

## RESEARCH ARTICLE

# Awareness and Attitude Relating to the Human Papilloma Virus and its Vaccines Among Pediatrics, Obstetrics and Gynecology Specialists in Turkey

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## Abstract

**Background:** To determine the level of knowledge on human papillomavirus (HPV) infection and vaccination, and the attitude towards HPV vaccination in pediatricians, obstetricians and gynecologists (OBG). **Materials and Methods:** Participants were administered a 40-question survey, investigating the demographic properties, the knowledge on the HPV infection-vaccination and attitudes towards vaccination. **Results:** The study enrolled a total of 228 participants (131 pediatricians and 97 OBGs). At a rate of 99.6%, the participants agreed with the fact that the HPV infection was the most common sexually transmitted disease and 33.8% of the participants had the opinion that the HPV vaccination should be administered only in women. The lowest level of HPV vaccine recommendation was among the pediatrics specialists (59.4%,  $p=0.012$ ). When asked whether they would have their daughters receive HPV vaccination, 79.5% of the participants answered favorably; this rate was 36.7% for the sons. At a rate of 59.5% of the participants thought that the HPV vaccine needed to be included in the national vaccine schedule. Most of the participants (91.6%) had the idea that reduction of the vaccine costs would increase the vaccination frequency. **Conclusions:** We observed that the consideration of the costs and the prejudices relating to the inefficacy of vaccination as well as the inadequate level of knowledge were involved in the physicians' resistance to HPV vaccination. We believe that the healthcare professionals should be informed adequately to overcome false beliefs, thereby ensuring success of the HPV vaccine upon inclusion in the national vaccine schedule in the future.

**Keywords:** Attitude - awareness - human papillomavirus - immunization - obstetrics & gynecology - pediatrics - vaccines

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## Introduction

Human papillomavirus (HPV), with more than a hundred types identified, is a double-stranded DNA, non-enveloped virus. HPV causes cervical cancer and anogenital papilloma. Nearly all of the cervical cancers result from HPV (Committee on Infectious Diseases, 2102; Walboomers et al., 1999). HPV-16 and HPV-18 are involved in 70-80% of the cases leading to cervical cancer (Munoz et al., 2003; Kim et al., 2014). The primary HPV types associated with anogenital papilloma are the HPV-6 and HPV-11 (Trottier et al., 2006; Warma et al., 2013). While the statistics relating to the disease and the data on the distribution of the HPV serotypes are inadequate in our country, the relevant data and their reliability are gradually increasing (Dursun et al., 2009; Ozcelik et al., 2003; Dursun et al., 2013). Based on the data from the Ministry of Health, the total cancer incidence among Turkish women is estimated to increase from 142.9 to 204

per 100.000 from 2004 to 2011. This increase is expected to be from 4.5 to 7.1 per 100.000 for the cervical cancers (Basara et al., 2013). As is the case worldwide, the most common cancer among Turkish women is the breast cancer (Basara et al., 2013; Ozmen et al., 2014; Ozmen et al., 2011). However, the cervical cancer, ranking second after the breast cancer in many countries as shown in studies, ranks ninth in our country in 2008 (Ceyhan, 2007; Basara et al., 2013; WHO, 2011; ). While the cervical cancer is rarely observed among women below 30 years of age, it most commonly occurs at mid-forties and the deaths associated with cervical cancer mostly occur at mid-fifties and mid-sixties (WHO, 2011). In our country, the elderly population is progressively increasing; and in 2012, the rate of the elderly population above 60 years of age has reached the world average at 11% (Basara et al., 2013). HPV infections and the secondary cervical cancers, which are currently not as problematic as in the developed countries, will start representing a big issue in

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our country over time.

Studies on HPV vaccine started in 1990s (Kahn et al., 2005; Frazer et al., 2014) and currently, HPV vaccine is not included in the national vaccine schedule. In Turkey, there are two HPV vaccines available on the market, containing 2 and 4 types of antigen, which have received authorization in 2007. HPV vaccine has not gained complete acceptance in the society and among healthcare professionals relative to the meningococcal and rotavirus vaccines, and is yet not widely administered. Various trials have revealed that the frequency of HPV vaccination increased with the increased level of knowledge on the HPV vaccine and HPV infection among the physicians, and changed according to the patient characteristics (Kahn et al., 2005; Riedesel et al., 2005).

In this trial, we aimed at determining the level of knowledge on the human papillomavirus (HPV) infection and vaccination, and the attitude towards HPV vaccination in pediatricians, obstetricians and gynecologists (OBG), and the physicians majoring in the fields of pediatrics and obstetrics and gynecology.

## Materials and Methods

The participants were administered a 40-question survey, prepared by the investigators. The survey included questions investigating the demographic properties (n=10), the knowledge on the HPV infection (n=10), the HPV vaccination (n=9) and the attitude towards vaccination (n=11). The survey form was prepared by the investigators, taking into consideration the similar literature studies, and the potential factors that prevent widespread administration of the HPV vaccine. The participants were informed on the fact that the survey was administered for a scientific study and no data that could reveal the participants' identities were collected. The survey forms were given to the participants by the investigators and the volunteers. The physicians completed the surveys without any intervention, after which the forms were collected. The survey included multiple-choice questions, for which the participants could select multiple answers, as well as questions requiring right/wrong and yes/no answers.

Approval was obtained for this study from "Adana Numune Training and Research Hospital Non-interventional Clinical Trials Ethics Committee" on 25.02.2014.

### Statistical analysis

The statistical analysis was conducted using the "Statistical Package for Social Sciences" version 15 (SPSS Inc., Chicago, IL, USA) software. First, the descriptive statistics (number, percentage, mean and standard deviation) of the variables in the study group were calculated, followed by comparative analysis with chi-square test. The significance level was  $p < 0.05$ .

## Results

### Participants' Demographics

A total of 228 physicians agreed to fill out the surveys

and participate in the trial, 131 participants (57.5%) were employed at the pediatrics and 97 (42.5%) were employed at the OBG departments. Among the pediatricians 64 were specialists (48.9%) while 67 (51.1%) were residents; while these figures were 46 (47.4%) and 51 (52.6%) for the OBG department. Among participants 114 were females (50.2%) and 113 were males (49.8%), 150 participants (65.8%) were married and 34.2 (34.2%) were single, 107 participants had children (46.9%) and 121 didn't (53.1%). The mean age was  $33.8 \pm 8.2$  years (Table 1).

### Participants' level of information on the HPV infection

At a rate of 99.6%, the participants agreed with the fact that the HPV infection was the most common sexually transmitted disease. When asked about the types of cancers which HPV could cause, 99.6%, 50.9%, 48.7%, 55.3% and 43% of the participants responded as cervical, vaginal, anal, penile and oral, respectively. The rate of awareness that HPV caused vaginal ( $p=0.023$ ), anal ( $p < 0.001$ ), penile ( $p=0.001$ ) and oral ( $p=0.001$ ) cancers was higher among the OBG relative to pediatricians. The rate of the participants who thought that natural HPV infection provided life-long lasting immunity was 35.5% in general, 37.7% and 29.9% in the pediatrics and OBG departments, respectively ( $p=0.162$ ). When asked about the risk factors for HPV infection, the most commonly selected choice ( $p < 0.001$ ) was multiple partners (99.1%), followed by HIV infection (54.8%), renal transplantation (35.5%), use of contraceptives (25.9%), smoking (43.9%), a high number of deliveries (24.7%), respectively. When asked about the type of HPV that caused genital papilloma, HPV-6, HPV-11, HPV-16 and HPV-18 had been selected at a rate

**Table 1. Demographic Characteristics of the Participants Filling Out the Survey**

Characteristics	n (%)
Age* (years)	33.8±8.2
Gender	
Male	113 (49.8%)
Female	114 (50.2%)
Sub-specialty	
Pediatric resident	67 (51.1%)
Pediatric specialist	64 (48.9%)
Obstetrics&gynecology resident	51 (52.6%)
Obstetrics&gynecology specialist	46 (47.4%)
Practice setting	
University hospital	36 (15.9%)
Research and Training hospital	135 (59.5%)
Government hospital	27 (11.9%)
Private hospital	29 (12.8%)
Occupational experience* (years)	
Pediatric resident	2.44±1.44
Pediatric specialist	8.35±5.7
Obstetrics&gynecology resident	2.28±1.17
Obstetrics&gynecology specialist	12.91±8.57
Marital status	
Married	150 (65.8%)
Single	78 (34.2%)
Children	
Boy	32 (29.6%)
Girl	47 (43.5%)
Boy and girl	29 (26.9%)

\*Mean±standard deviation

of 71.5%, 74.1%, 45.2% and 45.6%, respectively. There was no statistically significant difference between the departments with respect to these 4 types of HPV selected. As expected, the right answer of HPV6-11 for the question on genital papilloma and the types of HPV, was given at a rate of 37.4% and 49.5% in the pediatrics and OBG departments, respectively; and there was no statistically significant difference ( $p=0.079$ ). Similarly, there was no difference between the specialists or residents or by the type of hospital in answering this question accurately. When asked about the routes of transmission of HPV, the most commonly selected choice ( $p<0.001$ ) was sexual intercourse (100%), followed by genital-genital contact (78.1%), hand-genital contact (50.9%), oral-genital contact (64.5%), from mother to the baby during delivery (75.9%), via surgical glove (24.1%), and via contaminated biopsy forceps (33.3%), respectively. The choices of hand-genital contact ( $p<0.001$ ), oral-genital contact ( $p=0.003$ ) and from mother to the baby during delivery ( $p<0.001$ ) were selected more in the OBG department relative to the pediatrics department.

When asked about the HPV types that were oncologic, HPV-6, HPV-11, HPV-16 and HPV-18 were selected at a rate of 16.2%, 18%, 89% and 89.5%, respectively. There was no statistically significant difference between the departments with respect to selection of these 4 HPV types. As expected, the right answer of HPV 16-18 for the question on the oncologic HPV types, was given at a rate of 72.3% and 80.4% in the pediatrics and OBG departments, respectively; and there was no statistically significant difference ( $p=0.210$ ). Similarly, there was no difference between the specialists or residents or by the type of hospital in answering this question accurately.

The rate of the participants who thought that condom use prevented HPV transmission was 25%. There was no statistically significant difference between the Pediatrics and the OBG Departments ( $p=0.123$ ).

When asked about the effective methods of protection against HPV, the most commonly selected choice was monogamy (91.7%), followed by condom use (81.9%), hygiene (61.4%), and vaccination (85.1%), respectively. There was no difference between the specialists or residents or by the type of hospital in answering this question accurately.

The rate of the participants who believed that HPV-

**Table 2. Reasons for Not Preferring the HPV Vaccine**

	For Patients	For Her/his daughter	For Her/his son
Costs	67.7%	28.9%	29.4%
Side effects	11.3%	17.8%	7.9%
Lack of efficacy	45.2%	64.4%	70.6%
Other	6.5%	17.8%	9.5%

**Table 3. Favor HPV Vaccine for Specific Groups**

	Herself	Her/his girl	Her/his son	Patients
Pediatric resident	67.6%	82.8%	25.8%	80.6%
Pediatric specialist	57.1%	79.7%	38.3%	59.4%
Obstetrics&gynecology resident	62.5%	68.8%	33.3%	66.7%
Obstetrics&gynecology specialist	71.4%	86%	45.6%	82.6%

16 and 18 types were involved in cervical cancers was 91.2%. This rate was detected to be 97.2%, 96.6%, 96.3% and 87.5% at the university hospitals, private hospitals, government hospitals and training and research hospitals, respectively; however there was no statistically significant difference ( $p=0.118$ ). Similarly, there was no statistically significant difference between the specialists or residents ( $p=1.000$ ) or the departments ( $p=0.637$ ).

#### Participants' level of information on the HPV vaccine

The rate of the participants who were aware of the two different vaccines available in our country was 89.5%. The OBG specialists had the highest awareness at 92.8%; however there was no significant difference by the field ( $p=0.194$ ) or experience ( $p=0.832$ ). Considering the hospital of employment, the rate was observed to be 100% at the private hospital and this was statistically significant ( $p=0.001$ ).

The rate of the participants who had the idea that HPV vaccines could only be administered in women was 33.8%; this rate was lowest among the OBG at 21.7%. However there was no significant difference by the type of hospital ( $p=0.646$ ), the field ( $p=0.480$ ) or experience ( $p=0.403$ ). When asked about the number of antigen types the vaccines available in our country contain, the most commonly selected choice was one type (98.3%), followed by two types (68.9%), three types (9.6%) and four types (40.4%), respectively. Only 24.15 of the participants knew that there was both a bivalent and a quadrivalent vaccine available in our country. This rate was highest among the OBG specialists at 50%. The rate was 12.2% and 40.2% at the pediatrics and OBG departments, respectively; and this difference was statistically significant ( $p<0.001$ ). There was no difference by the type of hospital of employment.

At a rate of 70.6% of the participants considered that the HPV vaccines available in our country both contained the antigen types that caused cervical cancer and genital papilloma. There was no significant difference by the type of hospital of employment or experience. The rate of the participants who considered the 11 to 12-year-old girls as the primary target group for HPV vaccines was 76.8%; there was no significant difference by the department or experience. This rate was as high as 96.6% among the private hospital physicians and was statistically significant ( $p=0.016$ ). The rate of the participants who thought HPV vaccine could be administered also in vaccine-naïve females between 13 and 26 years of age was 93%; there was no significant difference by the type of hospital of employment ( $p=0.209$ ) or experience ( $p=0.198$ ). While this rate was 97.9% at the OBG department, it was 89.3% at the pediatrics department and the difference was statistically significant ( $p=0.016$ ).

The rate of the participants who considered that pre-vaccination serological investigation was necessary was

23.2%; there was no significant difference by the type of hospital of employment ( $p=0.665$ ), the department ( $p=1.000$ ) or experience ( $p=1.000$ ).

The rate of the participants who found it necessary to continue with the cervical screening after vaccination was 87.7%; there was no significant difference by the type of hospital of employment ( $p=0.718$ ) or the department ( $p=0.542$ ). This rate was 92.7% and 83.1% for the specialists and residents, respectively and the difference was statistically significant ( $p=0.028$ ).

The rate of the participants who thought that women with previous history of HPV infection should not be vaccinated was 21.5%; there was no significant difference by the type of hospital of employment ( $p=0.302$ ), the department ( $p=1.000$ ) or experience ( $p=0.149$ ).

#### *Participants attitude towards the HPV vaccine*

When asked whether they did or would recommend the HPV vaccine for their patients, the lowest rate of favorable answer was observed among the pediatricians (59.4%). This rate was 82.6%, 66.7% and 80.6% among the OBG specialists, OBG residents and pediatric residents, respectively (Table 3). 67.7%, 11.3%, 45.2% and 6.5% of the participants, who gave an unfavorable answer, indicated their reasons as the high cost, side effects, lack of efficacy of the vaccine and other causes, respectively (Table 2). When asked whether they would have their daughters (if any or if they had) receive HPV vaccination, 86% of the physicians from both fields and experience answered favorably (Table 3). 64.4%, 28.9%, 17.8% and 17.8% of the participants, who answered unfavorably, indicated their reason as the lack of efficacy of the vaccine, the high cost of the vaccine, the side effects of the vaccine and other causes, respectively (Table 2).

When asked whether they would have their sons (if any or if they had) receive HPV vaccination, 25.8% of the physicians answered favorably. This rate was similar between the groups; there was no statistically significant difference (Table 3). 70.6%, 29.4%, 7.9% and 9.5% of the participants, who answered unfavorably, indicated their reason as the lack of efficacy of the vaccine, the high cost of the vaccine, the side effects of the vaccine and other causes, respectively (Table 2).

When asked whether they themselves considered receiving a HPV vaccine, 71.4% of the female physicians from both fields and experience answered favorably (Table 3).

When asked whether they considered inclusion of the HPV vaccine in the national vaccine schedule as necessary, 76.1% of the OBG specialists ( $p=0.087$ ), 49% of OBG residents, 56.3% of pediatricians and 59.1% of pediatric residents answered favorably, respectively. The participants, who didn't find this necessary, did so due to the high cost (71.3%), side effects (7.5%), lack of efficacy of the vaccine (43%) and for other reasons (4.3%), respectively.

The reason for the lack of widespread use of the HPV vaccine was considered to be the high cost, side effects, lack of efficacy, parents' opposition and religious beliefs by 71%, 12%, 31%, 30.6% and 43.5% of the participants, respectively. At a rate of 91.6% of the participants thought

reduction of the HPV vaccine costs would increase the frequency of vaccination; there was no significant difference by the type of hospital of employment, the field or experience.

## **Discussion**

In this study, we aimed to determine the level of knowledge on the HPV infection and vaccination, and the attitude towards HPV vaccination in pediatricians, OBG, who are considered to be the two most effective groups in HPV vaccination.

The rate of cervical cancer is lower in our country compared to that in other countries (Ceyhan, 2007; Akcali et al., 2013). The rates are increasing progressively (Dursun et al., 2013; Basara et al., 2013). Are these rates realistic or are we still behind the Western countries with respect to screening? A trial involving the results from cervical screening in our country, performed in 2014, revealed lower rates of cytological abnormality as detected on cervical screening relative to those observed in the western countries, while the rates were observed to be similar to those in the other Islamic countries (Sengul et al., 2014; Nokiani et al., 2008; El-All et al., 2007).

This difference from the Western countries was attempted to be explained by the life style in the Muslim countries. However, in a 2011 trial, performed in our country, the prevalence of genital papilloma was detected to be 154 and even as high as 326 in some regions per 100.000. In 2003 and 2004 US trials, this rate was 170-205 while a 2008 Spanish trial revealed a rate of 182.1, which was similar to Turkish rates (Insinga et al., 2003; Koshiol et al., 2004; Castellsague et al., 2008). Although the incidence of genital papilloma is similar, the lower incidence of cervical cancer which occurs due to the causes is controversial.

In our study, at rate as high as 99.4%, the participants agreed with the fact that the HPV infection was the most common sexually transmitted disease. In a trial performed among pediatricians in 2013, this rate was 78% (Ozsürekcü et al., 2013). While participants from both fields were quite aware of the fact that HPV caused cervical cancer (99.4%), the rate of awareness on the fact that it also caused vaginal, anal, penile and oral cancers was quite low (50.9%, 48.7%, 55.3%, 43%). The level of knowledge was higher among the OBG specialists relative to pediatricians. The fact that the pediatricians don't encounter HPV and the associated diseases as commonly as the OBG specialists do may explain the current level of information on HPV. However based on our results, the information and awareness on HPV was inadequate at the OBG department. In our study, 38.3% of the participants thought that HPV infection provided life-long lasting immunity. Considering that this false belief may result in the physicians not to recommend HPV vaccine for their patients, we compared the two groups of physicians, who indicated that they would and would not recommend HPV vaccination for their patients and detected no statistically significant difference ( $p=0.124$ ). The level of information on HPV didn't appear to be effective on the vaccine recommendation. Comparing the physicians with accurate

and false information on the HPV vaccine with respect to receiving the vaccine, we interestingly obtained similar results. Our results revealed that the level of information on the HPV vaccine didn't appear to be effective on the vaccine recommendation.

In our study, the group of physicians, who recommended the HPV vaccine at the lowest rate, was the pediatricians (Table 3). Is the reason for this low rate among the pediatricians, who have always been pioneers in vaccination, the inadequate information on the HPV infection or HPV vaccine? Investigating the answer to this question, we detected no significant difference between the pediatricians and the other groups. The group of physicians, who would not recommend HPV vaccination for their patients, indicated that they would have their daughters receive vaccination at a rate of 44.4%. The group of physicians among female participants, who would not recommend HPV vaccination for their patients, indicated that they themselves would receive vaccination at a rate of 25%. The participants in all groups preferred having their daughters receive vaccination more relative to their sons (Table 3). Similarly, a 2005 study, performed among the family physicians in Istanbul, revealed that the participants preferred having their daughters receive vaccination more relative to their sons (Akcali et al., 2013). When asked about the reason why they didn't prefer to have their sons receive vaccination, the most common answer was the lack of efficacy of the vaccine (70.6%). While the rate of those considering to have their sons receive vaccination was 47.6% in the group of participants, who were aware of the fact that HPV vaccine could also be administered in males, the rate was 15.3% among the group of participants, who were not aware of this fact ( $p < 0.001$ ).

While 70% of the pediatricians, attending a pediatrics congress in 2011, thought that inclusion of the HPV vaccine in the national vaccine schedule was necessary (Ozsurekci et al., 2013), this rate was 59.5% on average and 76.1% among the OBG specialists in our trial. This 10% change occurring within a 3-year time among the pediatricians was not statistically significant ( $p = 0.356$ ). However, the physician awareness on HPV may be expected to be reduced upon retardation of the HPV informing activities, which had been initiated in 2007 with the authorization of the HPV vaccines in our country. 73% of the participants in our study, who didn't find it necessary to include the HPV vaccine in the national vaccine schedule, raised the issue of high costs, with the same results obtained in similar studies (Riedesel et al., 2005; Mazza et al., 2014).

In Muslim countries, sexual problems, sexual diseases, and particularly the sexually transmitted diseases are considered taboos. Therefore, the HPV vaccine can not be debated and administered by the physicians as comfortably as in the western countries. The reasons for the lack of widespread use of the HPV vaccine among the participants in our trial included the religious beliefs at a rate of 43.6% as well as the high costs. However, religious beliefs alone are not effective on HPV vaccination; this may vary between different countries. A trial, performed in 2009 in Malaysia, reported that the physicians commonly

recommended HPV vaccination for their patients and a trial, performed in 2011 in Indonesia, revealed that the parents commonly accepted the HPV vaccination while opposite results could be obtained from the trials in the United Arab Emirates and Syria (Wong et al., 2009; Jaspers et al., 2011; Ortashi et al., 2013; Alsaad et al., 2012). As is the case in many other trials, our trial also revealed that most of the participants (91.6%) thought that reduction of the HPV vaccine costs would decrease the frequency of vaccination (Kahn et al., 2005; Riedesel et al., 2005; Ozsurekci et al., 2013; Daley et al., 2006). The epidemiologic studies detected that HPV was the primary factor responsible for the invasive cervical cancers and the precursor lesions (Walboomers et al., 1999; Clifford et al., 2003). In our country, the vaccines, expected to be included in the national vaccine schedule, are the rotavirus and meningococcal vaccines. Following the reduction in costs and establishment of the long-term efficacy, inclusion of the HPV vaccine in the national vaccine schedule will become a current issue. However, the pediatricians and the OBG specialists, who would be considered to be most knowledgeable about the HPV infection and vaccination, don't have the expected level of knowledge. While previous trials revealed that the frequency of HPV vaccination increased together with the physicians' level of knowledge on the HPV vaccine and HPV infection, and varied depending on the patients' characteristics, some of our results showed that the high cost or the false beliefs on the lack of efficacy of the vaccine rather than the level of knowledge was effective on the resistance to vaccination (Kahn et al., 2005; Riedesel et al., 2005). It would be irrational to expect the society to accept the HPV vaccine before thoroughly informing the healthcare professionals, thereby eliminating their prejudices and false beliefs. Upon inclusion of the HPV vaccine in the national vaccine schedule, the rate of success would be very low, given the healthcare professionals, who don't believe in the vaccine and a society that has not completely accepted vaccination. Measures, directed towards all healthcare professionals but primarily the pediatricians and the obstetricians, who work on the front line in relation to HPV vaccination and infections, which would increase the level of knowledge and awareness on HPV need to be taken.

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