	1.316	0.000	6.000
General HPV vaccine knowledge	1.591	1.737	0.000	5.000
Information about the current HPV vaccination	0.865	1.240	0.000	5.000
HPV Knowledge Scale Total	10.142	7.364	0.000	29.000

HPV: Human papillomavirus

Table 3. Differentiation of HPV knowledge scores according to descriptive characteristics

Demographic Features		n Mean±SD	HPV Knowledge Scale Total	General HPV Knowledge	HPV Screening Test Knowledge	General HPV Vaccine Knowledge	Information on Current HPV Vaccination Program
			Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Gender	Male	124	5.387±6.715	3.734±4.317	0.460±0.991	0.653±1.256	0.540±0.999
	Female	678	11.012±7.146	7.192±4.049	1.133±1.341	1.763±1.759	0.925±1.271
	t		-8.133	-8.653	-5.327	-6.715	-3.193
	p		0.000	0.000	0.000	0.000	0.000
Marital Status	Single	792	10.177±7.377	6.676±4.278	1.033±1.321	1.599±1.741	0.870±1.243
	Married	10	7.400±5.892	5.200±4.077	0.700±0.675	1.000±1.333	0.500±0.972
	t		1.185	1.084	0.795	1.083	0.938
	p		0.236	0.278	0.427	0.279	0.349
Economic Level	Poor	23	7.348±8.060	4.870±5.030	0.913±1.345	1.087±1.703	0.478±0.730
	Middle	500	10.146±7.399	6.656±4.241	1.022±1.310	1.572±1.699	0.896±1.276
	Rich	279	10.366±7.219	6.807±4.256	1.050±1.327	1.667±1.805	0.842±1.204
	F		1.788	2.186	0.132	1.263	1.323
	p		0.168	0.113	0.876	0.283	0.267
Smoking Status	No	542	10.312±7.381	6.792±4.266	1.017±1.313	1.653±1.775	0.851±1.245
	Yes	260	9.887±7.352	6.461±4.358	1.007±1.307	1.511±1.642	0.908±1.224
	t		0.470	0.885	0.264	1.192	0.132
	p		0.625	0.413	0.768	0.304	0.876
Status of Pap Smear	Yes	46	14.630±6.444	9.000±3.353	1.761±1.594	2.196±1.655	1.674±1.477
	No	756	9.869±7.331	6.515±4.287	0.984±1.285	1.554±1.737	0.816±1.208
	t		4.304	3.860	3.923	2.439	4.613
	p		0.000	0.000	0.002	0.015	0.000
HPV Vaccination Status	Yes	127	12.457±6.442	7.882±3.502	1.362±1.349	2.063±1.722	1.150±1.409
	No	675	9.707±7.449	6.427±4.371	0.966±1.301	1.502±1.727	0.812±1.199
	t		3.895	3.544	3.131	3.358	2.829
	p		0.000	0.000	0.002	0.001	0.012
No Previous Sexual Experience	Yes	132	10.303±7.247	6.546±4.213	1.091±1.251	1.667±1.763	1.000±1.223
	No	670	10.110±7.391	6.679±4.291	1.016±1.329	1.576±1.733	0.839±1.242
	t		0.274	-0.328	0.594	0.547	1.366
	p		0.784	0.743	0.552	0.584	0.172
Previous occurrence of warts in the genital area	Yes	41	12.049±6.426	7.927±3.876	1.317±1.422	1.976±1.710	0.829±1.263
	No	761	10.039±7.400	6.589±4.288	1.013±1.309	1.570±1.738	0.867±1.239
	t		1.704	1.955	1.442	1.456	-0.191
	p		0.089	0.051	0.150	0.146	0.848
Thinking You Are Risky for HPV Virus	Yes	50	13.560±6.625	8.480±3.495	1.440±1.402	2.200±1.750	1.440±1.327
	No	752	9.915±7.358	6.536±4.298	1.001±1.306	1.551±1.730	0.827±1.225
	t		3.412	3.130	2.289	2.568	3.407
	p		0.001	0.000	0.022	0.010	0.001

F: ANOVA Test; t: Independent Groups T-Test; HPV: Human papillomavirus; SD: Standart Deviation

DISCUSSION

This study examined the knowledge levels of university students about HPV and vaccine and revealed that university students, who are in the risk group in terms of cancer and in the target group in terms of vaccination, have low levels of knowledge about HPV and vaccine. When other studies in the literature were examined, it was seen that the level of knowledge of university students about HPV and vaccine is quite low in Turkey and in many countries (Alsulami et al., 2023; Bernard et al., 2017; Wilson et al., 2017; Şahin et al., 2022; Alsancak et al., 2024; Daylan Koçkaya et al., 2024; Demir Bozkurt & Özdemir, 2023; Aynacı & Güksu, 2019; Turhan et al., 2019; Gözüksosyal, 2019; Aslan & Bakan, 2020). Based on these results, it can be said that qualified studies are needed to raise awareness of the young population about HPV and to raise awareness throughout the society.

In the study, it was found that the scores of men on HPV knowledge and vaccine knowledge were significantly lower compared to women. Similar to this finding, in many studies in the global literature on the subject, it was found that the knowledge levels of women about HPV and vaccine were significantly higher than men (Alsancak et al., 2024; Alsulami et al., 2023; Chen et al., 2021; Wanderly et al., 2021; Başlı et al., 2019; Aslan & Bakan, 2020; Rathfisch et al., 2015; Jeannot et al., 2019; Blodt et al., 2012). In the study conducted by Barnard et al. (2017) with students from the University of Mississippi, unlike the findings of the study, no significant difference was found in the HPV knowledge levels of male and female students between genders. However, it was observed that female students were more aware that HPV is a sexually transmitted disease and the rate of vaccination to prevent HPV was higher than male students (Bernard et al., 2017). In other studies in the literature, the fact that women have higher levels of knowledge about HPV and its vaccine is explained by their perception of a threat to health and higher concerns about their sexual health compared to men (Toshkov, 2023; Chen et al., 2021; Barnard et al., 2017). Similarly, in this study, it is thought that the fact that women are more affected by HPV-related diseases and that HPV-related trainings were mostly given to women played a role in this difference. However, the lack of knowledge about HPV in men indicates that more education should be provided, especially on sexual health and prevention strategies. HPV can also cause health problems in men, such as genital warts, anus cancer and head and neck cancers, but these risks are often underestimated compared to women. Therefore, it is crucial to increase health education to raise awareness of HPV among men.

The study revealed that students who had pap smear tests had higher levels of knowledge about HPV. In studies conducted on university students in our country, it was found that university students were not questioned about

their pap smear test and HPV vaccination status. Similarly, in the study by Tapera et al. (2017), it was found that students who had a pap smear test had better knowledge about HPV and its vaccine. Taking a pap smear test is critical for the early diagnosis of HPV, and this suggests that there is a positive correlation between HPV knowledge and testing rate among students.

In the study, students who received HPV vaccination were found to have high levels of knowledge about HPV and its vaccine. This finding is consistent with other studies in which HPV vaccinated university students had higher knowledge levels than students without HPV vaccination (Alsulami et al., 2023; Natypagon-Shah et al., 2021; Kasyoma et al., 2019). In the literature review of Lopez et al. (2020), which included 70 studies conducted in 16 European countries, it was determined that HPV vaccination rates were low and the biggest obstacle was the lack of sufficient information about HPV and vaccines. Similarly, Dibble et al. (2019) reported that inadequate knowledge about HPV and vaccines is reflected in vaccination rates. Therefore, increasing the level of knowledge about HPV and HPV vaccine is essential to improve HPV vaccination rates among university students.

Another important finding is that individuals who perceive HPV as a risky situation have higher levels of knowledge about HPV and its vaccine. Similarly, in other studies in the literature, it has been reported that individuals who perceive HPV virus as risky have higher knowledge scores about HPV and vaccine and have more protective behaviors (Alsancak et al., 2024; Chen et al., 2024). This finding provides important evidence on how risk perception shapes individuals' health-related behaviors. In other words, when individuals feel at risk, they are more informed and have more positive attitudes towards HPV-caused diseases. This information can be used in educational planning, and students' perception of risk situations about HPV and sexually transmitted diseases can make these trainings more effective.

On the other hand, in this study, no significant difference was found between students' knowledge about HPV and vaccination and factors such as marital status, smoking status, economic status, sexual experience and presence of genital warts. This result suggests that knowledge about HPV and vaccination behaviors may be largely based on social and educational factors, independent of personal health history or lifestyle. This finding suggests that HPV awareness and education programs should appeal to a wider audience, and that individuals from all segments of the society should benefit from these programs, not only for certain demographic groups.

In conclusion, this study emphasizes the importance of health education to increase knowledge about HPV and HPV vaccine. In particular, individuals who perceive

HPV as a health risk, who have Pap smear tests and who have received HPV vaccination have more knowledge, indicating a general increase in awareness in the society. It is understood that trainings need to be strengthened in order to eliminate the lack of knowledge among men and to accept HPV as a broader health problem. In addition, considering the effect of risk perception on health behaviors, it is thought that increasing this risk perception while informing individuals about HPV and its vaccine may improve health outcomes.

CONCLUSION

In this study, which examined the knowledge levels of university students about HPV and the HPV vaccine, it was determined that the knowledge level of the students was very low. This information can form an important basis for developing effective education and policy to combat HPV. Based on the findings of this study, school nurses can collaborate with the local community to implement a health-promotion approach in schools, and can play an effective role in addressing university students' lack of knowledge about HPV and increasing their access to the vaccine, which is an important step in protecting the health of young people. Within the scope of the World Health Organization's elimination project, awareness in the fight against HPV needs to be increased, especially among young university students. It is necessary for university students to regularly provide information about safe sexual intercourse, viruses that may pose a risk and their vaccines, and organize trainings such as conferences, symposiums and seminars at universities on sexually transmitted diseases. It is important to provide consultancy services regarding sexual and reproductive health in the medico-social centers of universities. School nurses should play an effective role in addressing university students' lack of knowledge about HPV and increasing their access to the vaccine, which is an important step in protecting the health of young people. The provision of the HPV vaccine free of charge by governments should be one of the priority initiatives of public health services.

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Analysis of data for the study: AT, AD

Interpretation of data for the study: AT, AD

Drafting the manuscript: AD

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