

Nurses' Knowledge and Opinions on HPV Vaccination: a Cross-Sectional Study from Istanbul

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Published online: 18 August 2017

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Abstract Implementing a HPV vaccination program is currently under evaluation by the Turkish health ministry. For screening and vaccination programs to be successful, the cooperation of nurses is essential. We aimed to evaluate (1) basic knowledge of nurses and nursing interns regarding HPV infection and cervical cancer, (2) their attitudes towards smear testing and HPV vaccination, and (3) their viewpoint on vaccination of school age children. This cross-sectional study was undertaken at Bezmialem Vakıf University. The survey was designed to assess knowledge about HPV infection, Pap smear testing, cervical cancer, HPV vaccine, attitudes towards HPV vaccination, and school-based vaccination programs. Validity content was determined by expert gynecologists, and a pilot study was performed on 10 nurses. A total of 550 questionnaires were handed out; 499 were completed. Our response rate was 90.7%. Fifty-nine participants answered all the knowledge questions correctly. The calculated knowledge score of the female participants was 6.99 ± 2.22 , the male participants was 5.89 ± 2.92 . Female participants were more knowledgeable ($p < 0.0001$). Out of the 353 female participants, 18.6% ($n = 66$) had undergone smear testing. There were 20 (5.6%) female and 6 (4%) male participants who were vaccinated against HPV. The leading answer for not having a HPV vaccine was “I’m not at risk for a HPV infection” ($n = 106$, 34.9%). There was a statistical relationship between

“HPV knowledge score” and answering “Yes” to “Do you want your children/future children to be vaccinated?” ($p = 0.001$) and “Do you think including the vaccine in the Turkish immunization program is necessary?” ($p = 0.001$). Nurses in our cohort seem to have satisfactory basic knowledge regarding HPV infection; however, their viewpoints on vaccination were not favorable. Strategies and intervention materials for HPV vaccination will be necessary if a national immunization program will be initiated.

Keywords HPV knowledge · HPV vaccination · HPV infection awareness

Introduction

HPV is one of the most common sexually transmitted viruses worldwide. HPV infection affects both men and women, although men are usually asymptomatic carriers. There are around a hundred strains of the virus which are categorized into low-risk and high-risk subtypes according to their carcinogenic potential [1]. Most of the HPV infections are asymptomatic and transient. Forty types are known to be transmitted via sexual contact along with more than a dozen types designated as high-risk HPV [2]. High-risk human papillomavirus (HR-HPV) infection has been recognized as the crucial source of cervical cancer since the 1990s [3]. In Turkey, cervical cancer is the third most common genital cancer in women. The incidence is estimated as 3.7% of all cancers. Cancer mortality due to cervical cancer is estimated to be around 2.4–5.8% [4].

The World Health Organization recognizes cervical cancer as the first type of carcinoma caused almost entirely by a viral infection. Besides causing cervical cancer, HPV infection is also responsible for 5% of all cancers worldwide including

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vulvovaginal, penile, anal, and oropharyngeal cancers [5]. HPV infection awareness and knowledge play an important role in prevention of cervical cancer. Tied efforts of vaccination and cancer screening are the next step in preventive medicine [6]. Healthcare workers, especially nurses, are primary collaborators in providing recommendation of these vaccines [7]. It is crucial that nurses involved are themselves knowledgeable and dispose a positive sentiment towards HPV vaccines.

The Turkish National Cancer program has been active since 1992. Previously, it was cytology based, but since August 2014, cervical cancer screening is completed by HPV testing and reflex cytology testing in cases with a positive result. HPV vaccines have been proven to result in safe, effective, and long-lasting immunization against infection. Various countries in the world have implemented the vaccination in their school children immunization program. Recently, the ACIP (Advisory Committee on Immunization Practices) recommended a 2-dose schedule for HPV vaccination for girls and boys who initiate the vaccination series at ages 9 through 14 years (category A recommendation) [8].

Installing a HPV vaccination program is currently under debate in Turkey [9]. Education and establishing preventive knowledge in the community is essential for infection prevention and vaccination efforts. For screening and vaccination programs to be successful, the cooperation of nurses is essential. We aimed to evaluate (1) basic knowledge of nurses and nursing interns regarding HPV infection and cervical cancer, (2) their attitudes towards smear testing and HPV vaccination, and (3) their viewpoint on vaccination of school age children.

Material and Methods

Study Sample

Between January 2016 and June 2016, nursing interns of Bezmialem Vakif University and nurses working at Bezmialem Vakif University Hospital and Suleymaniye Research and Training Hospital were approached by gynecology residents to participate in a survey. The survey was designed to assess their knowledge about HPV infection, Pap smear testing, cervical cancer, HPV vaccine, and their attitudes towards HPV vaccination and school age children vaccination.

Ethical Considerations and Study Protocol

The study was constructed according to the Declaration of Helsinki and approved by the Institutional Review Board of Bezmialem Vakif University. Validity content was determined by expert gynecologists, and a pilot study was performed on 10 nurses. A translated version of the questionnaire is available (Fig. 1). A total of 550 questionnaires were handed out; 499

were completed. Our response rate was 90.7%. There were 353 female and 146 male participants. The first part of the questionnaire included inquiries related to sociodemographic characteristics. In the second part, 10 questions were asked to determine the knowledge regarding HPV infection and smear testing. A knowledge score was calculated by adding the scores to the correct answers. The correct statements were designated to receive 1 point while the other options were given 0. Thus, the score ranged between 0 and 10. The questions in the last part were related to attitudes and beliefs regarding smear testing and HPV vaccination. A separate analysis was performed to establish the relation between knowledge score and attitudes towards HPV vaccination.

Data Analysis

Statistical analysis was performed utilizing SPSS (Statistical Package for the Social Sciences) version 21.0 (IBM Corp, Armonk, NY, USA) statistical software. Descriptive statistics were given as mean and standard deviation for continuous variables and frequency and percentage (%) for categorical variables. For the analysis of categorical variables, Pearson chi-square test was used. Statistical significance was set at $p < 0.05$. Comparison of knowledge scores between groups was analyzed with one-way ANOVA.

Results

Demographic Characteristics of the Participants The median age was 25.9 ± 6.1 . One hundred nine (31%) female participants and 47 (32.4%) male participants were married. Most of them had graduated from vocational nursing schools and had been working for shorter than 5 years. The majority were recruited from nurses and nursing interns working in the clinic wards (Table 1).

Knowledge of HPV and Cervical Cancer The calculated knowledge score of the female participants was 6.99 ± 2.22 , the male participants was 5.89 ± 2.92 . The median knowledge score among all the participants was 6.7 ± 2.5 . Female participants were more knowledgeable ($p < 0.0001$). Fifty-nine participants answered all questions correctly, 91 had one wrong answer. Three hundred ninety-nine (80%) participants answered more than half the questions correctly. The question most correctly answered was question no. 2: “HPV is a sexually transmitted virus”; 86% of the participants provided the correct answer. The least correctly answered question was question no. 8 “HPV vaccines protect against all the HPV types”; 33% provided the correct answer. Regarding question no. 3 “HPV infection may be asymptomatic,” 59% of the participants provided the right answer. The questionnaire is

Thank you for agreeing to participate. The information you provide and your identity will be kept a secret. You can decline to fill out the questionnaire at any time. Please provide a written consent that you agreed to take part without any pressure from the researchers.

i. Please state your gender A) Female B) Male

ii. Age:

iii. What is your educational attainment?

A) Nursing intern B) Nursing graduate (2 year)

C) Nursing graduate (4 year) D) Postgraduate

ix. How long have you been working at the hospital

A) <5 years B) 5-10 years

C) 10-20 years D) >20 years

x. Which department are you currently working at?

A) Operating room B) Clinical ward C) Outpatient clinic

D) Emergency room E) Intensive care unit

xi. Marital status A) Married B) Single

xii. Do you smoke? A) Yes B) No

Please pick an answer for the questions below to the best of your knowledge.

1) HPV infection is a frequently encountered infection.

A) True B) False C) I don't know

2) HPV is a sexually transmitted virus.

A) True B) False C) I don't know

3) HPV infection may be asymptomatic.

A) True B) False C) I don't know

4) Who might be under risk for HPV infection?

A) Women B) Men C) Both

5) HPV infection can cause genital warts.

A) True B) False C) I don't know

6) HPV infection can cause cervical cancer.

A) True B) False C) I don't know

7) There are many strains of the HPV virus that may cause cervical cancer.

A) True B) False C) I don't know

8) HPV vaccines protect against all the HPV types.

A) True B) False C) I don't know

9) Smear testing is not necessary after HPV vaccination.

A) True B) False C) I don't know

10) The smear test may detect cellular changes indicative of a HPV infection.

A) True B) False C) I don't know

Only female participants to answer the following questions please.

11) Did you have a smear test? A) Yes B) No

12) If you did not; what is your reason?

- 1) I am a virgin
- 2) I am afraid of a vaginal examination
- 3) I do not have any complaints
- 4) Other

Both female and male participants to answer the following questions please:

13) Did you have a HPV vaccine? A) Yes B) No

14) Do you want to be vaccinated? A) Yes B) No

15) Do you want your children/ future children to be vaccinated? A) Yes B) No

16) What is your reason for HPV vaccine refusal?

- 1) I'm not under risk for a HPV infection
- 2) HPV vaccine is not a commonly administered vaccine. I don't have knowledge regarding it
- 3) The vaccine has many side effects
- 4) The government does not pay for the vaccine cost
- 5) I'm not sexually active

17) There are many countries in the world in which HPV vaccination is part of a school age immunization program. Do you think including the vaccine in the Turkish immunization program is necessary?

A) Yes B) No C) I don't know or I don't care

Fig. 1 Sample questionnaire

Table 1 Demographic characteristics of the participants

		Female <i>n</i> = 353(%)	Male (<i>n</i> = 146)	<i>P</i>
Age		26.1 ± 6.5	25.5 ± 5.1	0.4
Educational attainment	Nursing intern	53 (15)	30 (20.5)	< 0.0001
	Nursing graduate (2 years)	98 (27.7)	76 (52.1)	
	Nursing graduate (4 years)	194 (55)	38 (26)	
	Postgraduate	8 (2.3)	2 (1.4)	
Years of work	< 5 years	222 (63)	90 (61.6)	0.04
	5–10 years	76 (21.5)	39 (26.3)	
	10–20 years	48 (13.7)	17 (12.1)	
	> 20 years	7 (1.8)	0 (0)	
Marital status	Married	109 (31)	47 (32.4)	
	Single	244 (69)	99 (67.6)	
Smoker		94 (26.5)	64 (43.6)	< 0.0001
Place of work	Operating room	30 (8.5)	20 (13.5)	0.005
	Clinical ward	223 (63.2)	93 (63.5)	
	Outpatient clinic	21 (6.2)	6 (4.1)	
	Emergency room	40 (11.3)	4 (2.7)	
	Intensive care unit	39 (10.8)	23 (16.2)	

available (Fig. 1). The distribution of the correct answers to the 10 knowledge questions is displayed in Fig. 2.

Attitudes Regarding Smear Testing Out of the 353 female participants, 18.6% (*n* = 66) had undergone smear testing. When we analyzed the subgroup who were married (*n* = 110), we found that 43.6% (*n* = 48) had undergone smear testing (Table 2). Multiple answers were allowed to be given for refusing a smear test. The leading reason for not having undergone smear testing was listed as “being a virgin” (44.8%) followed by “not having a complaint” (41%), being afraid of vaginal examinations (23.1%), and other reasons (9.6%).

Attitudes and Viewpoints Regarding HPV Vaccination In our cohort, there were 20 (5.6%) female and 6 (4%) male participants who were vaccinated against HPV. Overall vaccination status among both genders was 4.3%. Two hundred twenty-one (44.3%) of the participants declared they wanted to be vaccinated. Two hundred thirty-seven (52.8%) stated that they wanted their children/future children to be vaccinated. When asked the reason for not having a HPV vaccine, 310 participants provided an answer. The leading answer was “I’m not at risk for a HPV infection” (*n* = 106, 34.9%), followed by “HPV vaccine is not a commonly administered vaccine. I don’t have knowledge regarding it” (*n* = 83, 26.8%). Twenty-three participants (7.4%) stated “The vaccine has many side effects”, 4 (1.3%) participants answered “The government does not pay for the vaccine cost”, 26 (8.4%) stated “I’m not sexually active”, and 68 (21.9%) participants provided multiple responses.

When asked their opinions regarding HPV vaccination being a part of a national school children immunization program,

less than half stated that this would be necessary (*n* = 229, 45.9%). We performed an analysis to establish a relation between knowledge scores between demographic characteristics (Table 2). Additionally, we performed a variance analysis to determine a relation between knowledge scores and attitudes towards HPV immunization (Table 3). When we performed the variance analysis, there was a correlation between HPV knowledge score and answering “Yes” to “Do you want your children/future children to be vaccinated?” (*p* = 0.001). There was also a significant relationship between answering “Yes” to “Do you think including the vaccine in the Turkish immunization program is necessary” (*p* = 0.001) (Table 3).

Discussion

HPV and Cervical Cancer Screening Awareness Nurses have fundamental advisory roles regarding public health education. Their own awareness and attitudes towards health issues will be important determinants of healthcare service utilization. Our findings suggest that our cohort has moderate to high knowledge regarding HPV infection and smear testing. Previous studies on nurses and nursing students in Turkey have concluded that nurses lack basic knowledge on this subject [10–12]. Our data shows that nurses’ knowledge is better than that previously reported for our country [13].

Less than half the married female nurses in our study had undergone smear testing which is a concerning finding. Being afraid or ashamed of vaginal examination is a barrier for screening healthcare services. There are optimistic advancements and currently, self-sampling HPV kits are available [14]. The introduction of self-sampling HPV kits in Turkey

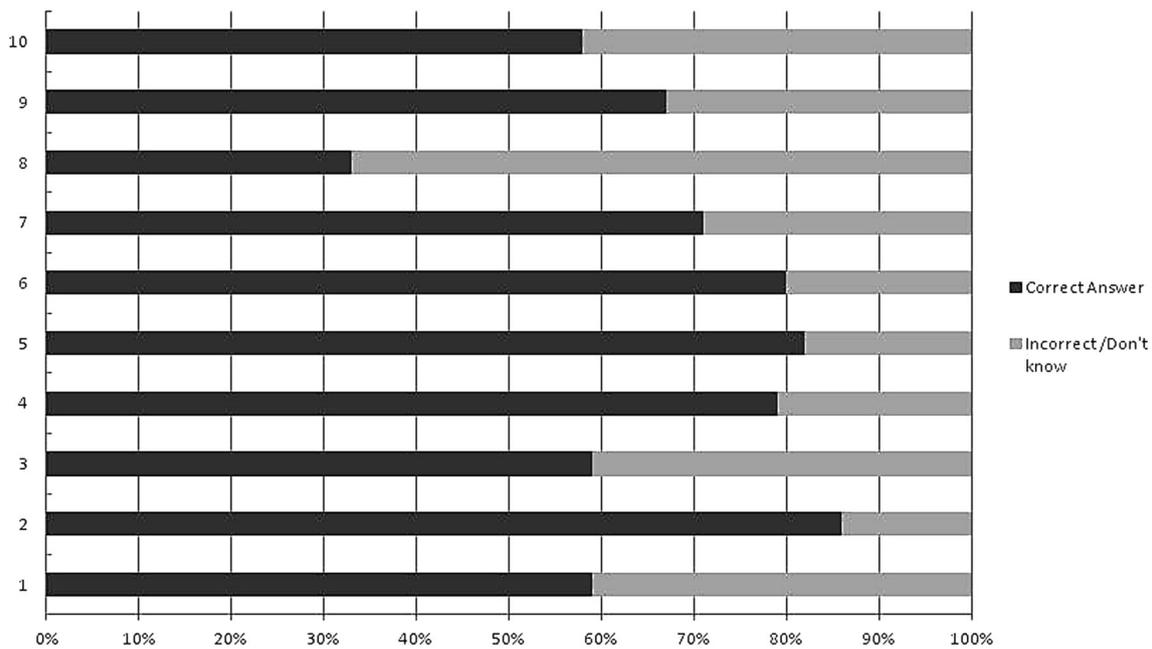


Fig. 2 Line graph showing the correct answers to knowledge questions. Refer to the questionnaire at Fig. 1 for the specific questions

may help increase cervical cancer screening in women who are embarrassed or exceedingly uncomfortable for social or private reasons.

Knowledge and Attitudes Regarding HPV Vaccination

Vaccination prior to HPV exposure is likely to provide the greatest benefit since more than half of our respondents never had sexual intercourse [15]. One striking result from our study is although nurses seem to have satisfactory basic knowledge regarding HPV infection, when it comes to their attitudes on vaccination, there were significantly less positive results. We found that there were 26 individuals who were vaccinated, less than half of our participants were willing to be administered with a HPV vaccine, and 52.8% stated that they would

like their child to be vaccinated. These numbers are still above the researchers' expectations as HPV vaccination is not currently under promotion in Turkey. There are no public awareness or education programs regarding HPV infection, and the vaccination is not covered by any health insurance.

HPV vaccines are most effective before onset of sexual intercourse hence immunization programs are school based. Vaccination programs which are school based have higher coverage rates. Additionally, there are global examples of catch-up vaccination campaigns and healthcare center-based programs [16]. For vaccination uptake to be more favorable, support from nursing personnel is required. Research shows that when a reinforced recommendation is provided, the likelihood of the vaccine uptake may increase as much as fivefold [17, 18].

In our study, 34.9% of respondents believed they were not at risk for HPV infection, and this was their logic for vaccine refusal. Risk perception was an important determinant for the acceptability of the vaccine, as shown in other studies [19]. There may be a taboo-state around sexuality, and whether the vaccine may be "halal" for adolescent girls can be disputed in Muslim communities [20]. When there is no sex education, the HPV vaccination can be a controversial issue in many countries, and as its adversaries allege, it encourages promiscuity [21]. On the other hand, in Muslim countries, there are boundaries to HPV screening, especially for unmarried sexually active women. In settings where HPV screening barriers are present, HPV vaccination gains further importance. Amidst this controversy, there are Muslim countries that have implemented the vaccine by government-funded campaigns including Malaysia and Abu Dhabi [22, 23].

Table 2 Nurses' knowledge scores in relation to demographic characteristics

		Knowledge score	P value
Education	Nursing intern	7.63 ± 2.61	< 0.001
	Nursing graduate	6.52 ± 2.42	
Work years	< 5 years	7.11 ± 2.5	< 0.001
	> 5 years	6.00 ± 2.35	
Marital status	Married	5.94 ± 2.33	< 0.001
	Single	7.00 ± 2.5	
Gender	Female	6.99 ± 2.22	< 0.001
	Male	5.89 ± 2.92	
Age	< 30	6.87 ± 2.52	0.01
	> 30	6.14 ± 2.26	
Smoking	Smoker	6.45 ± 2.49	0.01
	Non-smoker	6.80 ± 2.5	

Table 3 Knowledge scores and opinions towards HPV immunization

	Answer (<i>n</i>)	Knowledge score	<i>P</i> value
Do you want to be vaccinated? ^a	Yes (<i>n</i> = 221)	7.17 ± 2.27	0.3
	No (<i>n</i> = 248)	6.44 ± 2.48	
Do you want your children/future children to be vaccinated? ^a	Yes (<i>n</i> = 237)	7.11 ± 2.24	0.001
	No (204)	6.33 ± 2.5	
Do you think including the vaccine in the Turkish immunization program is necessary? ^b	Yes	7.56 ± 1.94	0.001
	No	6.41 ± 2.11	
	“I don’t know/I don’t care”	5.83 ± 2.74	

^a ANOVA^b Student’s *t* test

HPV is an infectious disease and school-based vaccination programs for other infectious diseases worldwide such as measles and polio have resulted in immense success throughout the last few decades [24, 25]. To achieve success with a vaccination program, it needs to be supported by government funding and insurance companies so that it can be given to everyone despite their social-economic status. We believe that the opportunity to include the HPV vaccine within the normal childhood vaccination schedule for both males and females may help to remove the current stigma attached to receiving this vaccine prior to the start of sexual behavior.

There are a few limitations to our study. It was conducted with a sample of nurses working at a university hospital and our results might not reflect knowledge and attitudes of other nurses in other regions especially rural areas in Turkey. Implications and future directions of this study include developing continuous nursing education and promotion of primary and secondary HPV-related cancer prevention efforts. As the lobbying against HPV vaccines creates a cloud of adversity and misinformation, nurses should be regarded as primary affiliates in prevention efforts.

In conclusion, in Turkey, we have a state-of-the-art HPV-based cervical cancer screening program. Implementing a HPV vaccination program is currently under evaluation by the health ministry [7]. We know that vaccine uptake strongly depends on the opinions and suggestions of healthcare workers. Strategies and intervention materials for HPV vaccination will be necessary if such a national immunization program will be initiated.

Acknowledgements This work was submitted as an abstract to the 12th Congress of the European Society of Gynecology.

Compliance with Ethical Standards All authors have contributed to the preparation of this paper and have adhered to ethical standards. The study was constructed according to the Declaration of Helsinki and approved by the Institutional Review Board of Bezmialem Vakif University.

Conflict of Interest The authors declare that they have no conflict of interest.

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