

ORIGINAL RESEARCH ARTICLE

Examining HPV knowledge levels of midwifery and nursing undergraduate students: A cross-sectional study in Turkey

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Abstract

HPV infection can lead to various diseases, from benign lesions to cancer, both in men and women. Health professionals with a high level of HPV knowledge will be effective in raising public awareness. This study aims to investigate the HPV knowledge level of midwifery and nursing students, who are future healthcare professionals. This study was carried out cross-sectionally. The data were collected between September and October 2022. The study was completed by 565 students. The form used is the 'Human Papilloma Virus Knowledge Scale (HPV-KS)'. The scale consists of 33 items and 4 sub-dimensions. The highest score to be obtained from the scale is 33 and the lowest score is 0. A high score indicates a high level of knowledge about HPV. In this study, it was found that nursing and midwifery students had low knowledge about HPV (11.45 ± 6.79). The HPV knowledge level of midwifery students was found higher than nursing students ($p=0.000$). Female students scored significantly higher than males in the HPV testing knowledge questions ($p=0.045$) and HPV vaccine knowledge questions ($p=0.022$) sub-dimensions. The HPV knowledge score of the students who stated that they had sufficient knowledge about sexually transmitted diseases was also high ($p=0.000$). Awareness of HPV should be developed in nursing and midwifery students. It is important for nursing and midwifery students, who will provide health services after graduation, to have a high level of HPV knowledge in order to protect their own and society's health. (*Afr J Reprod Health* 2023; 27 [6]: 101-109).

Keywords: Health professionals, human papilloma virus, knowledge level, university students

Résumé

L'infection au VPH peut entraîner diverses maladies, des lésions bénignes au cancer, tant chez l'homme que chez la femme. Les professionnels de la santé ayant un niveau élevé de connaissances sur le VPH seront efficaces pour sensibiliser le public. Cette étude vise à étudier le niveau de connaissance du VPH des étudiants sages-femmes et infirmières, qui sont de futurs professionnels de la santé. Cette étude a été menée de manière transversale. Les données ont été recueillies entre septembre et octobre 2022. L'étude a été réalisée par 565 étudiants. Le formulaire utilisé est le «Human Papilloma Virus Knowledge Scale (HPV-KS)». L'échelle se compose de 33 items et de 4 sous-dimensions. Le score le plus élevé obtenu sur l'échelle est de 33 et le score le plus bas est de 0. Un score élevé indique un niveau élevé de connaissances sur le VPH. Dans cette étude, il a été constaté que les étudiants en soins infirmiers et sages-femmes avaient une faible connaissance du VPH ($11,45 \pm 6,79$). Le niveau de connaissance du VPH des étudiantes sages-femmes était plus élevé que celui des étudiantes infirmières ($p = 0,000$). Les étudiantes ont obtenu des scores significativement plus élevés que les garçons dans les sous-dimensions des questions sur les connaissances en matière de dépistage du VPH ($p = 0,045$) et des questions sur les connaissances en matière de vaccin contre le VPH ($p = 0,022$). Le score de connaissances HPV des étudiants qui ont déclaré avoir suffisamment de connaissances sur les maladies sexuellement transmissibles était également élevé ($p = 0,000$). La sensibilisation au VPH devrait être développée chez les étudiantes en soins infirmiers et obstétricaux. Il est important que les étudiants en soins infirmiers et sages-femmes, qui fourniront des services de santé après l'obtention de leur diplôme, aient un niveau élevé de connaissances sur le VPH afin de protéger leur propre santé et celle de la société. (*Afr J Reprod Health* 2023; 27 [6]: 101-109).

Mots-clés: Professionnels de la santé, virus du papillome humain, niveau de connaissance, étudiants universitaires

Introduction

Human papilloma virus (HPV) is an infectious agent belonging to the papillomaviridae family that is

mainly sexually transmitted and can cause HPV-associated cancers in both men and women, with more than 200 species identified. HPV infection can lead to various diseases, from benign lesions to

cancer¹. It can cause all warts in the body, especially in the genital area. Almost all cervical cancers are caused by HPV. An increasing number of head and neck cancers, especially oropharyngeal cancer, have also been associated with HPV infection. However, anogenital cancers, including vaginal, vulvar, penile, and anal cancers, constitute a subset of HPV-associated cancers¹⁻³. It is estimated that 99% of cervical cancers, 90% of anal cancers, 65% of vaginal cancers, 50% of vulvar cancers, and 45-90% of oropharyngeal cancers are caused by HPV³. Generally, HPV infection can be categorized into two groups when it comes to its ability to cause genital cancer. In the first group, there are low-risk HPV types. These are known as HPV types 6 and 11, which cause cervical lesions and genital warts. In the second group, there are high-risk HPV types. These are HPV types 16 and 18, which cause squamous carcinoma of the vagina, vulva, anus, penis, and cervix⁴. It is considered that more than 70% of sexually active individuals become infected with human papillomavirus (HPV) at some point in their lives⁵. Most of the infected women and men do not show clinically significant manifestations and symptoms or may experience a temporary infection. Although age is not associated with the prevalence of genital HPV in men, the rate of newly diagnosed HPV infections in women decreases with age⁶.

Background

Human papilloma virus (HPV) is the most common sexually transmitted infection in the world, and most people are infected with it at some point in their lives. It has been suggested that 44% of sexually active women have HPV at any time. Despite the fact that most people do not experience any symptoms and recover without any negative health consequences, it can have adverse consequences for some individuals. The high economic burden caused by HPV infection in terms of health has led many countries to launch HPV vaccine campaigns⁷. A three-dose vaccine provides protection against HPV 6 and 11, which are responsible for 90% of genital warts, and HPV 16 and 18, which are responsible for 70% of cervical cancer. Although many countries have implemented programs to promote HPV vaccination since 2006, HPV vaccination is less common than other childhood and adolescent vaccinations^{8,9}. As of now, studies are continuing to include the vaccine in the national vaccination

calendar of Turkey. The prevention of cervical cancer and the effectiveness of early treatment to manage this type of cancer are the main reasons for the adoption of effective screening programs for early diagnosis. Routine cervical screening is performed with the Pap smear test, which is simple and safe. Pap smear tests should be performed as a regular part of health care for women between the ages of 21 and 65, even if they are not sexually active, have received HPV vaccination, or have entered menopause¹⁰. Planned organized screening programs with high coverage can significantly reduce the number of new cases of cervical cancer and the associated mortality rate. Therefore, vaccine and screening tests are recommended for primary protection¹¹. It is known that the society in Turkey has insufficient knowledge about HPV and HPV vaccines¹²⁻¹⁵. Healthcare professionals can play a strong role in preventing HPV infection and promoting HPV vaccination. In this context, necessary training and consultancy should be provided about HPV information, HPV screening tests, the importance of the HPV vaccine, the relationship of the vaccine with cancer, the age at which the vaccine should be administered, gender, side effects, and doses. To increase the prevalence of the human papillomavirus vaccine, first, health personnel should have comprehensive and up-to-date knowledge about vaccines and screening tests. Thanks to this awareness of healthcare personnel, complications caused by HPV infection and the cost of these complications can be reduced¹¹. Midwives and nurses have a great responsibility in this regard. When the limited number of studies in the literature are examined, it has been determined that midwives and nurses in Turkey have insufficient or partially sufficient knowledge about HPV¹⁶⁻¹⁸. In line with this information, this study aims to investigate the HPV knowledge level of midwifery and nursing students, who are future healthcare professionals.

Methods

This study was carried out cross-sectionally with students studying in the Department of Nursing and Midwifery of the Faculty of Health Sciences of a state university in, Kahramanmaraş, Turkey in the fall of 2022 academic year to reveal their knowledge level about HPV. The population of the study consisted of 730 students studying in the nursing and midwifery department in the relevant academic year.

Inclusion criteria were determined as follows: 1- being 18 years of age or older, 2- being an undergraduate nursing or midwifery student, 3- volunteering to participate in the study.

Exclusion criteria were determined as follows: 1- refusing to participate in the study, 2- not completing survey questions.

The study was completed by 565 students who met the inclusion criteria and agreed to participate in the study. Approximately 77% of the study population has been reached. The data were collected through an online survey between September and October 2022. A Google Form containing the study questionnaire was sent to WhatsApp groups consisting of students through class representatives to ensure proper selection of study participants. The forms used are the 'Personal Information Form' and 'Human Papilloma Virus Knowledge Scale (HPV-KS)'.

Data collection

Personal information form

The personal information form consisted of questions aimed at determining the characteristics of the participants, such as age, gender, department, class, smoking status, family history of cancer, and knowledge levels of sexually transmitted diseases (STDs).

Human Papilloma Virus Knowledge Scale (HPV-KS)

HPV-KS was developed by Waller et al. in 2013 to measure individuals' knowledge of HPV, the HPV vaccine, and screening tests. The scale investigates whether and to what extent individuals have heard of HPV, HPV vaccine, and HPV screening tests before. Participants are expected to mark each item of the HPV-KS as "Yes", "No" and "I do not know". At the evaluation stage, each correct answer is scored with =1, while the statements of incorrect answers and I do not know are scored with =0. The validity and reliability study for the Turkish version of the scale was conducted by Demir (2019). This scale includes 33 items and 4 subdimensions. The total score to be obtained from HPV-BO ranges between 0-33. A high score indicates that the knowledge level about HPV, HPV screening tests, and the HPV vaccine is high^{19,20}. The Cronbach α value of the scale was

calculated as 0.96. In this study, the Cronbach α value was found to be 0.93.

Data analysis

SPSS (IBM SPSS for Windows, ver. 23) statistical package program was used for statistical analysis. Measurement data were expressed as a number, percentage (%), and mean \pm standard deviation values. Normality assumptions of numerical variables were evaluated with Kolmogorov–Smirnov, and Shapiro–Wilk's normality tests. Mann Whitney U test, T-test, or one way ANOVA was used for the analysis of variables. A post hoc test was used to determine the difference between three or more groups. The findings were evaluated at a confidence interval of 95% and at the significance level of $p < 0.05$.

Ethical dimension

This study was performed in line with the principles of the Declaration of Helsinki. Ethics Committee approval was obtained from the Non-Interventional Clinical Research Ethics Committee of the Kahramanmaraş Sütçü İmam University Faculty of Medicine for the research (Date:21.09.2022 Session:2022/19 Decision No: 01). At the onset of the study, the participants were informed about the research and voluntary participation. The informed consent of the participants was obtained by selecting the "Yes" button to the question that they voluntarily participated in the study after reading the explanation text about the research before starting the survey through Google Forms.

Results

Characteristics of participants

Table 1 reflects the characteristics of the participants in the study sample, their scores from HPV-KS, standard deviations, and p values. A total of 565 students who participated in the study completed the HPV knowledge test completely. Fifty-one percent (n=288) of the participants were midwifery students. In terms of gender distribution, most of the sample group was female (n=496, 87.8%). In terms of age, the highest rate in the sample belonged to the 18-21 age group (n=420, 74.3%). A total of 26.7% (n=151) of the students participating in the study were in the

Table 1 Descriptive information and findings related to HPV-KS

Variables (n=565)	n (%)	HPV-KS Mean ± sd	score	p-Value
Gender				
Female	496 (87.8)	11.63 ± 5.73		
Male	69 (12.2)	10.13 ± 7.11		^a 0.084
Age				
18-21	420 (74.3)	10.29 ± 6.52*		
22-24	129 (22.8)	15.19 ± 6.46*		22-24 >18-21
25-27	11 (1.9)	12.54 ± 5.93		
28 and above	5 (0.9)	10.00 ± 5.09		^b 0.000
Department				
Nursing	277 (49)	9.97 ± 6.44		
Midwifery	288 (51)	12.87 ± 6.83		^a 0.000
Grade				
1	149 (26.4)	7.12 ± 5.43*		4>1, 3>1, 2>1
2	139 (24.6)	8.69 ± 5.60*		4>2, 3>2
3	151 (26.7)	13.83 ± 5.75*		4>3
4	126 (22.3)	16.76 ± 5.73*		^b 0.000
Longest living place				
Metropolis	281 (49.7)	11.59 ± 6.82		
City	82 (14.5)	10.93 ± 6.94		
Town	100 (17.7)	11.48 ± 6.65		
Village	102 (18.1)	11.45 ± 6.81		^b 0.897
Smoking				
Yes	71 (12.6)	12.39 ± 6.18		
No	494 (87.4)	11.31 ± 6.87		^a 0.180
Family history of cancer				
Yes	102 (18.1)	12.55 ± 7.01		
No	463 (81.9)	11.21 ± 6.72		^a 0.070
Have you ever heard of the HPV?				
Yes	376 (66.5)	14.37 ± 5.78		
No	189 (33.5)	5.64 ± 4.54		^a 0.000
Have you ever heard of the HPV test?				
Yes	272 (48.1)	15.62 ± 5.42		
No	293 (51.9)	7.58 ± 5.52		^a 0.000
Have you ever heard of the HPV vaccine?				
Yes	241(42.7)	16.18 ± 5.39		
No	324(57.3)	7.93 ± 5.46		^a 0.000
STD knowledge level				
Sufficient (x)	118(20.9)	17.25 ± 5.57**		x>y, x>z
Moderate (y)	290(51.3)	11.73 ± 6.10**		y>z
Poor (z)	157(27.8)	6.57 ± 5.00**		^b 0.000
HPV-KS Total score (n=565)		11.45±6.79		
General HPV knowledge sub-dimension score		7.86±3.63		
HPV testing knowledge questions sub-dimension score		1.26±1.48		
HPV vaccine knowledge questions sub-dimension score		1.61± 1.80		
HPV vaccine availability items sub-dimension score		0.70±1.13		

^aT test, ^bANOVA, *Post-hoc bonferroni, **Tamhane's T2

3rd grade, 87.4% (n=494) of the students were nonsmokers, and 51.3% (n= 290) stated that their level of knowledge about STDs was moderate. 33.5% of the students participating in the study stated that they had not heard of HPV before (Table 1).

HPV Knowledge levels of the participants

When the relationship between the descriptive characteristics of the participants and their knowledge scores was examined, the knowledge scores of the students between the ages of 18-21

Table 2: Sub-dimension scores by gender

	General HPV Knowledge Score (95% CI)	HPV Testing Knowledge Questions Score (95% CI)	HPV Vaccine Knowledge Questions Score (95% CI)	HPV Vaccine Availability Items Score (95% CI)
Female (n=496)	7.95 ± 3.60 (7.63 - 8.26)	1.31 ± 1.50 (1.17 - 1.44)	1.68 ± 1.80 (1.52 - 1.84)	0.69 ± 1.10 (0.59 - 0.79)
Male (n=69)	7.27 ± 3.83 (6.35 - 8.19)	0.92 ± 1.35 (0.60 - 1.25)	1.15 ± 1.73 (0.74 - 1.57)	0.76 ± 1.34 (0.44 - 1.09)
p	<i>0.148</i>	0.045	0.022	<i>0.608</i>

p: t test or Mann Whitney U test

Table 3: Findings on correct answers to HPV-KS items (n=565)

HPV KNOWLEDGE MEASURE	T/F	TRUE (N/%)
General HPV knowledge		
1.HPV can cause cervical cancer	T	299 (52.9)
2.A person could have HPV for many years with out knowing it	T	233 (41.2)
3.Having many sexual partners increases the risk of getting HPV	T	377 (66.7)
4.HPV is very rare	F	340 (60.2)
5.HPV can be passed on during sexual inter course	T	379 (67.1)
6.HPV always has visible signs or symptoms	F	347 (61.4)
7.Using condoms reduces the risk of getting HPV	T	278 (49.2)
8.HPV can cause HIV/AIDS	F	516 (91.3)
9.HPV can be passed on bygenital skin-to-skin contact	T	306 (54.2)
10.Men can not get HPV	F	275 (48.7)
11.Having sex at an early age increases the risk of getting HPV	T	206 (36.5)
12.There are many types of HPV	T	210 (37.2)
13.HPV can cause genital warts	T	287 (50.8)
14.HPV can be cured with antibiotics	F	424 (75.0)
15.Most sexually active people will get HPV at some point in their lives	T	107 (18.9)
16.HPV usually doesn't need any treatment	T	20 (3.5)
HPV Testing Knowledge Questions		
17.If a woman tests positive for HPV she will definitely get cervical cancer	F	367 (65.0)
18.An HPV test can be done at the same time as a Pap test	T	146 (25.8)
19.An HPV test can tell you how long you have had a HPV infection	F	469 (83.0)
20.HPV testing is used to indicate if the HPV vaccine is needed	F	479 (84.8)
21.When you have an HPV test, you get the results the same day	F	483 (85.5)
22.If an HPV test shows that a woman does not have HPV, her risk of cervical cancer is low	T	106 (18.8)
HPV Vaccine Knowledge Questions		
23.Girls who have had an HPV vaccine do not need a Pap test when they are older	F	371 (65.7)
24.One of the HPV vaccines offers protection against genitalwarts	T	163 (28.8)
25.The HPV vaccines offer protection against all sexually transmitted infections	F	370 (65.5)
26.Someone who has an HPV vaccine cannot develop cervical cancer	F	374 (66.2)
27.HPV vaccines offer protection against most cervical cancers	T	172 (30.4)
28.The HPV vaccine requires three doses	T	92 (16.3)
29.The HPV vaccines are most effective if given to people who have never had sex	T	84 (14.9)
HPV Vaccine Availability Items		
30.HPV vaccine is recommended for all females ages 11-26 years.	T	120 (21.2)
31.HPV vaccine is licensed for women aged 30- 45 years.	F	541 (95.8)
32.Both HPV vaccines that are available (Gardasil&Cervarix) protect against both genital warts and cervical cancer	F	537 (95.0)
33.HPV vaccine is permitted for males aged 11-26 years	T	49 (8.7)

T-true, F-false

were found to be significantly lower than those of the students between the ages of 22-24 ($p=0.000$). The HPV knowledge score of the nursing students was significantly lower than that of the midwifery students ($p=0.000$). The knowledge scores of the 4th-grade students were higher than those of the 1st, 2nd, and 3rd-grade students who were lower than themselves ($p=0.000$). Those with good knowledge of STDs scored significantly higher than the HPV knowledge test ($p=0.000$). However, in this study, gender ($p=0.084$), longest living place ($p=0.897$), smoking ($p=0.180$), and family history of cancer ($p=0.070$) did not affect HPV-KS scores. The HPV-KS total score of the participants was 11.45 ± 6.79 (Table 1). According to the scale sub-dimension scores, female students scored significantly higher than male students in the HPV testing knowledge questions ($p=0.045$) and HPV vaccine knowledge questions ($p=0.022$) sub-dimensions (Table 2).

The items that the participants know the least in the knowledge test are as follows: 'HPV usually doesn't need any treatment' ($n=20$, 3.5%), 'HPV vaccine is permitted for males aged 11-26 years' ($n=49$, 8.7%), 'The HPV vaccines are most effective if given to people who have never had sex' ($n=84$, 14.9%) (Table 3).

Discussion

In this study, the HPV knowledge levels of midwifery and nursing students, who are among the healthcare professionals of the future, were investigated. In the study, the HPV knowledge level of the students was determined using the HPV-KS scale. Points from this scale minimum-maximum scores range from 0 to 33. In the study, the HPV knowledge scores of nursing and midwifery students were found to be 11.45 ± 6.79 . When other studies conducted with the same data collection tool are examined; in a study conducted by Genç Koyucu with midwifery students, the HPV-KS score of the students was found to be 21.21 ± 4.69 and, it has been stated that there are knowledge gaps related to HPV among midwifery students²¹. In a study conducted by Aslan and Bakan with students studying in nursing and first and emergency departments, the HPV-KS score was found to be 5.86 ± 6.40 and, the results showed that the knowledge level of the students about HPV was not sufficient²². In a study by Akalın with medical and nursing students, the

HPV-KS score was determined to be 17.07 ± 6.95 ²³. Moreover, in studies conducted with university students studying in the field of health in India and the USA, it was reported that students had low levels of knowledge about HPV^{24,25}. Studies and this study show that students studying in health-related departments should increase their knowledge about HPV. However, in a study, it was determined that the HPV knowledge level of nursing students was high²⁶. It is thought that the curriculum should be reviewed and supported to increase the knowledge and awareness about HPV and to raise awareness of the students who receive education, especially in the health department about STDs. In this study, the HPV knowledge score of nursing students was lower than that of midwifery students. It is considered that the more intensive courses for women's health in the education of midwifery students affected the level of knowledge. In the study, the knowledge scores of the students between the ages of 18-21 were significantly lower than those of the students between the ages of 22-24. Likewise, the knowledge scores of the students in the 4th grade were higher than those of the students in the 1st, 2nd, and 3rd grades, who were lower than themselves. In previous studies with health department students, it was observed that students with higher years of education had higher HPV knowledge^{23,27,28}. This was thought to be due to the increase in the health knowledge levels of the students as they progressed from the first grade to the last grade. In addition, this result revealed that the sexually transmitted diseases course should be added to the curriculum starting from the 1st grade. In the study, those who had heard of HPV, HPV testing, and the HPV vaccine before received significantly higher scores than those who had not heard of HPV before. In addition, the scores of those with good STD knowledge were significantly higher. In this respect, this study was similar to previous studies^{22,23}.

In the study, the HPV knowledge score of female students was higher than that of male students, but the difference was not significant. But, in the sub-dimension scores of the scale, female students scored significantly higher than male students in the sub-dimensions of HPV test information questions and HPV vaccine information questions. In other studies, the authors found that female students' scores were significantly higher than male students^{22,23,29}. The fact that HPV is thought to be a

disease affecting only women and the lack of knowledge about it may have caused men not to be interested in this issue, and effective studies should be carried out to attract the attention of male students in this regard. Increasing the knowledge level of both male and female students will be more beneficial in terms of health protection and public awareness roles.

Midwives and nurses play an important role in raising the awareness of society about HPV. For this reason, midwifery and nursing students should have a high level of HPV knowledge. This study reveals the current status of HPV knowledge levels of undergraduate nursing and midwifery students studying at a university in Turkey. It was determined that the HPV and its vaccine knowledge levels of the students were low compared to the scale's maximum score. Moreover, according to a study conducted with university students in Turkey, only 4.9% of the students have been vaccinated against HPV and the most important obstacle to vaccination is not knowing when to be vaccinated³⁰. However, vaccination in Turkey until recently has been perceived as a medical procedure of infancy and childhood, and adult vaccination has generally been ignored except for some exceptional cases and individual applications³¹. This may be one of the reasons why information about the HPV vaccine is also low. The fact that the vaccine is paid in Turkey may also have caused the low vaccination rates, but the low level of HPV knowledge is thought-provoking. It is necessary to provide effective training on HPV to midwifery and nursing undergraduate students as well as general university students.

Conclusion

In this study, the HPV knowledge level of midwifery students was found higher than nursing students. At the same time, in this study, it was found that nursing and midwifery students had low knowledge about HPV. Students who stated that they had sufficient knowledge about sexually transmitted diseases and students who stated that they had heard some information about HPV before had higher knowledge scores. To increase awareness in this regard, it is necessary to encourage and increase education in universities and particularly in health-related departments. It is extremely important to

increase the level of knowledge of nursing and midwifery students who will provide healthcare services on the front lines after graduation in order to protect public health and reduce the burden and cost of diseases caused by HPV. Similar studies are recommended after training on sexually transmitted diseases and HPV.

Limitations

The most important limitation of this study is that it was evaluated with a single center. Therefore, the findings may not be representative of other midwifery and nursing undergraduate students in Turkey.

Author's Contribution

Ayla Güllü: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing-Original draft, Writing-Review&editing.

Competing interest

No conflict of interest has been declared by the author.

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