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Hemşirelik Öğrencilerinin Human Papilloma Virusu Hakkındaki Bilgi Düzeylerinin İncelenmesi

Investigation of Nursing Students' Knowledge Levels About Human Papillomavirus

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Öz

Amaç: Bu çalışmada hemşirelik lisans düzeyindeki öğrencilerin human papilloma virüs bilgi düzeylerinin belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: Tanımlayıcı ve kesitsel çalışma olan araştırmanın örneklemini bir vakıf üniversitesinin hemşirelik bölümünde olan ve çalışmaya katılmayı kabul eden 120 öğrenci oluşturmuştur. Örneklem hesabı sonucu en az 80 kişinin katılması gereken ve 120 kişinin katıldığı çalışmada 120 öğrenci örneklemi oluşturmuştur.

Bulgular: Hemşirelik öğrencilerin human papilloma virüsüne yönelik bilgilerinin ortalaması 14.10 olarak değerlendirilmiş ve bu sonuç doğrultusunda katılımcıların Human Papilloma Virüs Ölçeği seviyesinin düşük bir düzeyde olduğu tespit edilmiştir (X^{-}=14,10±S.S.=6,92). Yapılan analizler sonucunda Human Papilloma Virüs Ölçeğine ilişkin düzeyi ile yaş, sınıf, medeni durum, büyüdüğünüz yer, şu an yaşadığınız yer, cinsel yolla bulaşan hastalıklar hakkında bilgisi olma durumu, düzenli bir cinsel hayatı olma durumu ve bulaşıcı hastalıklardan korunmaya yönelik herhangi bir önlem alma durumu değişkenleriyle istatistiksel olarak anlamlı farklılık bulunmamışken (p>0,05) sadece cinsiyet değişkeniyle istatistiksel olarak anlamlı bir farklılık bulunmuştur (p<0,05)..

Sonuç: Bu araştırmanın sonucunda hemşirelik öğrencilerinin HPV bilgi düzeylerinin düşük olduğu saptanmıştır. Kadın katılımcılar ($\bar{X}$=15), HPV bilgi düzeyi bağlamında erkek katılımcılara ($\bar{X}$=11,93) kıyasla daha fazla bilgi sahibidir. Hemşirelik öğrencilerinin eğitim ihtiyacı olduğu ortaya çıkmıştır.

Anahtar kelimeler: Hemşirelik öğrencileri, HPV, Human Papilloma Virüs bilgisi

Abstract

Aim: This study aimed to determine the level of knowledge about the human papillomavirus among nursing students at the undergraduate level.

Materials and Methods: This descriptive, cross-sectional study included a sample of 120 students enrolled in the nursing department of a foundation university who agreed to participate in the study. Based on the sample calculation, at least 80 participants were required, and 120 students participated in the study, forming the sample.

Results: The mean knowledge level of nursing students regarding human papillomavirus was found to be 14.10, indicating that the participants' Human Papillomavirus Scale level was low (X^{-}=14,10±S.D.=6,92). The analyses revealed no statistically significant differences (p>0.05) between the level of the Human Papilloma Virus Scale and the variables of age, class, marital status, place of upbringing, current place of residence, knowledge of

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sexually transmitted diseases, regular sexual life, and taking any precautions against infectious diseases. The gender variable was the only one to demonstrate a statistically significant difference ($p < 0.05$).

Conclusion: This study revealed that nursing students have a low level of knowledge about HPV. Female participants ($\bar{X}$=15) had more knowledge about HPV than male participants ($\bar{X}$=11.93). The study indicated a need for further education among nursing students.

Keywords: Human Papillomavirus knowledge, HPV, Nursing students

Summary Statement

1. **What is known about this subject?**

   A small, double-stranded DNA virus called the human papillomavirus (HPV) often infects people. Human papillomavirus (HPV) with more than 200 subtypes triggers epithelial differentiation by infecting the basal layer of the skin by entering the skin and mucous membranes through the microscopic holes. When examining the findings of studies investigating knowledge and awareness of HPV infection among nursing students, it is often observed that the level of knowledge is low across all domains of the HPV knowledge scale.

2. **Results of this article**

   -Female participants (x = 15) have more information in the context of HPV knowledge compared to male participants ($\bar{x}$=11.93).

   -It was determined that individuals who stated that they had information about HPV, HPV vaccine and HPV test from the participants received higher scores from the HPV information scale and sub-dimensions.

3. **Contributions of this article (Bu makalenin katkıları):**

   First of all, this research article will raise awareness about HPV and it will be ensured that the knowledge levels of nursing students about HPV will be brought to the literature.

Introductıon

Human papillomavirus (HPV) strains are one of the main causes of infectious cancer in both men and women. Found in over 90% of cases, HPV is the primary risk factor for cervical cancer, one of themost common cancers in women.[1]

Screening, early diagnosis, and prompt treatment are essential for the diagnosis and treatment of HPV-related infections. The consequences of this common infection can be significantly preventedthrough vaccination. Prophylactic vaccines against HPV infections are

intended to prevent the disease in healthy individuals. Studies have shown that HPV vaccines provide protection against cervicalcancer lesions and the disease itself.[2]

HPV has been associated with a range of clinical disorders, including cancer and benign lesions. Years of research have concluded that high-risk HPV strains are precursors to cervical cancer. Cervical cancer is one of the most prevalent genital malignancies. The etiology of cervical cancer is now better understood, and certain HPV subtypes are recognized as global culprits. Both the expression of cellular gene products and the function of cellular proteins are compromised by high-risk HPV infection. A healthy cervix may exhibit some virus-related changes after exposure to an HPV infection. However, if left untreated, 15% of these lesions have been shown to progress to high-grade cervical intraepithelial lesions within 3-4 years and to invasive malignancy within 10 years.[3] Over the past decade, there has been a marked increase in the prevalence of HPV-positive oropharyngeal malignancies.[4]

The development and availability of a vaccine against human papillomavirus have provided a noteworthy opportunity for cancer prevention.[5] In addition to infectious diseases that are at the forefront of vaccine-preventable diseases, the prevention of certain virus-related cancers has recently become a major concern. Education, personalized feedback, and incentives aimed at increasing HPV awareness among healthcare providers are expected to lead to higher HPV vaccination rates. Hepatitis B and HPV vaccines have recently been shown to prevent cancer growth. Providing accurate information about vaccines and vaccinating nurses can primarily contribute to public health awareness and vaccination status.[6] Zrinyi et al. (2020) found that patients communicate and share information much more successfully with nurses than with doctors. It was concluded that nurses' roles need to be more broadly focused andprepared to increase screening and immunization rates, ensuring their continued implementation in the future.[7]

In short, nursing students, who are the nurses of the future, are at the forefront of healthcare delivery and can significantly influence the provision of healthcare services. They are of great importancefor the functionality of the healthcare system and are ideal patient advocates due to their constant contact with patients. Therefore, nurses and nursing students are in an important position to inform the public about HPV infection and the vaccine, to correct existing misinformation, and to enable individuals to make informed decisions about whether or not to get vaccinated. Furthermore, nursing students are at risk of HPV infection and complications during their university years. From this perspective, students are an important group who need to have sufficient knowledge about HPV because they are young and in a high-

risk group for HPV. For this reason, they should be well-trained in this area, and any gaps should be filled through training.

This study aimed to determine the level of knowledge about the human papillomavirus among nursing students at the undergraduate level.

Materıals and Methods

Type of Study

This study is descriptive and cross-sectional. Data was collected online via Google Forms after ethical consent was obtained.

Research Location and Time

The research was conducted with nursing students studying at a private foundation university in Istanbul between January 2023 and April 2023 (starting on January 11, 2023, following ethical committeeapproval).

Research Population and Sample

The research population consisted of 242 nursing students enrolled in the 1st, 2nd, 3rd, and 4th grades during the fall semester of 2022-2023 at the Nursing Department of the Faculty of Health Sciences at a private foundation university. The sample consisted of 110 people who agreed to participate in the study.

Inclusion and Exclusion Criteria for the Study

Inclusion criteria for the study:

- Participation in the study is voluntary.
- Must be enrolled in the Nursing Department of the Faculty of Health Sciences.
- Must be able to read and write Turkish.

Exclusion criteria:

- Not volunteering to participate in the study.
- Not being able to read and write Turkish.

Data Collection Tools

Two data collection tools were used in the study. The first section consists of a personal information form that examines students' demographic information and their HPV and HPV vaccination status. Thesecond section uses the “Human Papilloma Virus (HPV) Knowledge Scale.”

Sociodemographic Information Form

The “Sociodemographic Information Form” consists of a 16-question, two-stage questionnaire. The first section presents nine items regarding sociodemographic information such as gender, age, maritalstatus, field of study, grade level, place of residence, and parents' educational level.

The second stage of the form contains seven items related to sexual experiences, symptoms of sexually transmitteddiseases, and HPV vaccination status. The literature was consulted in the creation of the demographic information form.

Human Papilloma Virus Knowledge Scale (HPV-KS)

The HPV-KS was developed in 2013 by Waller and colleagues[8] to measure individuals' knowledge levels about HPV, the HPV vaccine, and screening tests. In 2019, Demir conducted the Turkishadaptation of the HPV-KS .[9] The scale aims to investigate whether individuals have previously heard of HPV, the HPV vaccine, and HPV screening tests, and to what extent they are knowledgeable aboutthese topics.

The original scale had a total of 35 items, which were reduced to 33 items in the Turkish adaptation. The HPV-KS consists of three subscales with 29 items and an independent subscale with 6 items. The first subscale of the HPV-KS consists of 16 items and assesses participants' general knowledge about HPV. The second subscale of the HPV-KS consists of 6 items and relates to HPV screening tests. The third subscale of the HPV-KS consists of 5 items and asks participants to respond to items related to the HPV vaccine.

The independent subscale of the HPV-KS was developed in three different ways for the HPV vaccination programs implemented in the three different countries where the scale was applied. The six itemsin the independent subscale inquire about the current vaccination program in the UK, US, and Australia regarding access to the HPV vaccine and vaccination timing. In the study conducted on validity andreliability, the independent subscale was created by including items deemed appropriate based on content validity, taking into account the current HPV vaccination program in our country. Participants areexpected to mark each item of the HPV-KS as “Yes,” “No,” or “I don't know.” During the evaluation phase, each correct answer is scored as 1, while incorrect answers and “I don't know” responses arescored as 0. To prevent bias in the answers, correct and wrong answers are mixed, as in the original scale. The total score obtained from the HPV-KS ranges from 0 to 33, and a high score indicates a highlevel of knowledge about HPV, HPV screening tests, and the HPV vaccine.

1. Factor: General HPV knowledge: Items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16 constitute the first subscale of the scale. Item 16, which is included in the first subscale of the scale, containsgeneral knowledge questions about HPV risk factors, transmission routes, prevention methods, and HPV infection treatment. The total score that can be obtained from this subscale ranges from 0 to 16; higher scores reflect higher general knowledge about HPV.

4. Factor: HPV screening test knowledge: Items 17, 18, 19, 20, 21, and 22 constitute the second subscale of the scale. The six items in the second subscale include questions about

knowledge related to thePap smear and HPV DNA test performed for cervical cancer screening. The total score that can be obtained from this sub-dimension ranges from 0 to 6. High scores obtained from this sub-dimensionindicate a high level of knowledge about HPV screening tests.

3. Factor: General HPV vaccine knowledge: Items 23, 24, 25, 26, and 27 constitute the third sub-dimension of the scale. The five items in the third subscale consist of questions about the protective effectsof HPV vaccines administered to prevent HPV infection and related diseases. The total score for this subscale ranges from 0 to 5, with higher scores indicative of a greater level of general knowledgeregarding the protective effects of the HPV vaccine.

2. Factor: Knowledge about the current HPV vaccination program: Items 28, 29, 30, 31, 32, and 33 constitute the final dimension of the scale. The six items in the fourth dimension of the scale includequestions about who should receive HPV vaccines, the age range for vaccination, and the number of doses required. The total score that can be obtained from this sub-dimension ranges from 0 to 6, andhigh scores indicate a high level of knowledge about the conditions for administering the HPV vaccine.

The Cronbach's alpha value for the 29 items of the original scale was 0.83, indicating a high degree of reliability. In Demir's study, the reliability coefficient of the HPV-KS was calculated as 0.96 for thetotal scale, a result that is comparable to the findings of the original scale study. In the present study, the Cronbach's alpha value of the HPV-KS Scale was determined to be 0.936.

Data Analysis

After all the data required for the research was collected, the data transferred to the electronic environment was checked for completeness, the data analysis phase was started, and incompletely answered questionnaires were removed from the research. Data analysis performed using IBM SPSS 22 software. When scales are used in questionnaire-based studies, the internal consistency of the items in the scale must first be measured to determine how reliably the concept to be represented can be measured. Reliability analysis is a methodical process that quantifies the consistency with which a measurement tool can be used. Reliability analysis is performed by calculating Cronbach's Alpha coefficient in Likert-type scales. For the coefficient to be used in academic studies, it must be at least0.70. After measuring the internal consistency of the scales, the scores representing the responses given to the items are added up, and the values representing the variables are calculated. To decide how the calculated variables will be analyzed, normality is tested. The utilisation of descriptive methods, encompassing the skewness and kurtosis criteria, to assess normality constitutes a prevalent approach. If a normal distribution is achieved, it is possible to use parametric methods, which have higher predictive

power. If the scores obtained from the scale differ according to demographic information and thedata are normally distributed, parametric analysis methods such as the Independent Groups T-Test and ANOVA were used. The significance of the relationship between the scale's subscales, were tested using the Pearson Correlation Coefficient. If the data is not normally distributed, the Mann-Whitney U Test and Kruskal-Wallis Test, which are non-parametric analysis methods, were used totest whether the scores obtained from the scales differ according to demographic information. In the analyses undertaken within the scope of the research, α=.05 were taken as the confidence interval.

The reliability analysis results of the scales were evaluated using Cronbach's Alpha coefficients. The Human Papillomavirus (HPV) Knowledge Scale demonstrated a high levelof reliability (α = 0.892), indicating strong internal consistency among the items. The subdimension General HPV Knowledge also showed a high reliability level, with a Cronbach's Alpha value of 0.831. The Current HPV Vaccination Program Knowledge scale had an overall reliability coefficient of 0.749, which indicates an acceptable level of reliability. Within this scale, the General HPV Vaccine Knowledge subdimension had a Cronbach's Alpha of 0.663, while the HPV Screening Test Knowledge subdimension had a coefficient of 0.631. Both subdimensions demonstrated moderate reliability levels, suggesting that while the items are consistent with one another, their reliability is somewhat lower compared to the overall HPV Knowledge Scale.

Ethical Principles of the Research

Before the commencement of the research, ethical committee approval was obtained from the Istanbul Yeni Yüzyıl University Ethics Committee for Research in Science, Social Sciences, and Non-Interventional Health Sciences, under number 2023/01-977. Participation in the research was voluntary, and verbal consent was obtained after being informed about the research (Approval was received on 09.01.2023).

Findings

Table 1 provides details concerning the socio-demographic characteristics of the participants included in the present study. 51.8% of the participants were aged 18-22; 70.9% were female; 88.2% were in their 4th year of study; 95.5% were single; 76.4% grew up in the city; 82.7% lived in a dormitory; 40.9% had mothers with primary school education; 29.1% had fathers with primary school education; 69.1% had mothers who were not employed; 50% had fathers who were workers. In addition, 90% of participants have not experienced any discomfort/illness related to the genital area and organs; 88.2% do not know about sexually transmitted diseases;

8.3% do not have a regular sex life; 59.1% take precautions to protect themselves from infectious diseases, and 95.5% have never been vaccinated against HPV.

Table 1. Participants' Socio-Demographic Characteristics (n=110)

Variables		n	%
Age	18-22	57	51,8
	23-27	53	48,2
Gender	Female	78	70,9
	Male	32	29,1
Grade	3rd Grade	13	11,8
	4th Grade	97	88,2
Marital Status	Single	105	95,5
	Married	5	4,5
Place of Upbringing	Province/City	84	76,4
	District/Town	18	16,4
	Village	8	7,3
Current Place of Residence	Dormitory	91	82,7
	Housing	19	17,3
Your Parents' Education Level (Mother)	Illiterate	7	6,4
	Literate	10	9,1
	Elementary School	45	40,9
	Middle School	22	20,0
	High School	20	18,2
	Bachelor's Degree	6	5,5
Your Parents' Education Level (Father)	Literate	10	9,1
	Elementary School	32	29,1
	Middle School	26	23,6
	High School	30	27,3
	Bachelor's Degree	12	10,9
Your Parents' Occupation (Mother)	Not employed	76	69,1
	Government employee	5	4,5
	Worker	15	13,6
	Other	14	12,7
Your Parents' Occupation (Father)	Not employed	8	7,3
	Government employee	13	11,8
	Worker	55	50,0
	Other	34	30,9
Which of the following is relevant to you regardingsexual organs and areas?	I have not had anydiscomfort/illness.	99	90,0
	Painful swelling and/or sores in the genital area	1	,9
	Foul-smelling, itchy, noticeablydark discharge in the genitalarea	10	9,1
Do you know about sexuallytransmitted diseases?	Yes	97	88,2
	No	13	11,8
Do you have a regular sex life?	Yes	14	12,7
	No	96	87,3
Are you taking any precautionsto protect yourself frominfectious diseases?	Yes	65	59,1
	No	45	40,9
Have you ever been vaccinatedagainst HPV?	Yes	5	4,5
	No	105	95,5

Table 2 shows the mean scores for the Human Papillomavirus Knowledge scale and its dimensions based on the participants' responses. It was determined that the participants' level of the Human Papillomavirus Knowledge scale was low ($\bar{X}$=14.10±S.D.=6.92). The scale

dimensions are as follows: general HPV knowledge ($\bar{X}$=8.14±S.D.=3.62), knowledge of the current HPV vaccination program ($\bar{X}$=2.52±S.D.=1.95), general HPV vaccine knowledge ($\bar{X}$=1.65±S.D.=1.42), and knowledge about HPV screening tests ($\bar{X}$=1.78±S.D.=1.56) were found to be low.

Table 2. Means of Human Papillomavirus Knowledge Scale and Dimensions

	Min.	Max.	Mean ($\bar{X}$)	Standard Deviation (S.D.)
Human Papillomavirus Knowledge Scale (HPV)	**0**	**33**	**14,10**	**6,92**
General HPV Knowledge	0	16	8,14	3,62
Current HPV Vaccination Program Knowledge	0	6	2,52	1,95
General HPV Vaccine Knowledge	0	5	1,65	1,42
HPV Screening Test Knowledge	0	6	1,78	1,56

Table 3 shows the results of the analyses showed that there were no statistically significant differences ($p>0.05$) between the level of the Human Papillomavirus Knowledge Scale and the variables of age, grade, marital status, place of upbringing, current place of residence, knowledge of sexually transmitted diseases, regular sexual life, and taking any precautions against infectious diseases. Only the gender variable showed a statistically significant difference ($p<0.05$).

When looking at the difference based on the gender variable, the mean Human Papillomavirus Knowledge scale score for female participants ($\bar{X}$=15.00±S.D.=6.86) is higher than that of male participants ($\bar{X}$=11.93±S.D.=6.68). When the difference is examined according to the age variable, the mean Human Papillomavirus Knowledge Scale score of the 18-22 years old participants ($\bar{X}$=14.70±S.D.=6.95) is higher than the mean of the 23-27 years old participants ($\bar{X}$=13.47±S.D.=6.89). When the difference is examined according to the variable "Do you have knowledge about sexually transmitted diseases?", the average Human Papillomavirus Knowledge Scale score of the participants who answered yes ($\bar{X}$=14.36±S.D.=6.84) is higher than the average of the participants who answered no ($\bar{X}$=12.23±S.D.=7.47). When the difference is examined according to the variable "Do you have a regular sex life?", the average Human Papillomavirus Knowledge Scale score of the participants who answered no ($\bar{X}$=14.11±S.D.=6.99) is higher than the average of the participants who answered yes ($\bar{X}$=14.07±S.D.=6.66).

Table 3. T-test and One Way ANOVA Results Related to the Human Papillomavirus Knowledge Scale

Variables		X̄	S.D.	T/F	p
Age	18-22	14,70	6,95	,931	,354
	23-27	13,47	6,89		
Gender	Female	15,00	6,86	2,141	**,034**
	Male	11,93	6,68		
Grade	3rd Grade	11,38	7,30	-1,520	,131
	4th Grade	14,47	6,82		
Marital Status	Married	14,01	6,84	-,623	,534
	Single	16,00	9,08		
Place of Upbringing	Province/City	13,59	7,01	,987	,376
	District/Town	15,88	5,62		
	Village	15,50	8,51		
Current Place of Residence	Dormitory	13,92	6,87	-,615	,540
	Housing	15,00	7,26		
Do you know aboutsexually transmitteddiseases?	Yes	14,36	6,84	1,042	,300
	No	12,23	7,47		
Do you have a regular sexlife?	Yes	14,07	6,66	-,022	,983
	No	14,11	6,99		
Do you take anyprecautions to protectyourself from infectiousdiseases?	Yes	14,26	6,38	,276	,783
	No	13,88	7,69		

* T=Independent t test, F=One way Anova

Discussion

The objective of this study was to ascertain the knowledge levels of nursing students with regard to HPV and to examine variables believed to be associated with it.

Findings from a study involving 120 nursing students at a private foundation university, conducted to examine nursing students' knowledge of HPV and HPV vaccination status and the factors influencingthese, were discussed in light of the literature on the socio-demographic characteristics of nursing students, their level of knowledge about HPV, and their health beliefs.

There are numerous studies in the literature evaluating health beliefs and knowledge related to cervical cancer and HPV vaccines[2,5,6,7]. A heterogeneity of responses has been observed among participants in studies conducted in various countries. Protection against HPV, which has a high risk of transmission through sexual contact, is only possible with sufficient knowledge about sexually transmitted diseases (STDs). Therefore, the study investigated the participants' knowledge about sexually transmitted diseases.

There are numerous studies in the literature that measure HPV knowledge and awareness levels. The results of these studies vary widely depending on the measurement tools and sample groups used. For example, in a study conducted by Aslan and Bakan (2021) targeting students studying in the health field, where the HPV Knowledge Scale was used as a data collection tool, the students' total mean score was 5.86; the mean score for the general HPV

knowledge subscale was 3.66; the mean score for HPV screening test knowledge was 0.82, and the mean score for the general HPV vaccination subscale was 0.94, which was similarly low to our study.[10] In a study conducted at a university in Kocaeli province, which aimed to measure university students' knowledge levels regarding HPV infections, vaccination, and screening, 59% of the participants were students studying health sciences, and 41% were students studying subjects other than health sciences. As a result of the study, the participants' HPV-KS total score means were 14.02±7.19 out of 33 points; the general HPV knowledge subscale was 8.66±3.92 out of 16 points, the HPV screening test knowledge subscale was 1.66±1.42 out of 6 points, the general HPV vaccine knowledge subscale was 2.4±1.77 out of 5 points, and the knowledge subscale score for the HPV vaccination program was 1.29±1.33 out of 6 points. Although similar values were obtained when compared to our study, the reason why the overall mean score of the study conducted and the subdimensions of knowledge about the current HPV vaccination program and HPV screening test knowledge received lower scores when compared to our study may be that participants educated outside the field of health sciences were included in the study.[11] In a study conducted with 326 students enrolled in the midwifery department of a university, the overall HPV-KS score was 21.21; the HPV general knowledge subscale score was 11.48; the HPV test score was 3.86; and the HPV vaccines score and HPV vaccination programs scores were 4.98 and 0.87, respectively. When comparing the score distributions, similar distributions were observed between both nursing and midwifery departments.[12] A study conducted in Zonguldak with 303 participants included students continuing their education in preclinical medical school and students from other faculties who volunteered to participate in the study. As a result of the study, the mean total scale score of the participants was determined to be 9.08.[13] A review of studies in the literature revealed that although students studying health sciences had higher mean scores than students studying other subjects, the overall level of awareness among students was found to be low.

Our study found that female participants had a higher level of knowledge about HPV than male participants. This finding is consistent with many studies conducted on this topic in the literature. Aslan and Bakan (2021). In a study using the HPV-KS, similar to our study results, the mean knowledge score for female students was 6.49, and for male students was 4.89.[10] According to the results of one study, gender does not have a significant effect ($p>0.05$) on HPV knowledge levels.[11] In another study conducted by Rathfisch et al. (2015) on university students in Turkey, 52% of female students and 39.6% of male students stated that they had heard of HPV.[14] In the same study, awareness of the relationship between HPV and cervical cancer was determined to be 58.1% in females and 48.4% in males.[14] In a study conducted with

the participation of 1238 students to evaluate the HPV knowledge levels of medical faculty students in Konya province, the HPV-KS general mean score was found to be 15.50 for female participants and 13.47 for male participants, and a statistically significant difference was found between the sexes.[15] In the study conducted by Daylan Koçkaya and colleagues, no statistically significant difference was found between genders in the HPV-KS scale total mean score and subdimensions.[11] The findings of our study indicate a significant difference in mean scale scores according to students' gender, which may be attributable to the limited number of male students in the study sample.

When examining the variation in HPV knowledge levels by class, no statistically significant differences were found with class level variables ($p>0.05$). This applies to the overall scale score and all subscales. This study showed that HPV knowledge and awareness levels increased with age and class level, along with the increase in education received. A study with medical students as the sample stated that students' HPV knowledge levels increased significantly as they advanced through their classes.[11]

Marital status leads to differences in general HPV vaccination and overall HPV knowledge levels. Our study found that unmarried participants had higher levels of knowledge. A study conducted by Ayazöz (2020) with medical students found that married students had higher levels of HPV knowledge and awareness.[16] These differences may be attributed to variations among the sample groups participating in the studies.

In our study, participants' HPV knowledge levels did not differ based on where they grew up or where they currently live. The absence of any differences in this regard in our study may be related to thefact that the sample group participating in the study consisted of individuals who were currently continuing their education in a city. To determine the difference created by this situation, a comparativestudy between individuals living in rural areas and those living in provinces may be recommended. Another study has also found that individuals living with their families have higher levels of HPV knowledge and awareness.

Participants with sexual experience have higher HPV-KS mean scores. Participants with a regular sex life have higher levels of general HPV knowledge, general HPV vaccine knowledge, HPV screeningtest knowledge, and total HPV knowledge compared to those without a regular sex life. However, the level of knowledge about the current HPV vaccination program does not differ between the two groups. The development of knowledge and awareness on a subject mostly occurs when there is a need for information on that subject. Therefore, it is considered a very normal and expected result thatindividuals with an active sex life have higher levels of HPV knowledge and awareness. A study found that sexual experience did not have a

significant effect on HPV knowledge levels ($p>0.05$).[11]Another study found that the rate of HPV vaccination among individuals who had previously been sexually active was significantly higher ($p=0.001$) than among those who had not had sexual experience. In the same study, the mean scores related to HPV among participants who had sexual experience were significantly higher ($p<0.05$). [17]

Limitations of the Study

The data for this study are limited to data collected from second, third-, and fourth-year nursing students at a private foundation university in Istanbul between January 23 and June 2, 2023. The information about the individuals included in the study is limited to the questions in the Sociodemographic Information Form, which was developed by the researcher, and the Human Papilloma virus Knowledge Scale. Data was collected online using the Google Forms application; therefore, women without online access were not included in the study, which limits the generalizability of the results to other populations.

Conclusion and Recommendations

The mean score on the HPV Knowledge Scale is 14.10. In this study, where the maximum possible score is 33, the mean score was found to be low. The mean score for HPV knowledge was 8.14 out of 16; 1.78 out of 6 for the HPV screening test knowledge subscale; 1.65 out of 5 for the general HPV vaccine knowledge subscale; and 2.52 out of 6 for the subscale related to the HPV vaccination program. Female participants had more knowledge than male participants in terms of HPV knowledge level. The study revealed that there was an increase in HPV knowledge levels with increasing grade level. General knowledge of HPV and knowledge levels regarding the current HPV vaccination program did not differ according to the age of the participants. Marital status does not lead to differences in general HPV vaccination or overall HPV knowledge levels. Participants with sexual experience appeared to have greater general knowledge about the HPV vaccine and current HPV vaccination programs. However, no statistically significant difference was found. Nurses must be familiar with the symptoms, transmission routes, prevention methods, and treatment options for HPV infection to safeguard their patients in healthcare settings. Nursing students shouldfollow current research to learn about HPV infection, receive education about HPV infection in their classes, and collaborate with other professionals working in the health field. Nurses working especially in family medicine and community health centers should plan trainings to inform and raise awareness among the public on this issue.

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