RESEARCH ARTICLE

CYPRUS
JOURNAL OF MEDICAL SCIENCES

DOI: 10.4274/cjms.2021.1624
Cyprus J Med Sci 2021;6(Suppl 1):14-21

The Level of Knowledge About Human Papillomavirus and Attitude Towards Vaccination Among Young Women in Turkey

Tülay Yılmaz, Hüsniye DİNÇ KAYA, Sevil Günaydın, Ümmügülsüm Günay

Istanbul University-Cerrahpasa, Faculty of Health Sciences, Department of Midwifery, Istanbul, Turkey

Abstract

BACKGROUND/AIMS: Human papillomavirus (HPV) is a virus that may cause cancer, and it is important to protect against HPV. This study was carried out to determine the young women's knowledge and attitudes toward the HPV and HPV vaccine.

MATERIALS and METHODS: This descriptive and cross-sectional study was completed with 533 young women in Turkey. A questionnaire form consisting of a total of 26 questions investigating the socio-demographic characteristics of the students and their knowledge and attitudes toward the HPV and HPV vaccine used. Data were analyzed using the Statistical Package for the Social Sciences for Windows SPSS 20.0 (SPSS Inc., Chicago, IL, USA).

RESULTS: While 57% of the participants stated that they knew what HPV is, 66% stated that they learned this information during the course. While 54% of the participants stated that they knew the routes of HPV transmission, 98% stated that HPV is sexually transmitted, and 59% stated that HPV is transmitted through the blood. In the study, half of the participants heard of the HPV vaccine. However, there was no participant who received the HPV vaccine among them. A significant difference was determined between having knowledge of HPV and knowing the routes of HPV transmission, having heard of the HPV vaccine, intention to receive the HPV vaccine, intention to receive the HPV vaccine if it is freely available, and intention to receive the HPV vaccine if it is recommended by the doctor ($p<0.05$).

CONCLUSION: This study revealed the need for education due to the lack of knowledge about the HPV and its' vaccine.

Keywords: HPV; student health; cervical cancer; young women

INTRODUCTION

Human papillomavirus (HPV) is a double-stranded, non-enveloped DNA virus from the parvovirus family.[1] This virus causes benign proliferations, such as warts, epithelial cysts, hyperkeratosis, anogenital, oropharyngeal and laryngeal papilloma, or invasive malignancies.[2] Furthermore, its association with the cervical cancer has been precisely determined.[1] It is known that there are >200 defined types of HPV.[1-3] It is known that HPV types such as 6–11 that are known to be low-risk cause genital warts while the *HPV* types such as 16–18 that are known to be high-risk cause cervical or other anogenital cancers.[1-3]

Human papillomavirus affects 30%–50% of sexually active young women and is among the most common sexually transmitted infections worldwide.[4,5] This leads to a significant public health problems.[5] It is estimated that approximately 290 million women worldwide are infected with the HPV.[6] In the analyses performed

To cite this article: Yılmaz T, Dinç Kaya H, Günaydın S, Günay Ü. The Level of Knowledge About Human Papillomavirus and Attitude Towards Vaccination Among Young Women in Turkey. Cyprus J Med Sci 2021;6(Suppl 1):14-21

ORCID iDs of the authors: T.Y. 0000-0002-3706-3844; H.D. 0000-0002-8461-643X; S.G. 0000- 0003-2539-8783; Ü.G. 0000-0003-2131-6963.

Address for Correspondence: Tülay Yılmaz
E-mail: tyilmaz@iuc.edu.tr
ORCID ID: orcid.org/0000-0002-3706-3844

Received: 25.12.2019
Accepted: 02.02.2020

by the International Agency for Research on Cancer-IARC, HPV has been determined to be responsible for 5%–10% of female cancers. According to the Turkish Cancer Research data for 2015, cervical cancer is among the top 10 most common types of cancer in women.[7]

Attention is paid to the importance of protection before transmission with the HPV to avoid the human papillomavirus outbreak.[8] The protection strategies against HPV primarily include the elimination of the risk factors and prophylactic vaccination. In addition to the protection measures against HPV to reduce the mortality and morbidity associated with the HPV infection, attention is paid to the spread of screening programs and early treatment.[9-11]

The World Health Organization (WHO) recommends the HPV vaccine for girls in the 9–13 age group.[12] According to the American College of Obstetricians and Gynecologists, the vaccine provides protection close to 100%, when it is administered before the first sexual intercourse. The completion of the vaccine series is important before the sexual life begins to ensure the highest level of prophylactic efficacy against the cancer that may develop.[12,13] According to the International Federation of Gynecology and Obstetrics-FIGO, women aged between 9–26 years are recommended to receive the vaccine whether they are sexually active or not.[14] The WHO recommends the inclusion of the HPV vaccine in the national immunization protection program if vaccination strategy and financial support are appropriate for the country and the region. There are differences in terms of vaccination rates around the world.[10] The HPV vaccine is included in the national immunization programs of approximately of 45 countries, including Denmark, England, France, Germany, Sweden, and the United States.[15,16]

In our country, the Turkish Society of Gynecologic Oncology recommends the usage of HPV vaccine.[17] In Turkey, it is not yet included in the vaccine schedule.[13,17] Therate of vaccination against the HPV is observed to be very low despite the presence of HPV vaccines in Turkey. In the studies conducted, it was determined that the reasons for not receiving the vaccine were the lack of sufficient evidence for protection against cancer, expensiveness of the vaccine, and the fears of negative effects of the vaccine and infections.[8] According to a study carried out by Unutkan and Yangin[13], it is indicated that the fact that long-term efficacy and side effects of the vaccines have not been proven, and they are not included in the national immunization program in Turkey, affects the society's perspective on the vaccine despite of obtaining a new evidence on HPV vaccines every day.

In Turkey, there are studies published between 2010 and 2018 in which young women's levels of knowledge on HPV, its' vaccine, and their attitudes toward the vaccine were evaluated.[2, 8,13,18-20] In those studies, it was determined that the level of knowledge about the HPV was moderate (24.1%–55.7%) and the rate of the vaccination against HPV was very low (0.3%–1.9%) among young women in Turkey.[2,8,13,18-20] No study was conducted in Istanbul was found among those studies conducted in different provinces of Turkey.

This research was carried out as a descriptive study to determine the knowledge and attitudes of the young women, who are in a period during which primary protection could be achieved, regarding the HPV and HPV vaccine, and whether the rate of vaccination against the HPV varied among them. The results obtained are considered to contribute to an educational planning and political arrangements required for protection against the HPV.

MATERIALS AND METHODS

Research design

This is a descriptive and cross-sectional study.

Time of Data Collection

Data were collected between 18–30 June, 2018.

Study Samples

The study was carried out in female students studying in the midwifery, Physical Therapy and Rehabilitation, Healthcare Management, Social Services, and Gerontology departments at the Faculty of Health Sciences of a public university in İstanbul. All female students at the faculty (n=1,214) constituted the population of the study. Sample selection was not performed in the 1st, 2nd, 3rd, and 4th grades of all the departments of the faculty, and it was aimed to reach the entire population by a random sampling method. A total of 533 (44%) female students who agreed to participate in the study, were 18 years and older, were in the class on the day of conducting the questionnaire, and completed the questionnaires were included in the study.

Data Collection Tool Used in the Study

The questionnaire form was prepared by the researchers in accordance with the literature.[1-4,8,13,18-20] This form was submitted for an expert opinion assessment and necessary corrections were made. Then, a pilot study was conducted on 10 people to evaluate the questionnaire form. The form that was arranged because of the pilot study was finalized. A questionnaire form consisting of a total of 26 questions investigating the socio-demographic characteristics (16 questions) of the students and their knowledge (5 questions) about and attitude (5 questions) toward the HPV and HPV vaccine was used. Nine, fifteen and two of the answers to the questions in the questionnaire form were prepared as optional, yes/no, and open-ended, respectively.

The data were collected between 18–30 June, 2018 using the face-to-face interview method with the students in all grades of

the faculty departments. It took approximately 5–10 mins to fill in the questionnaire form. Students were briefly informed about the study.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences for Windows SPSS 20.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were presented as mean, number, and percentage in the data analysis. Comparisons were evaluated using the chi-square test.

Ethical Approval and Consent to Participate

Ethics committee approval was received for this study from İstanbul Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee (approval date: 25.06.2018, approval number: 2018-12-14). All procedures performed in the studies involving the human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable to the ethical standards. Informed consent was obtained from all the individual participants included in the study. All participants gave written consent to participate in the study. Filling in the questionnaire was anonymous.

RESULTS

A total of 533 (44%) students out of 1214 female students were included in the study. There was no student who received the HPV vaccine among the participants.

The mean age of the young women participating in the study was 20.37±1.50 (18–28 years), and it was determined that 39% of them were in the midwifery department, 35% were in the second grade, 92% were unemployed, 89% had health insurance, 56% had income equal to the expenses, 96% were single, and 6% graduated from a medical vocational high school (Table 1).

While 57% of the participants stated that they knew what HPV is, 66% of them stated that they learned this information during the course. While 54% of the students stated that they knew the routes of the HPV transmission, 98% stated that HPV is sexually transmitted, and 59% stated that HPV is transmitted through the blood, and 10% stated that HPV is transmitted through the skin contact, and 5% stated that HPV is transmitted through breathing. Of the students participating in the study, 78% reported that they did not consider themselves to be at risk of HPV (Table 2).

Of the participants, 50% heard of the HPV vaccine. While the rate of receiving information about the vaccine was 85%, only 48% of them stated that they intended to receive the vaccine. While 87% of the participants stated that they could receive the vaccine if it was recommended by the doctor, 68% of them stated that they could receive the vaccine if the HPV vaccine was freely available (Table 2).

A significant difference was determined between having the knowledge of HPV and knowing the routes of HPV transmission, considering herself to be at risk of HPV transmission, having heard of the HPV vaccine, intention to receive the HPV vaccine, and intention to receive the HPV vaccine if it is freely available, and recommended by the doctor ($p<0.05$) (Table 3).

DISCUSSION

Protection against the HPV, early diagnosis, and the treatment are of social importance in the prevention of cervical cancer which is the third most common cancer after the corpus and ovarian cancers in Turkey.[8,16] Informing the students about HPV and HPV vaccine is considered to be an important strategy for the prevention of HPV.[21] In this study, it was aimed to determine the young women's knowledge and attitudes toward the HPV and HPV vaccine.

State of Having Knowledge of HPV

A bit more than half of the students participating in this study stated that they had knowledge of HPV (Table 2). In other national

Table 1. Analysis results of the participants' socio-demographic characteristics (n=533)

		n	%
Department	Midwifery	209	39
	PTR	130	24
	Healthcare management	92	17
	Social services	67	13
	Gerontology	35	7
Grade	1st grade	162	30
	2nd grade	185	35
	3rd grade	160	30
	4th grade	26	5
Working status	Employed	45	8
	Unemployed	488	92
Health insurance	Yes	476	89
	No	57	11
Marital status	Married	5	1
	Single	512	96
	She has a sexual partner	16	3
Level of income	Income less than expense	150	28
	Income equal to expense	299	56
	Income higher than expense	84	16
School graduated	Medical vocational high school	30	6
	Other	503	94

PTR, Physical Therapy and Rehabilitation; n, Number.

Table 2. Knowledge about human papillomavirus and its vaccine (n=533)			
		n	%
Having knowledge of HPV	Yes	304	57
	No	229	43
Where did you hear about HPV*	Course subjects	199	66
	The internet	103	34
	Healthcare personnel	77	25
	Books	75	27
	Friends	41	14
	Media	40	13
Knowing the routes of HPV transmission	Yes	286	54
	No	247	46
Routes of HPV transmission*	Sexually	279	98
	Through blood	169	59
	Through skin contact	28	10
	Through breathing	5	2
Considering herself to be at risk of HPV	Yes	97	18
	No	413	78
	No idea	23	4
Having heard of the HPV vaccine	Yes	265	50
	No	268	50
Intention to receive information about the HPV vaccine	Yes	452	85
	No	81	15
Intention to receive the HPV vaccine	Yes	258	48
	No	246	46
	Undecided	29	5
Receiving the HPV vaccine if it is freely available	Yes	362	68
	No	156	29
	Undecided	15	3
Receiving the HPV vaccine if it is recommended by the doctor	Yes	464	87
	No	69	13

*More than one option was indicated among those knowing the routes of transmission.

HPV, Human papillomavirus; n, Number.

studies carried out with university students, it is observed that the rate of having the knowledge of HPV varies between 24.1% and 55.7%.[2,13,18,19] These results are like the results of our study. In some studies carried out abroad, similarly to the present study, it is observed that the level of having knowledge does not exceed 60%.[22-24] However, there are also overseas study results revealing the high levels of having the knowledge of HPV compared to this study.[21,25,26] It is obvious that the young women in this study need knowledge. The fact that these young individuals, who are the health care professionals of the future, have knowledge of HPV is important primarily in terms of their own health, and then the health of the community they will consult.

In this study, a bit more than half of the students stated that they knew the routes of HPV transmission (Table 2). In the study of Kavanagh et al.[23], it was observed that one-quarter of the participants knew the routes of HPV transmission. The fact that the rate of knowing the routes of HPV transmission was high in this study compared to the study of Kavanagh et al.[23] is since this study was carried out in a health-related faculty.

The participants of this study also stated that they mostly obtained information about the transmission during the courses (Table 2). The fact that the participants' main source of information was the courses is like the study result obtained by Shetty et al.[21]. This similarity is thought to be caused by the fact that the participants of both the studies were students. In the study conducted by Basnyat and Lim[27], the importance of the social and interpersonal networks in realizing HPV-related preventive health behavior was revealed. Therefore, it should not be ignored that the use of other means of communication, together with the courses, will be beneficial in increasing the level of knowledge among the young womens.

In this study, almost all the students who knew the routes of HPV transmission knew that it is sexually transmitted (Table 2). In the study carried out by Shetty et al.,[21] the knowledge that HPV is a sexually transmitted disease was on the first rank, which is like the result of this study. It is an expected result that those with knowledge of HPV also have a high level of awareness of transmission routes.

Three out of four students participating in our study reported that they did not consider themselves to be at a risk of HPV (Table 2). In the study of Leung and Law,[26] a bit more than half of the students stated that they thought they could be infected with HPV in the future. It is thought that this difference between the two studies was due to a high level of knowledge of HPV in the study carried out by Leung and Law.[26]

Situation Related to the HPV Vaccine

In this study, the fact that half of the participants heard of the HPV vaccine (Table 2) is like the study result obtained by Shetty et al.[21] In a study carried out by Yilmaz and Griffin[8] in Turkey, the number of students who heard of the HPV vaccine was found to be higher compared to this study. This difference is thought to be so since the participants of the study were only nursing students. In the studies carried out by Borlu et al.[20] and Durusoy et al.[18] in Turkey, it is also observed that the rate of having heard of the *HPV* vaccine is lower compared to this study. This difference is thought to be so since the studies also included university students apart from the health sciences students. In the studies carried out with the same age group abroad by Kasymova et al.[25] and Leung and Law[26], it was reported that the vast majority of the participants had knowledge of the HPV vaccine. The difference here is thought to be due to a high level of knowledge of HPV mentioned in the results of this study carried out abroad, and its inclusion in the national immunization schedule.

It was determined that more than three-quarters of the students intended to have a knowledge of the vaccine (Table 2). This situation suggests that information-seeking behavior increases as the awareness increases. In domestic[18,20] and international[26] studies carried out with the similar groups, the rate of asking for information about the vaccine was also found to be same like the result of this study. A high level of information-seeking behavior is thought to be so, since the study was carried out with individuals from a younger age group.

In this study, only half of the participants intended to receive the *HPV* vaccine (Table 2). In the studies carried out by Borlu et al.[20] and Durusoy et al.[18] with the university students in Turkey, it was observed that the ratio of those who intended to receive the HPV vaccine was far less compared to this study. The difference between this study and other studies is thought to be so since the other studies included non- health-related departments. In the study carried out by Shetty et al.[21] abroad, the rate of intention to receive the vaccine was higher compared to this study. Since there is a similarity between the two studies in terms of the age group and the education levels, this difference is thought to be due to a high level of knowledge of HPV in the study carried out by Shetty et al.[21] It is stated that the acceptability of the HPV vaccine is more possible when the people receive written educational information about the risks and benefits.[21]

It was observed that the rate of intention to receive the vaccine increased by one and a half when the vaccine is freely available (Table 2). In the study conducted by Kasymova et al.[25] in the United States, where HPV was included in the national immunization schedule, the ratio of those who received the vaccine was found to be higher compared to this study. In a study carried out by Basnyat and Lim[27] in Singapore, it was indicated that the confidence in the Government's health policies increased the rate of the confidence in the vaccine. This also suggests that it is important to receive the Government's support in the acceptance of the HPV vaccine.

In the present study, it was found out that the number of people who stated that they could receive the vaccine if it was recommended by the doctor increased by the two times (Table 2). It is known that health care providers play an essential role in the patient education regarding the benefits of the HPV vaccine and offering a strong recommendation.[21] Indeed, in the study by Kasymova et al.[25] in which the vaccination rate was found to be high, it was determined that three-quarters of those with the vaccination received the vaccine with the doctor's recommendation. In the studies by Basnyat and Lim[27] and Leung and Law[26], it was also indicated that the health care providers play an essential role in the vaccination decision. In the study carried out by Durusoy et al.[18], it was determined that being aware of the vaccine was an important determinant of a positive attitude toward the vaccination. This reveals that health care providers' recommendation and having knowledge of the vaccine are important factors in the increase of vaccination acceptance.

It was observed that those with the knowledge of HPV mostly intended to receive the HPV vaccine (Table 3). In the study by Zhuang et al.[28], the lack of knowledge was determined to be the biggest obstacle in receiving the HPV vaccine. In the study by Shetty et al.[21], it was determined that a more positive attitude toward

Table 3. Comparison of having knowledge of human papillomavirus and some parameters (n=533)

Having knowledge of human papillomavirus*					
		Yes	No	χ^2	p
Knowing the routes of HPV transmission**	Yes	247 (46%)	39 (7%)		
	No	57 (11%)	190 (36%)	219.881	**0.000**
Considering herself to be at risk of HPV transmission	Yes	75 (14%)	22 (4%)		
	No	221 (42%)	192 (36%)	23.028	**0.000**
	No idea	8 (1%)	15 (3%)		
Having heard of the HPV vaccine	Yes	221 (42%)	44 (8%)	149.449	**0.000**
	No	83 (15%)	185 (35%)		
Intention to receive the HPV vaccine	Yes	172 (32%)	86 (16%)		
	No	115 (21%)	131 (25%)	20.420	**0.000**
	Undecided	17 (3%)	12 (2%)		
Receiving the HPV vaccine if it is freely available	Yes	225 (42%)	137 (26%)	12.324	**0.002**
	No	73 (14%)	83 (15%)		
	Undecided	6 (1%)	9 (2%)		
Receiving the HPV vaccine if it is recommended by the doctor	Yes	274 (51%)	190 (36%)	5.945	**0.015**
	No	30 (6%)	39 (7%)		

*Knowing that HPV causes cancer, knowing the ways of prevention from HPV etc.

**Sexually, through blood etc.

p <0.05; HPV, Human papillomavirus; n, Number.

the vaccination was associated with the intention to receive the HPV vaccine. In the study carried out by Leung and Law[26], it was determined that those with the knowledge of HPV had positive attitudes toward the HPV vaccine. Devarayasamudram et al.[24] indicated that a structured curriculum would be effective in the increasing young women's knowledge about and attitudes toward HPV. Therefore, it is important to raise the awareness of HPV and its vaccine. Furthermore, information is an important variable in increasing the acceptability of the vaccine.

In this study, there was no one who received the vaccine. In the studies carried out with university students in Turkey, the vaccination rate was found to be three per thousand by Borlu et al.[20] and four per thousand by Durusoy et al.[18] It is an expected result that the vaccination rate is too low while the level of knowledge of HPV and HPV vaccine was so low[18,20] and the HPV vaccine is not included in the country's routine vaccination policy.[17] In the study carried out by Leung and Law[26] abroad with the female students in Hong Kong, it was observed that approximately half of the students were vaccinated. It is thought that such a high rate of vaccination was caused by discounting the HPV vaccine to female university students.[26]

CONCLUSION

Half of the students did not have knowledge of HPV. There was no one who received the vaccine among the participants. Most of the students intended to have a knowledge of the vaccine. Students' primary source of information is the courses.

When other studies on HPV and HPV vaccine carried out in Turkey were considered, in those studies, the level of knowledge about the HPV did not vary, there was no individual who received the vaccination against HPV, intention to receive the information about the vaccine did not vary among most young women, the rate of those who intended to receive the vaccine increased, and the rate of those who intended to receive the vaccine increased if the vaccine was freely available. It could be interpreted that young women's knowledge about the HPV was still moderate. However, there were positive attitude changes toward the HPV vaccine, even if they did not receive the vaccine.

This study reveals the need for education to increase the awareness of HPV and its vaccine. It is important that the Faculty of Health Sciences students, as health care providers in the future, have knowledge of HPV and its vaccine. To increase students' awareness, elective courses to raise awareness of the cancer could be added, brochures could be prepared, informative meetings could be held, and they could be provided with the opportunities to receive consultancy service in this regard.

Recommendations

It may be recommended to provide the education for increasing the levels of knowledge about the HPV and its vaccine and

arrange the curriculum, carry out studies including men, add the HPV vaccine to the national immunization schedule, include it in the current government policies, provide the flow of accurate information about the HPV through the social media.

Limitations of the Study

This study has limitations, such as the fact that it was a descriptive and cross-sectional study and was carried out in a single center and included only the female students. Our results cannot be generalized since the study was carried out in a single center. Since the HPV is a sexually transmitted infection, men's knowledge, and attitude toward the vaccination are also important. Men's knowledge and attitudes were not evaluated in this study.

Acknowledgements

We would like to thank all the participants for helping with recruitment for the study.

ETHICS

Ethics Committee Approval: Ethics committee approval was received for this study from İstanbul Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee (Date: 25.06.2018, number: 2018-12-14).

Informed Consent: All participants gave written consents.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Conception: T.Y., H.D., S.G., Ü.G.; Design: T.Y., H.D., S.G., Ü.G.; Data Collection and/or Processing: T.Y., H.D., S.G., Ü.G.; Analysis and/or Interpretation: T.Y., H.D., S.G., Ü.G.; Literature Review: T.Y., H.D., S.G., Ü.G.; Writing: T.Y., H.D., S.G., Ü.G.; Critical Review: T.Y.

DISCLOSURES

Financial Disclosure: The author declared that this study had received no financial support.

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Gerend MA, Shepherd JE. Correlates of HPV knowledge in the era of HPV vaccination: A study of unvaccinated young adult women. *Women Health*. 2011;51:25-40.
2. Guvenc G, Akyuz A, Seven M. Determination of the knowledge and attitudes of nursing students about human papilloma virus infection and its vaccines. *Gulhane Med J*. 2012;54:104-110.
3. Yuksel KB, Sencan H, Kucur SK, et al. The knowledge and tendency of doctors, nurses and hospital staff working in Dumlupinar University - Evliya Celebi Research and Training Hospital about human papilloma virus (HPV) infections and HPV vaccination. *J Obstet Gynecol Neonatal Nurs*. 2015;12:64-67.
4. Tu YC, Wang HH, Lin YJ, Chan TF. HPV knowledge and factors associated with intention to use condoms for reducing HPV infection risk among adolescent women in Taiwan. *Women Health*. 2015;55:187-202.
5. Anderson S, Isaac A, Jeffery CC, et al. Practices regarding human papillomavirus counseling and vaccination in head and neck cancer: A Canadian physician questionnaire. *J Otolaryngol Head Neck Surg*. 2017;46:61.
6. Santhanes D, Wong CP, Yap YY, et al. Factors involved in human papillomavirus (HPV) vaccine hesitancy among women in the South-East Asian Region (SEAR) and Western Pacific Region (WPR): A scoping review. Hum Vaccin Immunother. 2018;14:124-133.
7. Turkish Ministry of Health cancer. Stat Interface, (Turkey), 2017. Available at: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/istatistik/2014-RAPOR._uzuun.pdf;2015
8. Bal-Yılmaz H, Koniak-Griffin D. Knowledge, behaviors, and attitudes about human papilloma virus among nursing students in Izmir, Turkey. *J Canc Educ*. 2018;33:814-820.
9. Bozkurt OD, Hadimli A, Sen E, et al. Knowledge and view of nursing students towards human papilloma virus (HPV) infection and vaccine: Regional variations. *JACSD*. 2016;5:23-48.
10. Martínez-Gómez X, Curran A, Campins M, et al. Multidisciplinary, evidence-based consensus guidelines for human papillomavirus (HPV) vaccination in high-risk populations, Spain, 2016. *Euro Surveill*. 2019;24:1700857.
11. World Health Organization. Human papillomavirus (HPV) and cervical cancer. (2019). Available at: https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus- (hpv)-and-cervical-cancer.
12. World Health Organization. Comprehensive cervical cancer control: A guide to essential practice - 2nd ed. (2014). Available at: https://apps.who.int/iris/bitstream/handle/10665/144785/9789241548953_eng.pdf;j
13. Unutkan A, Yangin HB. Determining the knowledge and opinions of the university student about human papilloma virus vaccine. *TAF Prev Med Bull*. 2016;15:151-158.
14. International Federation of Gynecology Obstetrics. FIGO statement on HPV vaccination safety. (2013). Available at: https://www.figo.org/sites/default/files/uploads/project-publications/Statement%20on%20Safety%20of%20HPV%20vaccination%20-
15. Saslow D, Solomon D, Lawson HW, et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. *CA Cancer J Clin*. 2012;62:147-172.
16. Public Health Agency of Turkey Ministry of Health Department of Cancer, CervicalCancer Screening Program National Standards https://hsgm.saglik.gov.tr/tr/kanser-tarama-standartlari/listesi/483-serviks-kanseri-tarama-program%C4%B1-ulusal-standartlar%C4%B1.htmlAccessed (15 March 2019).
17. Turkish Society of Gynecologic Oncology asilari. Available at: http://www.trsgo.org/menu/157/hpv-
18. Durusoy R, Yamazhan M, Tasbakan MI, et al. Determination of knowledge of Turkish midwifery students about human papilloma virus infection and its vaccines. *Asian Pac J Cancer Prev*. 2013;14:6775-6778.
19. Genc RE, Sarican ES, Turgay AS, Icke S, Sari D, Saydam BK. Determination of knowledge of Turkish midwifery students about human papilloma virus infection and its vaccines. *Asian Pac J Cancer Prev*. 2013;14:6775-6778.
20. Borlu A, Gunay O, Balci E, et al. Knowledge and attitudes of medical and non-medical Turkish university students about cervical cancer and HPV vaccination. *Asian Pac J Cancer Prev*. 2016;17:299-303.
21. Shetty S, Prabhu S, Shetty V, et al. Knowledge, attitudes and factors associated with acceptability of human papillomavirus vaccination among

undergraduate medical, dental and nursing students in South India. *Hum Vaccin Immunother.* 2019;15:1656-1665.

22. Donadiki EM, Jiménez-García R, Hernández-Barrera V, et al. Knowledge of the HPV vaccine and its association with vaccine uptake among female higher-education students in Greece. *Hum Vaccin Immunother.* 2013;9:300-305.
23. Kavanagh FG, McNamara AT, Fopohunda O, et al. Human Papilloma virus-associated head and neck cancer: A 21st century pandemic; assessing student awareness and knowledge. *Ir Med J.* 2018;111:837.
24. Devarayasamudram S, De Gagne JC, Kurudi NP, et al. Effectiveness of a structured teaching program on knowledge and attitudes toward HIV among young women in India. *J Commun Health Nurs.* 2018;35:49-56.
25. Kasymova S, Harrison SE, Pascal C. Knowledge and awareness of human papillomavirus among college students in South Carolina. *Infect Dis (Auckl).* 2019;12:1178633718825077.
26. Leung JTC, Law CK. Revisiting knowledge, attitudes and practice (KAP) on human papillomavirus (HPV) vaccination among female university students in Hong Kong. *Hum Vaccin Immunother.* 2018;14:924-930.
27. Basnyat I, Lim C. Perspectives of young Chinese Singaporean women on seeking and processing information to decide about vaccinating against human papillomavirus. *Women Health.* 2018;58:806-821.
28. Zhuang QY, Wong RX, Chen WM, et al. Knowledge, attitudes and practices regarding human papillomavirus vaccination among young women attending a tertiary institution in Singapore. *Singapore Med J.* 2016;57:329-333.