Ordu Üniversitesi Hemşirelik Çalışmaları Dergisi
Ordu University Journal of Nursing Studies

Ordu University J Nurs Stud
2023, 6(3), 731-738
DOI:10.38108/ouhcd.1170908

Araştırma Makalesi/ Research Article

Knowledge, Behaviours and Affecting Factors About Human Papilloma Virus and Vaccination Among University Students

Üniversite Öğrencilerinin Human Papillomavirüs ve Aşısı Hakkındaki Bilgi, Davranışları ve Etkileyen Faktörler

Daina Charnelle Fougang[1] Serap Tekbaş[2]

[1] Near East University, Lefkoşa, KKTC
[2] Izmir Tinaztepe University, İzmir, TÜRKİYE

Geliş tarihi/ Date of receipt: 04/09/2022 **Kabul tarihi/ Date of acceptance:** 14/05/2023
 Published online: 15/10/2023

ABSTRACT

Objective: The purpose of this research was to evaluate knowledge and behaviours of university students about Human Papillomavirüs (HPV) infection and the HPV vaccine.

Method: This descriptive study was carried out between 05.04.2020 and 25.07.2020. The population of the research consisted of 267 international students studying in the law and engineering faculties of Near East University, and the sample group consisted of 213 international students. The data were collected through an online questionnaire developed by the researcher based on the literature review and consisting of four parts: demographic criteria, characteristics, behaviors of students regarding HPV infection and vaccine, information about HPV infection, and information about HPV vaccine. The data were analyzed using the SPSS 22.0 program and the analysis results were interpreted at the $p<0.05$ significance level.

Results: The average age of the participants in our study was 22.05±2.31 and 19.2% of them were vaccinated against the Human Papilloma Virus. 62% of the participants were sexually active and 34.3% had heard of Human Papilloma Virus before. The knowledge score about the virus was affected by sexual activity, early sexual intercourse, class level, economic status, and marital status.

Conclusions: The poor knowledge of students about the risks factor of HPV infection and vaccine is reflected in their risky behaviour. Promoting and providing universal access to the HPV vaccination may encourage international students to get the vaccine, leading to fewer new cases of HPV infection.

Keywords: Behaviour, human papillomavirus, knowledge, vaccination

ÖZ

Amaç: Bu araştırmanın amacı, öğrencilerin Human Papillomavirüs (HPV) enfeksiyonu ve aşısı ile ilgili bilgi ve davranışlarını değerlendirmektir.

Yöntem: Tanımlayıcı tipteki bu çalışma, 05.04.2020-25.07.2020 tarihleri arasında gerçekleştirilmiştir. Araştırmanın evrenini Yakın Doğu Üniversitesi hukuk ve mühendislik fakültelerinde öğrenim gören 261 uluslararası öğrenci oluşturmuş olup, 213 uluslararası öğrenci araştırmanın örneklem grubunda yer almıştır. Veriler, araştırmacı tarafından literatür taramasına dayalı olarak geliştirilen ve demografik kriterler, özellikler, öğrencilerin HPV enfeksiyonu ve aşısı ile ilgili davranışları, HPV enfeksiyonu hakkında bilgi ve HPV aşısı hakkında bilgi olmak üzere dört bölümden oluşan çevrimiçi anket aracılığıyla toplanmıştır. Veriler SPSS 22.0 programı kullanılarak analiz edilmiş, analiz sonuçları $p<0.05$ anlamlılık düzeyinde yorumlanmıştır.

Bulgular: Çalışmamıza katılanların yaş ortalaması 22.05±2.31 olup, %19.2'si HPV'ye karşı aşılanmıştır. Katılımcıların %62'si cinsel olarak aktifti ve %34.3'ü daha önce Human Papilloma virüsü duymuştu. Virüs hakkındaki bilgi puanı cinsel aktivite, erken cinsel ilişki, sınıf düzeyi, ekonomik durum ve medeni durumdan etkileniyordu.

Sonuçlar: Öğrencilerin HPV enfeksiyonu ve aşısının risk faktörü hakkındaki yetersiz bilgileri, riskli davranışlarına yansımaktadır. HPV aşısına kapsamlı erişimi teşvik etmek ve sağlamak, uluslararası öğrencileri aşı olmaya teşvik edebilir ve daha az yeni HPV enfeksiyonu vakasına yol açabilir.

Anahtar Kelimeler: Davranış, human papillomavirüs, bilgi, aşılama

ORCID IDs of the authors: DCF: 0000-0003-4406-4236; ST:0000-0001-6112-0899
Sorumlu yazar/Corresponding author: Serap Tekbaş
Izmir Tinaztepe University, İzmir, TÜRKİYE
**This study was presented as an oral presentation at the " 2. Uluslararası 3. Ulusal Onkoloji Hemşireliği Kongresi (18-19 Aralık 2020)" congress.*
e-posta/e-mail: seraptekbas@gmail.com
Atıf/Citation: Fougang DC, Tekbaş S. (2023). Knowledge, behaviours, and affecting factors about human papillomavirüs and vaccination among university students. Ordu Üniversitesi Hemşirelik Çalışmaları Dergisi, 6(3), 731-738. DOI:10.38108/ouhcd.1170908

Ordu University J Nurs Stud
2023, 6(3), 731-738
DOI:10.38108/ouhcd.1170908

Introduction

Among sexual diseases, Human Papillomaviruses (HPV) of family papillomaviridae are the most common viral infections of the reproductive that affected women and men. HPV can further cause cancers or genital warts on the different part of the body like the cervix, vulva, vagina, penis, anus, tongue, and tonsils (Turiho et al., 2015). According to the International Cancer Research Agency, there are 200 HPV varieties identified which have been characterized by two groups such as malignant cancers or benign cancer (Jalil and Karevskiy, 2020). There are 12 high-risk types of HPV which can induce cancer in both men and women. Besides in 70-80% of the cases, cervical cancer is caused by HPV 16 and 18, however, it is the second cancer type with a high mortality rate in the world (Guimera et al., 2020).

The study made by Arbyn, et al. (2020), showed that between 185 countries assessed there were approximately 570 000 cases of cervical cancer and 311 000 deaths; cervical cancer was among the three cancers affecting women younger than 45 years in 146 (79%) of those 185 countries. Thus, HPV is not the problem of a specific country even if in the developing country the prevalence is highest. Indeed, a study conducted in Turkey has shown that 38.05% were HPV DNA positive (Oz et al., 2018).

The primary prevention method of HPV is based on the provided awareness just as the risk factors of infection, which will help in a change of exposure behaviors; also, associating with the HPV vaccine that will lead to protection against HPV more effectively (WHO, 2019). However, the sexual way is the main way of transmission of HPV so it is advisable to use a condom for people who are already sexually active and bound down to less sexual partners, for adolescents, it is important to avoid early intercourse. The vaccination is effective when all these risk factors are respected, knowledge and behaviors are the keys to avoiding and reducing this HPV (Monteiro et al., 2018). However, the research of Cinar, et al (2019) at the university in Turkey showed that only 16.8% of university students have ever heard of HPV; the percentage of students not having any knowledge of HPV is high, and only 1.5% of them was vaccinated.

In the general approach to avoiding an infection disease, each individual has to know how it is transmitted so that he/she can know how and which methods can be used to prevent but a previous study about the knowledge and behavior toward HPV among nursing students a university in Turkey showed 98.1% of student there were not vaccinated with an HPV vaccine. In another side, 23% of them, during their last sexual intercourse have not used condoms (Bal-Yılmaz and Koniak-Griffin, 2018). The reasons for this high prevalence can be explained by the presence of barriers for implementation or utilization of preventive methods, in an instance of this study carried out in Cyprus among 178 medical students in the university, the result showed that given the fact that the students were in the health sciences department, their knowledge, and awareness about the prevention of cervical cancer were somehow shortcomings (Farazi et al., 2019). University students are at higher risk of HPV and its complications compared to other age groups. Not having sufficient knowledge about HPV and HPV vaccine and not developing a positive attitude towards HPV vaccine cause an increase in the risk in university students where sexually transmitted infections are common (Kanmodi et al., 2020). Despite this, many people have poor awareness of the association of HPV with cervical cancer (Fakor et al., 2016; Nekooi et al., 2016). In addition, the perception of sexuality differs from society to society, and the symptoms of sexually transmitted infections such as HPV show the presence of sexual life before marriage, therefore preventing or delaying going to the doctor. For these reasons, our aims to evaluated the student's knowledge, behaviours and status of the students about HPV and vaccine.

Research Questions

1. What are the risk behaviours of students about human papillomavirus infection?
2. What is a score of the knowledge of the students about human papillomavirus infection?
3. What is a score of the knowledge of the students about human papillomavirus vaccination?

Material and Method

This study was conducted with a descriptive study design.

Study Designs and Sampling

Data was collected online between 5 April and 25 July 2020. We planned to include departments with non-medical and non-health education in our study. The sample size for the study was 0.05 error, 0.95 confidence interval the minimum sample size was calculated as 152 by power analysis. There are 16 non-health departments at the university. These sections were selected by random sampling method by making a list. According to the random sample

Ordu University J Nurs Stud
2023, 6(3), 731-738
DOI:10.38108/ouhcd.1170908

result, international engineering and law faculty students were invited to this study. The international engineering faculty have 161 students and law faculty have 106 students. It was aimed to include all students from these faculties in the study and all students were invited to the study. The sample group of our study consisted of 113 (71%) students in the international engineering faculty and 100 (94.3%) students in the law faculty who agreed to participate in the study. The sample group of our study consists of 213 (85%) students.

Data Collection

A questionnaire form designed by the researchers based on the literature was used in the study. (Oz, et al., 2018; Shaikh, et al., 2019). After the questionnaire was created, the reviews of three experts were taken. The last form of our questionnaire was created in line with the feedback of expert opinions. Our questionnaire was focused on four parts: Socio-demographic characteristics consisting of gender, age, faculty, religion, economic status (5), some characteristics of students about HPV and applying for the vaccine (7), knowledge of HPV (20), and knowledge of HPV vaccination (9). There was one question concerning the source of information.

The maximum score that can be obtained in the knowledge about HPV section in the questionnaire was 20. The score of knowledge about HPV was categorized in: 0-7= low level of knowledge; 8-14= middle knowledge level; 15-20=high level of knowledge.

The maximum score that can be obtained in the knowledge about HPV vaccines section in the questionnaire was 11, it was categorized in: 0-3= low level of knowledge; 4-6= middle knowledge level; and 7-9= high level of knowledge.

Data Analysis

The data was analyzed using SPSS version 22.0. The conformity of the data to the normal distribution was evaluated with the Kolmogorov Smirnov Test. Pearson correlations tests have been used in the case of parametric test and spearman's correlation have been considerate in the case of non-parametric test. Between the continuous variable and categorical variable with more than two values, One-way Anova has been used in the case of parametric test, but in the case of the non-parametric test, the test used was the Kruskal Wallis test.

Results

In our study, 213 students participated, their mean age was 22.05±2.319. There were more male students (62 %) than female students (38%). We found that HPV knowledge mean score was 6.08±4.17. HPV vaccine mean score was 3.52±2.181. In general, there were 29 countries and the majority of students were respectively from Nigeria 34.7%, 12.5% Zimbabwe, 7.98% Congo, 7.5% Cameroun.

Of the students participating in the study, 43.2% stated that they had never heard of HPV, 37% stated that multiple sexual partners are not risk, 31% stated that HPV is not contagious and 39.9% stated that there is no method to protect from HPV.

Table 1 shows the results for the descriptive statistics regarding behaviors and status of the students about HPV and vaccine. Approximately 62% of the students were sexually active and the mean age of the first intercourse was 17.59 ±2.6. The minimum age of the first intercourse was 11 and maximum was 23 years old, majority (62.6%) of the students have started sexual activity before 18 years old. Parental communication on sexual issues was not common in this sample, since the majority of students (75.1%) had no sexual communication with their parents. Furthermore, just 15.5 % of these students have been go to the doctor for genital warts. Vaccine status review reveals that only 19.2 % of students were vaccinated against HPV and 80.8 % of students were not vaccinated.

Table 1. HPV-related risk behaviors of students (n=213)

Relate Behaviours of the students		n	%
Active Sexual	No	132	62
	Yes	81	38
First age of intercourse	11-15	35	20.1
	16-18	74	42.5
	19-23	65	37.3
Smoking	Never	162	76.8
	Rarely	23	10.9
	Often	11	4.3
	every time	17	8.1
Go to the doctor for genital warts	No	180	84.5
	Yes	33	15.5
Talk to parents of sexual matters	No	160	75.1
	Yes	53	24.8
Been HPV vaccinated	No	172	80.8
	Yes	41	19.2

Ordu University J Nurs Stud
2023, 6(3), 731-738
DOI:10.38108/ouhcd.1170908

There is a statistically significant difference (x^2=7.993, p=0.046) of knowledge score between the 1. and 2. class levels. The mean score of the student in 1. year class is statistically significantly (p=0.02) higher than for the mean score of students in 2. year class. The mean score (7.33±4.03) of the students with an economic situation low than the expense is statically significant (p=0.02) higher than the mean score of the student who has income more than expense (5.86±4.33). The mean scores of the participants who has a boy or girlfriend (7.028±4.11) are significantly (p=0.02) higher than the mean score of the married student (5.86±4.33). There is also a statistically significant difference (p=0.02) between the score of HPV knowledge and the age of the first intercourse when the age is up to 18 years old the score of knowledge increases. The mean score (5.69±3.79) of HPV knowledge of the students with the first age of intercourse between 16–18-year-old is significantly (x^2=5.047 p=0.025) lower than the mean score (7.36±4.10) of students with the age of first intercourse between 19–23-year-old (Table 2).

Table 2. The relation between the variable and HPV knowledge

Variables		The score of HPV infection knowledge			
		Mean ±SD		x^2	p
Class level		6.08±1.71		7.993	0.046*
First	Second	7.02± 3.11	4.95 ±3.82	9.937	0.02*
Second	Third	4.95 ±3.82	5.87±4.19	1.247	0.26
Third	Fourth	5.87±4.19	7.02 ± 3.11	0.408	0.503
Economic status		6.089 ± 4.17		14.094	0.001**
Low	Equal	7.33±4.036	5.13±4.02	14.026	0.001**
Equal	More	5.13±4.02	5.86±4.3	0.733	0.390
Marital status		6.84±4.87			0.003**
Married	Boy-girl friend	6.41±3.14	7.028±4.11	0.323	0.569
Single	Boy-girl friend	5.04±4.14	7.028±4.11	10.766	0.001**
Married	Single	6.41±3.14	5.04±4.14	2.3	0.129
Age of early intercourse		6.21±4.01		7.874	0.02*
11-15	16-18	5.17±3.87	5.69±3.79	0.635	0.46
16-18	19-23	5.69±3.79	7.36±4.10	5.047	0.025*
19-23	11-15	7.36±4.10	5.17±3.87	5.95	0.015*

*Kruskal Wallis test: chi-square. *p<0.05 **p<0.01*

A significant difference was found between the economic status of the students and the level of HPV vaccine knowledge. The source of the difference consists of students who stated that they are at a low socio-economic level. It has been found that students with low economic status have more information about the HPV vaccine than students whose income is equal to their expenses (p=0.001) and whose income is more than their expenses (p=0.044). The vaccine knowledge score level of students with social security was found to be significantly higher than students without social security (p=0.001) (Table 3).

There is a significant (x^2=18.255, p=0.001) difference between the score of HPV vaccine knowledge among different types of marital status of the participants. A significant difference was found between marital status and vaccination knowledge level, and it was determined that the vaccination knowledge level of the student group with a boy-girlfriend was higher than the married and single student groups (p=0.001). A significant relationship was found between age at first sexual intercourse and vaccination knowledge score level. Vaccination knowledge score level was higher for students whose first sexual intercourse age was 19 and over (p=0.034) (Table 3).

There is a statistically significant strong positive correlation (r=0.522, p<0.05) between HPV knowledge and HPV vaccine knowledge of the participants. When the mean score of HPV knowledge increases the score of the HPV vaccine also increases (Table 4).

The main source of the information of the students was respectively internet 113 (53.05%) the second source was family 38 (17.84%) and

Ordu University J Nurs Stud
2023, 6(3), 731-738
DOI:10.38108/ouhcd.1170908

only respectively 28 (13.14%) and 8 (3.7%) of the students were informed by a doctor or nurse. Only 7 (3.28%) of the students declare the teacher as an informer about HPV (Table 5).

Table 3. Comparison of sociodemographic variables and HPV vaccine knowledge mean score

Socio-demographic variables		**The score of HPV vaccine knowledge**		
		Mean ±SD		**p**
Class level		3.52±2.108		0.18
First	Second	4±1.85	3.06±2.05	0.09
Second	Third	3.06±2.05	3.37±2.22	0.445
Third	Fourth	3.37±2.22	3.810±2.40	0.971
Economic situation		3.52±2.18		0.003**
Low	Equal	4.32±2.10	2.94±2.11	0.001**
Equal	More	2.94±2.11	3.18±1.86	0.856
Low	More	4.32±2.10	3.18±1.86	0.044*
Social security	No	3.01±2.19	0.224**	0.001**
	Yes	3.95±2.0		
Marital status		3.52±2.18		0.001**
Married	Boy-girl friend	4.14±2.10	3.33±2.3	0.211
Single	Boy-girl friend	2.87±2.076	4.14±2.102	0.001**
Married	Single	3.33±2.3	2.87±2.076	0.439
Age of early intercourse		3.62±2.14		0.002**
11-15	16-18	3.45±2.45	3.09±2.02	0.583
16-18	19-23	3.09±2.02	4.30±1.93	0.001**
19-23	11-15	4.30±1.93	3.45±2.45	0.034*

*One-way ANOVA test *p<0.05;*

Table 4. Correlation between the scores of the vaccine knowledge and the HPV knowledge of the students (n=213)

The score of the knowledge	Mean± SD	r	p
Knowledge on HPV infection	6.08± 4.17	.522	.001*
Knowledge on HPV vaccine	3.52±2.18		

*Pearson correlation test; **p<0.01; *Correlation is significant at the 0.01 level (2-tailed). r: coefficient of correlation*

Table 5. The student's information source's regarding HPV and HPV vaccine (n=213)

HPV source of Information	**n**	**%**
Doctor	28	13.14
Nurse/Midwife	**8**	**3.75**
Family	38	17.84
Tv	19	8.92
Internet	**113**	**53.05**
From teacher	**7**	**3.28**

Discussion

This study revealed that 43.2% of international students, had never heard about HPV, conversely, 31.1% ignored that HPV is contagious. Moreover, participants erroneously believed there is no preventive method of HPV. Similarly, the researcher conducted among international students in China showed a majority of participants had limited awareness and knowledge about HPV (Gao et al., 2016). Almost the majority of the participants in this study are from African nations where HPV awareness is poor (Nyambe et al., 2019), in fact, a study in Ugandans showed 88.2% of people had been reported to have never heard of HPV (Mukama et al., 2017). The majority of our participant presented risky behaviours, in particular, 62% were sexually active, indeed a redundancy of early sexual intercourse was a behavior observed in the majority of the student participant to this study. Lack of communication about sexuality with parents was predominant, indeed in this study, 75.1% of students has never verbally exchanged with their parents. A lot of studies among Africans demonstrated that sexual communication with parents is still

Ordu University J Nurs Stud
2023, 6(3), 731-738
DOI:10.38108/ouhcd.1170908

considered as taboo topic by the majority, even though it presents a large benefit to prevention of STDs (Hamdi, 2018; Goa et al., 2016). Limited access to hospitals of students having genital warts was an accentuated behavior among the participants, in spite of risky behavior accrued in this study, only 19.2 % of the students were vaccinated against HPV. Lack of sexual education can be a cause of poor awareness, sexual health education experiments in a study conducted among the students revealed helpful and suitable in raising HPV awareness and vaccination uptake (Liu et al., 2019). Our findings helped to understand the large gap between HPV awareness and practices among international students.

The factor influencing HPV awareness is essential in raising HPV prevention. This study demonstrated that the student's knowledge toward HPV depends on the marital status of the international student, this result was contrary from the (Hanley et al., 2014) study showing that knowledge or awareness of HPV are not impacted by the marital status. Therefore, understanding the dynamic of the absence of HPV awareness by merging marital status with HPV prevention may affect the number of persons awarded twice as much. The age of the first intercourse is influenced by the level of information regarding HPV, according to our findings. Early sexual activity is a risk factor for cervical cancer in fact a study showed that student having early intercourse has a low level of knowledge about HPV (Charalambous et al., 2020). Therefore, we hypothesize that students who had their first intercourse during adulthood are more likely to employ a preventative barrier when they are at risk or are aware of the danger of infection.

Our findings revealed that students with social security and a low socioeconomic status are more knowledgeable about HPV prevention methods. Indeed, people with social security have greater access to medical awareness and care due to medical insurance, which could explain the high level of knowledge about the HPV vaccine. Several researches claimed the overwhelming number of non-vaccinated against HPV lived in developing countries with limited access to HPV vaccine (Almobarak et al., 2016; Kanmodi et al., 2020). Furthermore "until Jun 2021 only four countries (24%) had a mature HPV vaccination program with a high first-dose coverage". In light of the large proportion of students who were sexually active and had early sexual intercourse at the time of this study, it appeared that students who began sexual activity in their adolescence were negligent and unconcerned with HPV and vaccination prevention. Although early intercourse is an HPV risk factor, HPV testing and vaccination should be aggressively advocated among international students to avoid new and hazardous contaminations. (Haruyama et al., 2021).

The score of each participant's HPV knowledge is closely linked to the score of HPV vaccination knowledge in this study. Indeed, when the score of HPV is low, the score of the HPV vaccination is likewise low. When the score of HPV is high, the score of the HPV vaccine is also high. Our findings were comparable to those of a prior study, which found that knowledge of HPV predicted knowledge of and willingness to use the HPV vaccination (Dönmez et al., 2019). The effectiveness of medical education has been demonstrated through experimental study, which revealed a statistically significant difference between pre-test and post-test scores after the application of education (Ford et al., 2020) .

The internet was the primary source of information in this study (53.05%), and many other studies have shown similar results (Cinar et al., 2019; Costa et al., 2020; Gao et al., 2016). Compared to a study where students got enough knowledge about HPV the main source of information was education (Widjaja, 2019). Thus, in our study, there were only 3.28% of students informed by the teacher but in other studies, it has been found in the many others studies that education and training in school impacted the behaviours of students toward the HPV vaccine (Chanprasertpinyo and Rerkswattavorn, 2020; Evans et al., 2020; Koç, 2015). The internet is not the right source of information about HPV because it cannot change the place of medical awareness by a professional (Swarnapriya et al., 2016). A study showed that 61.1% of women took the HPV vaccine were because it has been recommended by their doctor (Shaikh et al., 2019). Uptakes a pap smear among students is conditioned by the quality of information received (Almobarak et al., 2016). The best and appropriate source of HPV knowledge or awareness is professional healthcare because they have enough knowledge that can be used to counsel people about HPV and applied their role of potential immunizers (Daniel et al., 2019).

Conclusion and Recommendations

Young individuals might be among the people who benefit from the HPV vaccine in order to

Ordu University J Nurs Stud
2023, 6(3), 731-738
DOI:10.38108/ouhcd.1170908

minimize the incidence of HPV. This group of people continues to have a lack of knowledge about HPV, which leads to dangerous behaviors such as early sexual intercourse and a skepticism for the need of vaccines. The level of HPV and vaccination knowledge was influenced by factors such as marital status, economic situation, access to medical care, and information source. Promoting and providing universal access to the HPV vaccination may encourage international students to get the vaccine, leading to fewer new cases of HPV infection. International students' awareness is still insufficient to prevent the spread of infection. Incorporating and promoting more HPV information and education into curricular courses will undoubtedly reduce sexual risk behavior. Access to information on sexually transmitted infections should be organized in a planned and sustainable way for university students who are in the risk group. This can be achieved by providing regular health education to university students.

Limitations

Data were collected cross-sectionally at a single university, thus results may not be generalizable to all university students.

Ethics Committee Approval: This study was approved by the Near East University Institutional Review Board (YDU/2020/79-1098). All students' consent was obtained before beginning the survey. The study followed the ethical principles in Helsinki Declaration, and the confidentiality of personal information was ensured.
Peer-review: External referee evaluation.
Author Contributions: Idea/concept: ST, DCF; Design: ST, DCF; Consulting: ST; Data Collection and/or Data Processing: DCF; Analysis and/or Interpretation: DCF; Source scanning: ST, DCF; Writing the Article: DCF; Critical review: ST.
Conflict of interest: The authors declare that they have no conflict of interest.
Financial Disclosure: No financial support has been received for this research.

What did the study add to the literature?

- University students at risk for HPV have low knowledge about HPV and HPV vaccine and have risky behaviors related to HPV.
- Students prefer to access information about HPV and HPV vaccine from the internet instead of health professionals.

References

Almobarak AO, Elbadawi AA, Elmadhoun WM, Elhoweris MH, Ahmed MH. (2016). Knowledge, attitudes and practices of Sudanese women regarding the pap smear test and cervical cancer. Asian Pacific Journal of Cancer Prevention, 17(2),625-630. https://doi.org/10.7314/apjcp.2016.17.2.625

Arbyn M, Weiderpass E, Bruni L, de Sanjosé S, Saraiya M, Ferlay J, et al. (2020). Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. The Lancet Global Health, 8(2),191-203. https://doi.org/10.1016/S2214-109X(19)30482-6.

Bal-Yılmaz H, Koniak-Griffin D. (2018). Knowledge, behaviors, and attitudes about human papilloma virus among nursing students in Izmir, Turkey. Journal of Cancer Education, 33(4),814-820. https://doi.org/10.1007/s13187-017-1163-1

Chanprasertpinyo W, Rerkswattavorn C. (2020). Human papillomavirus (HPV) vaccine status and knowledge of students at a university in rural Thailand. Heliyon, 6(8), e04625.

Charalambous I, Ioannou G, Nikolaou S, Theologou R, Yiallourou A, Papatheodorou S, et al. (2020). State of knowledge of human papillomavirus (HPV), HPV vaccine and testing: a cross-sectional study among female university students in Cyprus. Women Health, 60(1), 26-42. https://doi.org/10.1080/03630242.2019.1610825

Cinar İO, Ozkan S, Aslan G.K, Alatas E. (2019). Knowledge and behavior of university students toward human papillomavirus and vaccination. Asia-Pacific Journal of Oncology Nursing, 6,300-307.

Costa ADS, Gomes JM, Germani ACCG, Silva, MR, Santos EFDS, Soares Júnior JM, et al. (2020). Knowledge gaps and acquisition about HPV and its vaccine among Brazilian medical students. Plos One, 15(3), e0230058.

Daniel CL, McLendon L, Green CL, Anderson K J, Pierce JY, Perkins A, et al. (2019). HPV and HPV vaccination knowledge and attitudes among medical students in Alabama. Journal of Cancer Education, 36(1),168-177.

Dönmez S, Öztürk R, Kısa S, Karaoz Weller B, Zeyneloğlu S. (2019). Knowledge and perception of female nursing students about human papillomavirus (HPV), cervical cancer, and attitudes toward HPV vaccination. Journal of American College Health, 67(5),410-417. https://doi.org/10.1080/07448481.2018.1484364

Evans L, Matley E, Oberbillig M., Margetts E., Darrow L. (2020). HPV knowledge and attitudes among medical and professional students at a Nevada University: a focus on oropharyngeal cancer and mandating the vaccine. Journal of Cancer Education, 35(4), 774-781.

Farazi P A, Siahpush M, Michaud TL, Kim J, Muchena C. (2019). Awareness of HPV and cervical cancer prevention among university health sciences students

in Cyprus. Journal of Cancer Education, 34(4), 685-690. https://doi.org/10.1007/s13187-018 1356

Fakor F, Ghanbari A, Mahfouzi L, Dalil Heirati SF, Graili S. (2016). Knowledge and attitudes of medical students about human papilloma virus (HPV) vaccination and associated factors. Journal of Holistic Nursing And Midwifery, 26(4), 71-79.

Ford ME, Cannady K, Nahhas GJ, Knight, KD, Chavis C, Crawford B, et al. (2020). Assessing an intervention to increase knowledge related to cervical cancer and the HPV vaccine. Advances in Cancer Research, 146,115-137. https://doi.org/10.1016/bs.acr.2020.01.007

Gao H, Okoror T A, Hyner GC. (2016). Focus group study of Chinese international students' knowledge and beliefs about HPV vaccination, before and after reading an informational pamphlet about Gardasil. Journal of Immigrant and Minority Health, 18(5), 1085-1092.

Guimera N, Alemany L, Bruni L, Muñoz N. (2020). Demonstrating the importance of different HPVs in cervical cancer and other HPV-related cancers. In human papillomavirus, 3,41-51. Academic Press.

Hamdi S. (2018). The impact of teachings on sexuality in Islam on HPV vaccine acceptability in the Middle East and North Africa region. Journal of Epidemiology and Global Health, 7, 17-22. https://doi.org/10.1016/j.jegh.2018.02.003

Hanley SJB, Yoshioka E, Ito Y, Konno R, Sasaki Y, Kishi R, et al. (2014). An exploratory study of Japanese fathers' knowledge of and attitudes towards HPV and HPV vaccination: does marital status matter. Asian Pacific Journal of Cancer Prevention, 15(4), 1837-1843.

Haruyama R, Okawa S, Akaba H, Obara H, Fujita N. (2021). A review of the implementation status of and national plans on HPV vaccination in 17 middle-ıncome countries of the WHO Western Pacific Region. Vaccines, 9(11),1355. https://doi.org/10.3390/vaccines9111355

Jalil AT, Karevskiy A. (2020). The cervical cancer (CC) epidemiology and human papillomavirus (HPV) in the middle east. International Journal of Environment. Engineering and Education, 2(2),7-12.

Kanmodi KK, Chidiebere O, Nwafor NJ, Amoo BA. (2020). Knowledge of HPV, HPV-induced cancers, and HPV vaccine among university students in medical laboratory science disciplines: Nigerian study. Gynecologic and Obstetric Investigation, 3(1),1-7.

Koç Z. (2015). University students' knowledge and attitudes regarding cervical cancer, human papillomavirus, and human papillomavirus vaccines in Turkey. Journal of American College Health, 63(1), 13-22.

Liu CR, Liang H, Zhang X, Pu C, Li Q, Li QL et al. (2019). Effect of an educational intervention on HPV knowledge and attitudes towards HPV and its vaccines among junior middle school students in Chengdu, China. BMC Public Health, 19(1), 1-9.

Monteiro DLM, Brollo LCS, Souza TPD, Santos JRPD, Santos GR, Correa T, et al. (2018). Knowledge on the HPV vaccine among university students. Revista do Instituto de Medicina Tropical de São Paulo, 60. https://doi.org/10.1590/s1678-9946201860046

Mukama T, Ndejjo R, Musabyimana A, Halage AA, Musoke D. (2017). Women's knowledge and attitudes towards cervical cancer prevention: a cross sectional study in Eastern Uganda. BMC women's health, 17(1), 1-8. https://doi.org/10.1186/s12905-017-0365-3

Nekooi MS, Ayazi S, Gandomi, Moosavi SG, Fakhri A. (2016). Level of knowledge about human papillomavirus infection among women of Kashan city, Iran. International Archives of Health Sciences, 3(1), 7-12.

Nyambe A, Kampen JK, Baboo SK, Van Hal G. (2019). Knowledge, attitudes and practices of cervical cancer prevention among Zambian women and men. BMC Public Health, 19(1), 1-15. https://doi.org/10.1186/s12889-019-6874-2

Oz M, Cetinkaya N, Apaydin A, Korkmaz E, Bas S, Ozgu E, et al. (2018). Awareness and knowledge levels of Turkish college students about human papilloma virus infection and vaccine acceptance. Journal of Cancer Education, 33(2),260-268. https://doi.org/10.1007/s13187-016-1116-0

Shaikh MY, Hussaini MF, Narmeen M, Effendi R, Paryani NS, Ahmed A, et al., (2019). Knowledge, attitude, and barriers towards human Papillomavirus (HPV) Vaccination among youths of Karachi, Pakistan. Cureus, 11(11). https://doi.org/10.7759/cureus.6134.

Swarnapriya K, Kavitha D, Reddy GMM. (2016). Knowledge, attitude and practices regarding HPV vaccination among medical and para medical in students, India a cross sectional study. Asian Pacific Journal of Cancer Prevention, 16(18), 8473-8477.

Turiho AK, Muhwezi WW, Okello ES, Tumwesigye NM, Banura C, Katahoire AR. (2015). Human papillomavirus (HPV) vaccination and adolescent girls' knowledge and sexuality in Western Uganda: A comparative cross-sectional study. Plos One, 10(9), e0137094. https://doi.org/10.1371/journal.pone.0137094

Widjaja VN. (2019). Awareness, knowledge and attitudes of human papillomavirus (HPV) among private university students-Malaysia Perspective. Asian Pacific Journal of Cancer Prevention, 20(7), 2045.

World Health Organization. Papillomavirus human (PVH) et cervical cancer (2019). Date of access:26.05.2020, https://www.who.int/fr/newsroom/fact-sheets/detail/human-papillomavirus-(HPV)-and cervical-cancer