Awareness of human papillomavirus and acceptability of human papillomavirus vaccine: A survey of Turkish university students

Human papilloma virüsü hakkında farkındalık ve human papilloma virüs aşısının kabul edilebilirliği: Türk üniversite öğrencileri araştırması

Human papillomavirus vaccine survey university students Turkey

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Öz

Amaç: Türk üniversite öğrencilerinin Human Papilloma Virüsü (HPV) hakkında farkındalıklarını ve HPV aşısının yaptırılmasını etkileyen faktörlerin değerlendirilmesini amaçladık. Gereç ve Yöntem: Bu kesitsel çalışmada, Ankara, Türkiye'de 158'i iletişim fakültesi ve 129'u Tıp fakültesi olmak üzere, toplam 287 öğrenciye 33 sorudan oluşan bir anket uygulandı. Bulgular: HPV aşısının olası yan etkileri, HPV aşısının kanserden ve genital siğilden koruyucu etkileri, HPV enfeksiyonun seksüel yolla geçişi öğrencilerin aşılanma isteğini etkileyen faktörler idi. HPV aşısının kanserden koruyucu etkisinin farkındalığı (7,7-odds) HPV aşısı yaptırmada en güçlü faktör olarak bulundu. Tartışma: Türk üniversite öğrencilerinin HPV için aşılanma oranlarını arttırmak için HPV aşısının kanserden koruyucu etkisinin iyi açıklanmasına ihtiyaç vardır.

Anahtar Kelimeler

Farkındalık; Human Papillomavirüs; Human Papillomavirüs Aşısı; Türk Üniversite Öğrencileri; Servikal Kanser

Abstract

Aim: We aimed to assay the awareness of Human Papilloma Virus (HPV) and factors affecting willingness of HPV vaccination among Turkish university students. Material and Method: A total of 287 students (158 from the department of communication and 129 from the department of medicine) received a survey including 33 questions in this cross-sectional study in Ankara, Turkey. Results: The probable adverse effects of HPV vaccine, protective effects from cancer and genital wart of HPV vaccine, sexually transmission risk of HPV infection were the significantly different factors among students which affect willingness of vaccination. Awareness of HPV vaccination about its protective effect from cancer was found the most powerful factor (7.7-odds) for HPV vaccine administration. Discussion: The protective effect of the HPV vaccine from cancer needs to be well described to increase the HPV vaccination among Turkish university students.

Keywords

Awareness; Human Papillomavirus; Human Papillomavirus Vaccine; Turkish University Students; Cervical Cancer

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Introduction

Cervical cancer is the most common gynecological cancer all over the world [1] approximately 500,000 cases per year are diagnosed and 80% of those cases occur in developing countries [2,3]. Differences in prevalence of cervical cancer between developed and developing countries are associated with the generally successful use of the screening programs in developed countries.

After the proven association between Human Papilloma Virus (HPV) and HPV-related diseases, research to prevent HPV transmission, in particular HPV vaccination, was encouraged by the investigators. HPV vaccination can prevent HPV-related diseases, including genital warts, vaginal, anal and cervical cancer [4]. Since the United States Food and Drug Administration (FDA) had approved of the first HPV vaccination in 2006, HPV vaccination became widespread, particularly in developed countries. HPV vaccination was introduced in national vaccination programs in at least 66 countries.

Turkey is a country located in middle-east, and neighbors the European Union. 99.2 % of the citizens in Turkey are Muslim. The HPV vaccination rate in Turkey is not evident. We may figure out approximate HPV vaccination rates through selling reports of companies. In total, 188,402 box HPV vaccine had been sought from 2007 until August 2016, in Turkey. This data points that approximately 60, 000 women (0.17 % of total women population) had HPV vaccination in 9 years. The estimated rate is considered to be very low compared to those of developed countries. By 2010, the rates of HPV vaccination reached 37.6 % and 32 % in USA and in Austria, respectively [2,3].

The Ministry of Health of Republic of Turkey consider to add HPV vaccination to the national vaccination program. In a developing country as Turkey, although HPV vaccination is introduced free of charge as part of national HPV vaccination; the implementation of HPV vaccine may be lower than expected because of some superstitions and religious reasons which may arise due to the lack of knowledge about HPV and its vaccination. Therefore, it carries quite importance to know the awareness, attitudes and factors affecting HPV vaccination among young citizens lived in a Muslim country as Turkey, so we conducted this study assay the awareness and factors affecting acceptability of HPV vaccine among Turkish university students.

Material and Method

This is a cross-sectional study assaying awareness and factors affecting acceptability of HPV vaccination between January and April 2015 in Ankara, Turkey. A total of 287 undergraduate students at Ankara University; 158 from the department of communication (DoC) and 129 from the department of medicine (DoM), received a self-administered survey including 33 questions.

The survey was designed to evaluate the awareness and knowledge about HPV infection and vaccine. The survey was divided into 3 main parts and contained 33 questions in total. The first part of the survey explored demographics and non-identifying information such as age, gender, smoking status, sexual experience, current vaccination status, knowledge and awareness about HPV infection and HPV vaccine. The second part explored acceptability of HPV vaccine and factors that affect this decision. There were 5 questions in this part. Each of those 5 factors were in a 4-point Likert scale, from 1 to 4; 4-point scale (strongly non-important, not-important, important, strongly important) on the participants' attitudes regarding having HPV vaccine. The evaluated factors were the price of the HPV vaccine, likely adverse effects of the HPV vaccine, belief on low risk to transmission of HPV infection to themselves, preventive effect of HPV vaccine from cervical cancer and protective effect of HPV vaccine from genital warts. The mean points were determined for each factor. The third part of the survey aimed to evaluate the knowledge about HPV infection and HPV vaccine. This part had a scale comprised of 19 ''True or False'' questions. In the third part, the total knowledge score was calculated on a 0-100 scale, based on the fraction of correct answers to the questions.

The normality of the variables was analyzed by the Kolmogorov–Smirnov test. Student's t test or the Mann–Whitney U test were used to compare the categorical and continuous variables. Chi-square or Fisher's exact test were performed for nonparametric variables between groups. Odds ratios and 95% confidence intervals (CIs) for factors affecting acceptability of HPV vaccine were calculated via a logistic regression model. Two-sided p values were considered statistically significant at $p < 0.05$. Statistical analyses were carried out using SPSS 17.0 for Windows (SPSS Inc., Chicago, IL, USA).

This project received ethical approval from the Ankara University Institutional Review Board and the Ethics Committee.

Results

The socio-demographic characteristics, attitudes and knowledge of the students of the DoC and the DoM groups about HPV infection and HPV vaccine were shown in Table 1. There were statistical significant differences between DoC and DoM groups in terms of average ages; 22.4 ± 1.9 years vs 24.1± 0.8 years, smoking status; 44.9 % vs 24.8 %, sexual intercourse; 46.2 % vs 22.5 %. The willingness of HPV vaccination; 48.7 %

Table 1. Social-demographic characteristics of the participated students

Variables	Students of the DoC n=158	Students of the DoM n=129	p value
Age (years)	22.4 ± 1.9	24.1± 0.8	< 0.001
Number of the participants who recommend HPV vaccine	99 (62.7)	123 (95.3)	< 0.001
Gender Male Female	 79 (50.0) 79 (50.0))	 73 (56.6) 56 (43.4)	 0.266
Being in a relationship	65 (41.1)	50 (38.8)	0.682
Smoking	71 (44.9)	32 (24.8)	< 0.001
Sexual intercourse	73 (46.2)	29 (22.5)	< 0.001
Number of the participants who had HPV vaccine before survey	0 (0)	3 (2.3)	0.091
Willingness of HPV vaccination	77 (48.7)	81 (62.8)	0.017
Number of the participants who had heard HPV vaccine	22 (13.9)	117 (90.6)	< 0.001
[a] Total knowledge (for HPV infection and vaccine) (%)	10.5 (0-89.4)	68.5 (0-100)	< 0.001

Values are given as mean ± SD, median (min-max) and number (percentage), HPV: human papilloma virus, DoC: Department of Communication, DoS: Department of Medicine, [a]: The knowledge percentile about HPV infection and cervical cancer, *p<0.05 is considered statistically significant

vs 62.8 %, the number of the participants who had heard HPV vaccine; 13.9 % vs 90.6 % and total knowledge for HPV infection and vaccine 10.5 % vs 68.5 % were significantly higher in DoC group than DoM group.

The comparison of willingness HPV vaccination among students was shown in Table 2. The willingness of HPV vaccination was significantly higher in female students than male students (p< 0.001) and the students of the DoM have higher significantly willingness of HPV vaccination than the students of the DOC, p=0.017.

Table 2. Comparison of willingness HPV vaccination among students

Variables	Willingness n=158	Non-willingness n=129	p value
Gender			
Male	68 (44.7)	84 (55.3)	< 0.001
Female	90 (66.6)	45 (33.4)	
Students of the DOC	77 (48.7)	81 (51.3)	
Students of the DoM	81 (62.8)	48 (37.2)	0.017
Being in a relationship	63 (39.9)	52 (40.3)	0.940
Smoking	58 (36.7)	45 (34.9)	0.748

Values are given as number (percentage) , DoC: Department of Communication, DoS: Department of Medicine, HPV: human papilloma virus, *p<0.05 is considered statistically significant

Four of the 5 variables; including likely adverse effects of HPV vaccine point (p< 0.001), sexually transmission risk of HPV infection point (p< 0.001), protective effect of HPV vaccine from cancer point (p< 0.001) and protective effect of HPV vaccine from genital wart point (p<0.001), were found to be statistically significant among students compared willingness versus non-willingness HPV vaccination groups (Table 3).

Table 3. Comparison of the factors affecting willingness HPV vaccination among students

[a] Variables	Willingness n=108	Non-willingness n=39	p value
Cost of the HPV vaccine	1.1 ± 1.0	0.9 ± 0.8	0.649
Adverse effects of HPV vaccine	2.5 ± 0.6	1.8 ± 1.0	< 0.001
Transmission risk of HPV	2.5 ± 0.6	1.6 ± 1.1	< 0.001
Protective effect of HPV vaccine from cancer	2.7 ± 0.6	1.0 ± 0.6	< 0.001
Protective effect of HPV vaccine from genital wards	2.5 ± 0.7	1.0 ± 0.7	< 0.001

[a] Each of those variables were in a 4-point Likert scale, from 1 to 4; 4-point scale (strongly important, important, not-important, strongly non-important) on the participants' attitudes regarding having HPV vaccine, Statistical analysis were performed through the numeric value of the points. Values are given as mean ± SD, median (min-max), HPV: human papilloma virus, *p<0.05 is considered statistically significant

When we performed logistic regression analysis of independent risk factors' point by using a cut-off score level ≥3 to identify the most important factors for willingness of having HPV vaccination among students, we found the protection from cancer score ≥3 was merely the significantly statistical factor which affected the willingness of having HPV vaccine (OR: 7.7, CI: (3.4-17.6), p< 0.001), (Table 4).

Table 4. Logistic regression analysis of independent risk factors' point for willingness of having HPV vaccination among students (n= 158).

Variables	OR (95% CI)	P value
Price point ≥3*	0.5 (0,2-1.1)	0.104
Adverse effects point ≥3*	0.5 (0.2-1.1)	0.099
Transmission risk point ≥3*	1.4 (0.7-2.9)	0.312
Protection from cancer point ≥3*	7.7 (3.4-17.6)	< 0.001
Protection from genital ward point ≥3*	1.2 (0.6-2.6)	0.485

OR: Odds Ratio, CI: Confidence Interval, *p<0.05 is considered statistically significant, Price point: price of the HPV vaccine point, Adverse effects point: likely adverse effects of HPV vaccine point, Transmission risk point: sexually transmitted risk of HPV infection point, Protection from cancer point: protective effect of HPV vaccine from cancer points, Protection from ward point: protective effect of HPV vaccine from genital wart point.
*: Each of those 5 factors were scored from 1 to 4; 4-point scale (strongly non-important, not-important, important, strongly important) on the participants' attitudes regarding having HPV vaccine.

Discussion

We evaluated the university students (students of the department of communication vs students of the department of medicine) by the same self-administered survey including questionnaires aimed to assess the awareness and factors affecting acceptability of HPV vaccine. The awareness, total knowledge and willingness of the students of the department of medicine regarding HPV vaccine was higher than of the students of the department of communication. The likely adverse effects of HPV vaccine, sexually transmitted risk of HPV infection, protective effect of HPV vaccine from cancer, protective effect of HPV vaccine from genital wart were the factors that affect the willingness of HPV vaccination among the university students. When compared with other factors, the protective effect of HPV vaccine from cancer was the only factor that increased the willingness of HPV vaccination by 7.7-fold.

We found that the acceptance of the HPV vaccine among students from DoM were 62.8 %. The corresponding values were found as 48.7 % among students of the DoC. In a study by Pandey et al. [5], the acceptance of the HPV vaccine among medical students was found to be 67.8 %. This ratio was similar to the findings of the current study for students from DoM. In current study, we found that the increased awareness concerning HPV infection and vaccine was associated with high willingness of having HPV vaccine as it was indicated in previous studies [6-8]. Education about diseases may also be considered as one of the important parameters to struggle with those diseases. In a study, investigating the cervical cancer knowledge, education about the disease resulted in improvements [9].

The gender may be considered as an important factor concerning acceptance of HPV vaccine. In current study, 44.7% of the male participants and 66.6% of the female participants were amenable for HPV vaccination. In a recent study conducted among young males aged 14-24 in Italy, 54.9% of the participants reported that they had heard of HPV infection, and after being explained about HPV infection and vaccine, 58.2% of the participants reported that they would be willingness HPV vaccination [10]. In the current study, the rates of willingness HPV vaccination were found to be significantly lower in male students than in female students (44.7% vs. 66.6%). This finding actually may have similar viewpoints with the first HPV vaccination policy which was considered the target population as girls only. However, more recent data and vaccination policy include adolescent boys for HPV vaccination anymore [11,12].

In the current study, only 13.9% of students of the DoC have heard of HPV infection. This percentage was comparably lower than in western countries; such as Denmark, in which the rates of hearing HPV infection was 78%; respectively [13]. Unfortunately, in current study; we could reach those high levels of awareness (79.1%) only among students of Medicine University. In several studies, it has been shown that the acceptance of the HPV vaccine increased after explanation of HPV vaccine and its benefits [11-13]. Current study has showed that the willingness of the HPV vaccine depended on the high awareness and knowledge of the HPV infection and vaccine. The likely adverse effects of the vaccine, transmission risk of HPV infection, protective effect of HPV vaccine from cancer and protective effect of the HPV vaccine from genital ward were the significantly important factor that affect the willingness of HPV vaccination of the students. In particular, being aware of the protective effect of HPV vaccine from cancer was the most important factor and was found to be associated with higher willingness rate of having HPV vaccine; it increased the acceptability of HPV vaccine 7-folds among students.

In total, 188,402 box HPV vaccine had been sought from 2007 until August 2016, in Turkey. This data points that approximately 60, 000 women (0.17 % of total women population) had HPV vaccination in 9 years. The estimated rate is considered to be very low compared to those of developed countries. By 2010, the rates of HPV vaccination reached 37.6 % and 32 % in USA and in Austria, respectively [4]. Islam is the largest religion in Turkey with 99.2 % of the population being recognized as Muslim according to the survey which was done by Republic of Turkey Presidency of Religious Affairs. It may be more difficult to explain the benefits of a vaccine that prevents diseases mostly related with sexual relation in a country which most of the citizens were Muslim. Additionally, in some conservative cultures, virginity is considered as a high moral standing, and a woman who had extramarital sex or polygamy may suffer from various social or familial problems [14,15]. In Muslim countries and in conservative cultures, a negative campaign against vaccination may be arranged easily with speculations that the vaccination leads the people to extramarital sex or polygamy which the religion had banned. Although all those negative thoughts, in the local meetings with the representatives of the Ministry of Health of Republic of Turkey; it was mentioned that they consider the HPV vaccination to add to the national vaccination program. However, there is a lack of knowledge about awareness and attitude of Turkish young population about HPV infection and its vaccine. Therefore, studies about HPV vaccination from Turkey should be encouraged and the policies which increase the awareness and knowledge about HPV and its vaccination should be supported.

In conclusion, current study showed that the awareness of HPV vaccination about its protective effect from cancer was the most powerful factor for HPV vaccine administration among Turkish university students. The protective effect of the HPV vaccine from cancer needs to be well described to increase the HPV vaccination among Turkish university students.

Statement of Human and Animal Rights: The authors undersign, certificate that the procedures and the experiments. The authors have done respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2000, as well as the national law.

Competing interests

The authors declare that they have no competing interests.

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