Original Article

Transferring Information about Human Papillomavirus and Vaccine from Student to Family

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ABSTRACT

OBJECTIVE: Determining and increasing the awareness of midwifery students and their families about Human Papilloma Virus (HPV) and vaccines (HPVV).

METHODOLOGY: The study is of descriptive type. The study was conducted at Ege University Faculty of Health Sciences (EUFHS). The population consisted of all students studying in the Department of Midwifery at EUFHS and their families, and the sample consisted of voluntary participants. Data were collected between September and November 2023. Trainings were conducted face-to-face in faculty classrooms, brochures were distributed, and the questionnaire and Human Papillomavirus Knowledge Scale (HPV-KS) were collected online (Google Forms). The questionnaire and scale were administered twice to the students (before and after the training) and once to their families. Students were asked to educate at least one family member with the brochure. 303 pre-training (PR-T), 179 post-training (PS-T) students and 105 family members participated. Data were analyzed using a t-test, Bonferroni test, and Analysis of Variance in the SPSS 25, and significance was evaluated at a 95% confidence interval.

RESULTS: The mean HPV-KS scores of the students were calculated as PR-T 10.95±5.52 (min: 0, max: 21.0), PS-T 15.39±2.70 (min: 9.0, max: 27.0), and the difference between them was found to be statistically significant (t = 11.806; p < 0.05). It was determined that 71.3% of the students who received training provided education to their families about 'HPV and HPVV.

CONCLUSION: As a result of the research, the students' knowledge level increased, and accurate and reliable information was relayed from them to their families.

KEYWORDS: Human Papilloma Virus (HPV), Human Papilloma Virus vaccine (HPVV), midwifery student, information transfer, family education

INTRODUCTION

When the risk factors that increase the disease burden in developing countries are examined, malnutrition, poor water quality and sanitation are followed by unsafe sex. The World Health Organization (WHO) reports that people aged 15-49 years have at least one sexually transmitted infection and that there are approximately 374 million new infections annually. The prevalence of these infections is highest among individuals aged 20-24, followed by those aged 15-19 [1-3].

Human Papillomavirus (HPV) and its variants are known to cause sexually transmitted infections and precancerous lesions, leading to more than 311,000 cervical cancer deaths each year. Approximately 5.0% of newly diagnosed cancers worldwide are due to HPV infection. More than 200 types of HPV have been identified[4,5]. Preventive vaccinations against HPV screening and treatment of precancerous lesions are the most effective ways to prevent cervical cancer and are much more cost-effective than cancer treatment[5]. HPV vaccines (HPVV) have been included in the routine vaccination program in many countries since 2008. HPVV protects HPV-uninfected persons against HPV infection and its risks (genital warts and cancer of the cervix, vagina, vulva and penis)[6]. It is 95% effective against the most common oncogenic types of HPVV and 100% protective against precancerous lesions and persistent infections, especially when administered before sexual activity begins[5].

Our country lacks direct statistical information on HPV, except for local records from private centres. According to national data, it is estimated that approximately 2500 women were diagnosed with cervical cancer in Turkey in 2018, and approximately 1250 women died from cervical cancer. Regarding preventive health practices, the HPV vaccine is paid and voluntary in Turkey and is not included in the national vaccination calendar[7,8]. The Turkish Society of Gynecology and Obstetrics, the Turkish Society of Gynecologic Oncology and the Society of Colposcopy and Cervical Pathologies recommend HPVV for both sexes[8-10]. One of the most critical factors affecting vaccination rates is the level of knowledge of parents[9]. Studies have shown that young people and their families have insufficient knowledge about HPV and HPVV[10,11].

This study was designed to assess the awareness of

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midwifery students and their families regarding HPV and HPV vaccination, enabling students to convey information to their families through interactive training sessions and ultimately increase the knowledge level of both students and their families.

METHODOLOGY

Students and their families studying in a university's midwifery department participated in this descriptive study.

Study Design

The study data were collected during the fall semester of the 2023-2024 academic year, from September to November 2023. Face-to-face interviews and student training sessions were held in the classrooms of the Faculty of Health Sciences. After the students were informed about the classroom research, online data collection tools (questionnaires and scales) were sent to their email addresses, and they were asked to respond. The training was conducted in the classrooms using both presence and interactive methods.

Data collection tools

The questionnaire form includes information on literature, as well as socio-demographic and descriptive data created by researchers. The Human Papilloma Virus Knowledge Scale (HPV-KS) was developed by Joe Waller in 2013 and adapted into Turkish by Demir Bozkurt and Özdemir (2023). The scale consists of 33 items, and the Cronbach alpha coefficient is 0.96.[14,15]

Study Population

The research focused on all students studying in the Midwifery Department and their families (at least one family member). The population consisted of all students (450 students) enrolled in Ege University, Faculty of Health Sciences, Department of Midwifery. The sample consisted of 303 pre-training (PR-T) students, 179 post-training (PS-T) students, and 105 family members who agreed to participate in the study, approved the consent form, and completed the forms (questionnaire and scale) entirely.

In the research using the "G. Power-3.1.9.2" program, the power of the study was calculated at the 95% confidence level after data collection. According to the power analysis calculated based on the difference between measurement times, the alpha level was set at 0.05. With an effect size of 1.02, the study's power was estimated to be 99.9% for the relevant sample.

Data Collection

Online consent for participation in the study was obtained from students and their family members. Students were given preliminary information about the study through class representatives. After this, the data were collected in five stages.

In the first stage, students were asked to complete the online survey and the pre-training (PR-T) HPV-KS test, which was sent to their institutional email addresses.

In the second stage, as explained in the email sent to the students, they were asked to collect online data from at least one family member. The online forms (questionnaire form and HPV-KS) to be applied to the families were added to the email.

In the third stage (2-4 weeks after the first stage), students were trained in presence, and researchers prepared brochures on the subject, which were distributed. The training was separate for each class, presented in the form of PowerPoint presentations about HPV and its vaccines, which were explained through interactive methods. A plain and straightforward information brochure was provided to students both in paper and online formats.

In the fourth stage, after training (2-4 weeks after the third stage), the HPV-KS form (in Google Forms format) was sent to the students' email addresses and administered again.

In the fifth stage, Students were asked to convey the education they received to their families (at least one family member) with the help of the brochure and to report this to the researchers through class representatives.

Statistical Analysis

The data were analyzed in the SPSS-25 package program: Descriptive statistical methods, scale Cronbach Alpha values, t-test, Bonferroni test, Analysis of Variance (ANOVA) and the significance was evaluated at the 95% confidence interval and $p<0.05$ level.

Limitations of the Research

Following the earthquake disaster in Turkey on February 6, 2023, the data collection phase was conducted online due to the university's online education; the delay in structured education resulted in a research limitation. It has been accepted for students who don't reside with their family or who have lost their family to provide education on HPV and HPVV to a relative for this study.

Ethical Disclosures

Permissions were granted by the Ege University Scientific Research and Publication Commission (25/05/2023, 06/08/1998) and by the author, who adapted the HPV-KS scale into Turkish. Additionally, informed consent was obtained from students and their families.

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RESULTS

Student Related Results

When the descriptive findings of the students who contributed to the pre-training questionnaire were examined, it was found that 81.2% were between the ages of 19 and 22, 30.0% were in their final year of university, 51.5% were living in state dormitories, and 83.2% were part of a nuclear family structure. It was

determined that 63.4% of the students and 40.9% of their families perceived their financial situation as 'income equal to expenses'. The findings regarding the health status of the students are as follows: 81.8% have never been sexually active, 76.6% do not smoke, 60.1% do not consume alcohol, 56.1% receive regular healthcare, and 72.6% have received regular childhood vaccinations. When the students' answers to questions about HPV were examined, 56.8% were unaware of the relationship between HPV and cervical cancer, 59.7% had received training on sexual health, and 94.2% wanted to get the HPV vaccine. Regarding HPV, 63.7% had very low knowledge, 5.6% had low knowledge, and 30.7% had moderate knowledge.

According to the findings of students who completed the post-training questionnaire, 86.0% were between the ages of 19 and 22, and 36.3% were in their final year of university.

The mean HPV-KS score of the students' PR-T was 10.95±5.53 (min:0-max:21.0), and the mean HPV-KS score of PS-T was 15.39±2.70 (min:9.0-max:27.0). Independent sample t-test results for the change in HPV-KS mean scores reported a statistically significant increase in the students' information levels ($t = 11.806$; $p = 0.000$). The effect size for the relevant score increase is 1.02 (**Table I**).

The reliability analysis calculated the HPV-KS Cronbach's Alpha (α) coefficient as 0.903 for PR-T and 0.809 for PS-T. The Cronbach's Alpha (α) coefficient for HPV-KS applied to families was 0.933.

The differences between the groups (PR-T & PS-T) were reported to be significant in terms of the students' age groups ($F=14.734$; $p<0.05$), grades ($F=65.984$; $p<0.05$), mothers' education level ($F=3.021$; $p<0.05$), place of residence ($F=3.731$; $p<0.05$), receiving regular health services ($F=8.559$; $p<0.05$), alcohol intake ($F=6.249$; $p<0.05$), regular childhood vaccinations ($F=7.229$; $p<0.05$) and knowing the relationship between HPV and cervical cancer ($F=132.476$; $p<0.05$) (**Table II**).

Family Members Related Results

When the descriptive information of the families is observed, 51.4% of the respondents were the student's mother, 7.6% were the father, 18.1% were the sibling, and 22.9% were the relative. 36.2% of the respondents are between the ages of 41 and 50, 87.6% are women, 37.1% are university graduates, 76.2% have children, 85.7% live in a 'nuclear family' structure, and 87.6% have health insurance.

While it was declared that 61.9% of family members care about their health, only 58.1% of them had regular health checks, 66.7% received regular vaccinations (including childhood, COVID, and influenza), 59.0% didn't smoke, and 76.2% didn't consume alcohol.

42.9% of the family members first had sexual intercourse between the ages of 21-25, 39.0% didn't use any birth control method, 21.0% of those who used birth control used condoms, and 27.6% had regular gynecological examinations. 98.1% of the participants didn't have any sexually transmitted diseases, 67.6% didn't have any gynaecological diseases, and 16.2% had experienced a gynaecological infection (such as vaginitis or candida albicans).

51.4% of the families hadn't heard of HPV, 50.5% didn't know the relationship between HPV and cervical cancer, 49.5% needed education about HPV, and 89.5% didn't receive the HPVV.

When descriptive characteristics of family members were compared with mean HPV-KS scores, it was concluded that place of residence ($F=3.943$; $p<0.05$), smoking ($F=3.761$; $p<0.05$), alcohol intake ($t=3.335$; $p<0.05$), hearing about HPV ($F=14.069$; $p<0.05$), knowing the relationship between HPV and cervical cancer ($F=9.916$; $p<0.05$) and hearing about HPVV ($t=4.229$; $p<0.05$) were statistically significant (**Table III**).

It was deduced that 71.3% of the students who received training provided education to their families regarding 'HPV and HPVV' with the distributed brochure.

Table I: Distribution of students' mean HPV-KS scores before and after training

	Group	n	$\bar{X}$	SS	t test value	p-value	Effect size
Mean HPV-KS score	Pre-training (PR-T)	303	10.95	5.25	11.806	0.000*	1.02
	Post-training (PS-T)	179	15.39	2.70			

Table II: Comparison of students' socio-demographic and descriptive characteristics and mean HPV-KS score

Features	HPV-KS $\bar{X}$ ±SD	F value	p-value	Bonferroni
Age group				
18 years and under	6.17±5.50	F = 14.734	0.000*	1<2.3
Between 19-22 years old	11.31±5.24			
23 years and above	12.93±5.53			
Class				
1st Class	5.38±5.14	F = 65.984	0.000*	1<2,3,4; 2<3.4 ; 3<4
2. Class	8.90±4.61			
3rd Class	12.95±3.64			
4th grade	14.76±3.53			
Mother's education level				
Primary school and below	10.21±5.57			

Secondary school	10.74±5.49	F= 3.021	0.030*	1<3
High school	12.39±5.36			
University and above	12.62±4.70			
Place of residence at the time of the survey				
At home with his family	10.84±5.32	F = 3.731	0.006*	1<2
At home with friends	13.82±4.40			
At home with relatives	12.25±7.50			
In the state dormitory	10.16±5.60			
Receiving regular health care				
Yes	12.05±5.08	F = 8.559	0.000*	2<1
Irregular	9.35±5.70			
No	10.65±6.12			
Alcohol use status				
Users	11.80±4.67	F = 6.249	0.002*	3<2
Social drinkers	12.39±4.94			
Non-users	10.05±5.75			
Regular vaccination status				
Yes	11.67±5.36	F = 7.229	0.001	1>2.3
Irregular	9.19±5.47			
No	8.55±5.87			
Knowing the relationship between HPV and CxCA				
I know	14.39±4.01	F=132. 476	0.000*	3<1.2; 2<1
I partially know	10.75±3.90			
I don't know	4.52±4.30			

Table III:
Comparison of some descriptive characteristics of families and mean HPV-KS scores

Features	HPV-KS $\bar{X}$ ±SD	F value	p-value	Bonferroni
Longest lived place				
Town	4.33±7.11	F = 3.943	0.010*	4>1.3
District	7.81±7.35			
Province/city	6.39±6.64			
Metropolitan/ metropolis	12.14±8.62			
Smoking status				
Yes	7.10±6.90	F = 3.761	0.027*	2>3
Rarely	13.17±8.09			
No	6.87±7.51			
Alcohol use status				
Occasional social drinker	11.88±8.08	t= 3.335	0.001*	** -
No	6.34±6.98			
Hearing about HPV				
Yes	11.24±7.16	F = 14.069	0.000*	1>2
No	3.93±6.07			
I'm not sure	5.80±7.89			
Knowledge of the relationship between HPV and CxCA				
I know	11.36±8.49	F = 9.916	0.000*	1,2>3
Partially	10.23±6.90			
I don't know	4.66±6.41			
Hearing about the HPV vaccine				
Yes	9.86±7.51	t= 4.229	0.000*	-
No	4.08±6.34			

**p<0.05*

DISCUSSION

This study was conducted to increase individual awareness of a preventable viral problem that is thought to pose a future clinical risk. Cancer is a significant health problem, and there are rare types of cancer that are less likely to develop with the strengthening of preventive health services. Many types of cancer caused by HPV can be reduced with conscious, simple measures. This is particularly valuable for understanding the disease burden and treatment costs in countries, as well as the material and moral health of individuals.

The relationship between HPV infection and gynecologic cancers is a known fact. Prophylactic HPV vaccines protect uninfected people against HPV infection and its risks. WHO has set targets and strategies to eliminate cervical cancer by 2030. Vaccinating all children and informing families is particularly important[5,6]. The midwifery profession serves women and has a responsibility in this regard. Midwives can contribute to preventive health services by providing accurate information about HPV and vaccines to the community. The fact that the highest proportion of the students participating in the study was in the last two years of university education (30% were in the final year and 36.6% were one year before the final year) suggests that the study provided students with the opportunity to gain experience. In his thesis study, Yılmaz A 2007[16] found that midwives working in primary healthcare provided more health education than health officers and nurses. Counseling by trained health professionals can potentially improve the management of HPVV [10,11,17]. Courses that included HPV in the curriculum and internships in various clinics had a positive impact on the average HPV-CS score of students as they progressed through their university careers.

High levels of preventive health care require women to have high levels of health literacy. Educating women to promote healthy societies is the best investment for the future. An informed mother raises informed children and helps create a healthy generation. Gökoğlu AG 2021[18] emphasizes that maternal education is effective in promoting healthy lifestyle behaviours. In his thesis, Söylemez NM 2023[19] found a significant and positive relationship between child health outcomes and parental health literacy. Our results support that students with educated mothers have significantly higher HPV-CS scores.

Sexually transmitted diseases are taboo in our culture. This situation negatively affects the dissemination of HPV information. In our study, the high average HPV-KS score of students living with friends indicates that taboo topics are discussed among young people. Studies conducted with university students found that the mean HPV-CS score was similarly higher in young people living in student dormitories[10,11]. It is believed that the information provided by the students in our study will have benefits, including discussing a taboo subject within the family and correcting incomplete and incorrect information.

In our study, the mean HPV-CS scores of students who did not consume alcohol were lower. Yılmaz Özdemir R 2023[20] also found that the mean HPV-CS scores of students who did not consume alcohol were lower in their study with medical students. Individuals without harmful habits are expected to be highly aware of healthy lifestyle behaviours and awareness; however, our results showed the opposite. People who drink alcohol or have other dangerous habits are more likely to encounter risky situations than others and their awareness is thought to stem from the need to take precautions. Individuals with high health awareness who value health regularly undergo health checks, do not neglect vaccinations, and follow medical innovations, which is reflected in their behaviour and attitudes. Sommer I 2018[21] found that one reason individuals do not undergo periodic health checks is a lack of awareness. In this sense, it is expected that students who receive regular health services, have regular vaccinations, and are aware of the relationship between HPV and cervical cancer will have high scale scores.

Before the age of 20, it is known that women who have had more than one sexual partner are at high risk because the cervical tissue has not yet completed its development and, therefore, cannot form an adequate immune response against HPV[22]. In our study, 42.9% of the family members had their first sexual intercourse between the ages of 21 and 25. Individuals can reduce the risk of HPV infection by limiting the number of sexual partners and using condoms correctly[23]. In our study, it is a positive situation that family members had their first sexual intercourse at the ideal age, were monogamous, and 21.0% of them used condoms. In addition, the majority of family members were non-smokers and non-drinkers (59.0% non-smokers, 76.2% non-drinkers), had regular health check-ups (58.1%) and were vaccinated (66.7%). Although these rates are at a good level among the population participating in our study, habits such as not smoking, having regular vaccinations, and not neglecting health checks are not at the desired level in our society. Research has been conducted to help individuals adopt, maintain, or enhance their healthy lifestyle behaviours. Serim H 2021[25] emphasize the importance of impulses and willpower in determining preferences and behaviours through their behavioural economics approach model. They suggest different, memorable, and engaging activities to help individuals overcome their lack of knowledge. Our study is a good example of individuals gaining or maintaining awareness through a different method (knowledge transfer from students).

Regular gynecologic examination is the only way to diagnose premalignant and malignant conditions early. Cervical cancer is the most important disease that can be diagnosed and treated early with regular gynecologic examination[26]. In our study, 27.6% of family members underwent regular gynaecological examinations, which reflects the current attitude in Turkey. In countries where sexuality is taboo, women are ashamed of gynecological examinations. In a study conducted with highly educated women, only 22.6% reported having regular gynecological examinations. In another study, it was found that women usually had gynecological examinations due to pregnancy and childbirth (57.89%) and preferred a female doctor (94.8%), while 25.33% were embarrassed[27]. In another study, it was found that exposure to the genital area during gynecological examination ($p<0.001$) was a behavior that increased shame[28]. In our culture, gynecological examinations are postponed or not considered by women because of the importance of privacy.

The level of knowledge about HPV and its vaccine among the family members who participated in our study was at a level suggesting the necessity of HPV education (51.4% had not heard of HPV, 50.5% did not know the relationship between HPV and cervical cancer and 49.5% needed education about HPV). In a study conducted with HPV-positive patients, 28.9% of the participants had no information about HPV, while 43.1% had no information about HPV[29]. In another study, only 3.4% of participants had information about HPV [30]. In a study conducted with parents of girls aged 10-18 years, 60.7% of the participants wanted to learn about HPV and HPV[31]. In the study conducted by Mutlu N 2021[32], only 11.9% of the participants received HPV vaccination. As our research results show, the level of knowledge about HPV and HPVV is low, and the reasons for this include the fact that people think that HPV is only sexually transmitted and can only cause disease in women; HPVV is not included in the national vaccination program, the vaccine is expensive, and vaccines are only for women.

The limitation of this study is that it was conducted only with a group of students enrolled at Ege University and their families.

CONCLUSION

As a result of the study, the knowledge level of the students increased, and 71.3% of the students who received training informed their families about "HPV and HPVV" through brochures. The number of families who received training (127) was higher than the number of families who participated in the study (105). It is recommended that the study be conducted with larger populations, joint projects be undertaken with non-governmental organizations and action plans be developed to mobilize support systems.

Ethical permission: Ege University, Izmir, Turkey, ERC letter No. (25/05/2023, 06/08, 1998). Informed consent was obtained from students and their families.

Conflict of interest: There is no conflict of interest between the authors.

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Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publicly.

AUTHOR CONTRIBUTION

Gulbol S: Design, data collection, processing, analysis & interpretation, literature search
Kochan Z: Design, Data collection, processing, literature search
Saydam BK: Concept, design, analysis & interpretation, literature search

Abbreviations used in the article:
HPV: Human Papilloma Virus
HPVV: Human Papilloma Virus Vaccine
HPV-KS: Human Papillomavirus Knowledge Scale
PR-T: Pre-training
PS-T: Post-training
ANOVA: Analysis of Variance

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