



A global study on knowledge and perception of HPV and HPV vaccination among young obstetricians and gynecologists

Uluslararası kadın hastalıkları ve doğum asistan hekimleri ile genç uzmanların HPV ve HPV aşısı hakkındaki bilgisi ve algısı

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Abstract

Objective: Our goal is to improve the understanding of human papillomavirus (HPV) and its vaccination among obstetrics and gynecology trainees and young specialists worldwide.

Materials and Methods: This cross-sectional study was conducted through an online survey consisting of 28 questions by the World Association of Trainees in Obstetrics and Gynecology between February and August 2023. The questionnaire collected demographic data of the study participants and assessed the respondents' knowledge and perception of HPV, HPV vaccines, and vaccine dosing schedule.

Results: Two hundred five Ob/Gyn trainees and young Ob/Gyns from 52 countries completed the survey. The majority of respondents were trainees (158, 77.1%). Most trainees and young Ob/Gyns learned about HPV for the first time during medical school (149, 72.6%). Almost all (204, 99.5%) Ob/Gyns responded that HPV was sexually transmitted. More than half of the respondents had not received HPV vaccination (110, 53.7%). The vaccine was recommended for respondents mostly by their Ob/Gyn senior colleagues (110, 53.7%). Most of the respondents knew how to manage HPV-positive patients (179, 87.3%).

Conclusion: This study suggests that even though knowledge on HPV and its vaccination is satisfactory among trainees and young Ob/Gyns, HPV vaccination remains deficient. There is a need to understand, educate, and address the potential problem that lies underneath.

Keywords: Human papillomavirus, vaccination, obstetrics, gynecology, residency

Öz

Amaç: Amacımız, dünya çapında kadın hastalıkları ve doğum asistan hekimleri ve genç uzmanları arasında insan papilloma virüsü (HPV) ve aşılama bilgisi ve anlayışını araştırmaktır.

Gereç ve Yöntemler: Bu kesitsel çalışma, Dünya Kadın Hastalıkları ve Doğum Asistanları ve Genç Uzmanları Birliği tarafından Şubat 2023 ve Ağustos 2023 tarihleri arasında 28 sorudan oluşan bir anket aracılığıyla gerçekleştirildi. Anket ile çalışma katılımcılarının demografik verileri, HPV ve HPV aşılama dair bilgileri ve anlayışları elde edildi.

Bulgular: Anketi 52 ülkeden 205 kadın hastalıkları ve doğum asistanı ve genç uzmanı tamamladı. Ankete katılanların çoğunluğunu asistan hekimler oluşturdu (158, %77,1). Asistan ve genç uzman hekimlerin büyük bir kısmı HPV'yi ilk kez tıp fakültesi sırasında öğrenmiş (149, %72,6). Katılımcıların neredeyse tamamı (204, %99,5) HPV'nin cinsel yolla bulaştığını yanıtladı. Ankete katılanların yarısından fazlası HPV aşısı yaptırmadığını belirtti (110,

PRECIS: Using a 28-point questionnaire, we have evaluated the human papillomavirus (the most common sexually transmitted infection) and its vaccination knowledge amongst the Ob/Gyn trainees and young specialists globally.

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%53,7). Aşı, katılımcılara çoğunlukla kıdemli meslektaşları tarafından önerilmiş (110, %53,7). Ankete katılanların çoğu HPV pozitif hastaların nasıl yönetileceğini bildiğini belirtti (179, %87,3).

Sonuç: Bu çalışma, kadın hastalıkları ve doğum asistan hekimleri ve genç uzmanları arasında HPV ve HPV aşısı hakkındaki bilgilerinin tatmin edici olmasına rağmen, HPV'ye karşı aşılama miktarının hala yetersiz olduğunu göstermektedir. Alında yatan potansiyel sorunu anlamaya ve çözmeye ihtiyaç vardır.

Anahtar Kelimeler: İnsan papilloma virüsü, aşılama, kadın hastalıkları, jinekoloji, ihtisas

Introduction

Human papillomavirus (HPV), a double-stranded DNA virus, is the most common sexually transmitted infection worldwide⁽¹⁾. Over 200 HPV types exist, with types 6, 11, 16, and 18 being the four major types that colonize the human genital tract⁽²⁾. Low-risk, non-oncogenic types 6 and 11 are associated with anogenital warts and laryngeal papillomatosis, whereas high-risk, oncogenic HPV types 16 and 18 cause cervical and anal cancers⁽¹⁻³⁾. More than 99% of cervical cancers (CC) are attributable to HPV infection⁽⁴⁾.

CC is the most common gynecological malignancy in developing countries and the fourth most common cancer in women worldwide, after breast, colorectal, and lung cancers^(5,6). Globally, over 600,000 new cases of CC and more than 340,000 related deaths are reported annually⁽⁷⁾. Approximately 85% of these new cases and 90% of CC deaths occur in low- and middle-income countries (LMICs)⁽⁶⁾. Given the causal relationship between HPV and CC, an effective primary preventive modality against CC is HPV vaccination of pre-adolescent girls before their sexual debut⁽⁸⁾. Three types of HPV vaccines are available: A bivalent Cervarix vaccine that protects against HPV types 16 and 18, a quadrivalent Gardasil vaccine that protects against HPV types 6, 11, 16, and 18, and a nonavalent vaccine that is effective against HPV types 6, 11, 16, 18, 31, 33, 45, 52, and 58⁽⁹⁾.

The World Health Organization currently recommends a single dose of HPV vaccine in girls aged 9-20 years and two doses for women aged 21 years and above⁽¹⁰⁾. This single dose regimen is comparable to efficacy to the previous two to three dose schedules. The new single-dose regimen is a cost-effective strategy for improving access to HPV vaccines and increasing global HPV vaccine rates, which had only a 13% two-dose completion rate in 2020⁽¹⁰⁾. This is especially so because cost remains a significant impediment against HPV vaccine uptake, especially in LMICs, where HPV vaccination is yet to be included in national immunization schedules or school vaccination programs, and is thus not freely available to all pre-adolescents in these countries⁽¹¹⁾. Poor knowledge and awareness of HPV infections and HPV vaccines have also been identified as a barrier to the uptake of HPV vaccination⁽⁸⁾. Obstetricians and gynecologists (Ob/Gyns) play critical roles in improving awareness and uptake of HPV vaccines among the general female population. Their knowledge of HPV infections and HPV vaccination influences their willingness to recommend HPV vaccination to their clients. Moreover, Ob/Gyns are also at risk of HPV infection and its adverse sequela. Therefore, it is important to assess their knowledge of HPV infections and

HPV vaccination. Therefore, this study sought to assess the knowledge of HPV and its vaccination among a global cohort of Ob/Gyn trainees and young specialists.

Materials and Methods

Study Design

This cross-sectional survey investigated the knowledge and perception of HPV and HPV vaccination among Ob/Gyn trainees and young specialists globally. The study was conducted over six months, from February 7, 2023, to August 8, 2023, by the World Association of Trainees in Obstetrics and Gynecology (WATOG). WATOG is an international organization with 85 member countries, representing all Ob/Gyn trainees and young Ob/Gyn specialists who are within 10 years of the start of their residency training. We aimed to receive at least one response from each member country of the WATOG.

Study Instrument

A study-specific questionnaire designed using Google Forms was used in this study. The questionnaire consisted of 28 questions, including multiple-choice, multi-answer, "Yes" and "No", and open-ended questions. The first section of the questionnaire collected demographic data of the study participants, including age, country of origin, country of residency, and training information, including the commencement and completion dates of residency training and specialization. Other sections assessed the respondents' knowledge and perception of HPV, HPV vaccines, and vaccine dosing schedule. The questionnaire was electronically distributed to the study participants through the WATOG Country/National and Regional Representatives.

Statistical Analysis

The data obtained were analyzed using Google Forms.

Ethical Considerations

In line with the Declaration of Helsinki, participation in this study was voluntary. All respondents consented to participate in the study before completing the questionnaire. Collected data were completely anonymized. Ethical approval was not sought for this study because it was a completely anonymous online survey with no patient-related data.

Results

Demographic Characteristics of Participants

Two hundred and five Ob/Gyn trainees and young Ob/Gyns from 52 countries completed the survey. The 52 countries included Albania, Armenia, Australia, Belgium, Bolivia,

Botswana, Brazil, Burundi, Colombia, Democratic Republic of Congo, Dominican Republic, Croatia, Egypt, France, Germany, Greece, India, Iraq, Ireland, Italy, Kazakhstan, Kenya, Kyrgyzstan, Latvia, Malawi, Malaysia, Mexico, Namibia, Nepal, New Zealand, Nigeria, North Macedonia, Pakistan, Peru, Philippines, Poland, Portugal, Romania, Rwanda, Serbia, Sierra Leone, Slovenia, South Africa, Sudan, The Netherlands, Turkey, United Kingdom, Uruguay, United States of America, Venezuela, Zambia, and Zimbabwe.

Respondents were aged between 22 and 43 years, with a mean age of 31.5±3.9 years. Female respondents were 153 (74.6%), while 52 (25.4%) were males. The majority (192, 93.7%) of the respondents had their Ob/Gyn training in their countries of origin. Almost half of the respondents were in their 3rd-4th year of training (91, 44.4%). This was followed by those in their 1st-2nd year of training (50, 24.4%), while others were in their 5th-6th year (46, 22.4%), and 7th-10th year of training (18, 8.8%). The majority of respondents were trainees (158, 77.1%), while young specialists constituted the remaining study participants (47, 22.9%).

HPV and HPV Vaccine Knowledge of the Study Participants

Most trainees and young Ob/Gyns learned about HPV for the first time during medical school (149, 72.6%), whereas more than one-tenth learned about the virus during their Ob/Gyn residency (24, 11.7%). The majority of respondents had learned about HPV during their residency training (176, 85.9%) (Figure 1). More than one-third of those who reported that they had not learned about HPV during residency were first- and second- year residents (10/29, 34.5%). Only two young Ob/Gyn specialists-one from Pakistan and another from Peru- reported that they did not receive lectures on HPV during their Ob/Gyn residency training. One respondent learned about HPV at the International Federation of Gynecology and Obstetrics Vaccination Workshop, which was held in 2022 in Prague, Czech Republic. More than one-tenth (33, 16.0%) of the respondents learned about HPV in high school, elementary school, from family (parents were either Ob/Gyn or urology specialists), a family doctor, social media, the internet, or a

friend. One trainee from New Zealand learned about HPV for the first time while being vaccinated in primary school as part of his country’s national vaccination program.

Almost all (204, 99.5%) Ob/Gyns responded that HPV was sexually transmitted; only one respondent thought it was transmissible via blood. The reported clinical features of HPV infection were as follows: Asymptomatic (92, 44.8%), genital warts (86, 41.9%), postcoital bleeding (17, 8.2%), vaginal discharge (17, 8.2%), irregular vaginal bleeding (13, 6.3%), dyspareunia (6, 2.9%), vulvar itching (5, 2.4%), advanced disease/cancer (4, 1.9%), abnormal Pap smear (3, 1.4%), cervicitis (2, 0.9%), genital rash (1, 0.4%), and herpes ulcer (1, 0.4%).

More than half (144, 70.2%) of the respondents learned about HPV vaccination at the same time they learned about HPV. Only four (2.0%) respondents- one trainee each from Belgium, Portugal, Turkey, and the United States of America- learned about HPV vaccination before learning about HPV. They had learned about HPV vaccination while in high school from their general practitioners and pediatricians and received the vaccination before learning more about the virus later on. Most of the respondents reported that the ideal age to initiate HPV vaccination was between 9 and 14 years (126, 61.5%) or before sexual debut (33, 16.1%). The majority (168, 82.0%) responded that even though a person had previously contracted HPV, they could still be vaccinated. Three-fourth (155, 75.6%) of the respondents opined that the vaccine had no adverse effects (Figure 2), while 63, 30.7% believed that the vaccine had no contraindication (Figure 3).

HPV Vaccination Status of the Study Participants

More than half of the respondents had not received HPV vaccination (110, 53.7%) (Figure 4). Those who had been vaccinated (95, 46.3%) had received varying doses of the vaccine, from single to full doses, of either a quadrivalent or nonvalent vaccine, initiated between the ages of 10 and 30 years. Of those who were not fully vaccinated, three started their vaccinations in 2023. Two of these were from Turkey, where the nonavalent vaccine became available in 2023, and one from Romania, where the HPV vaccine is excluded from the national

Do you have theoretical lessons on HPV during your training?
205 responses

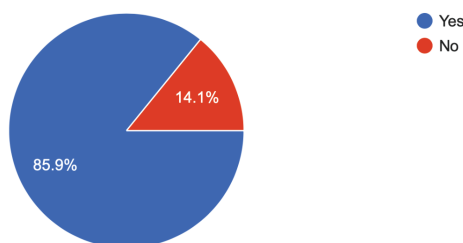


Figure 1. Theoretical lessons on HPV during residency

Do you consider that there is a potential risk when applying the vaccine?
205 responses

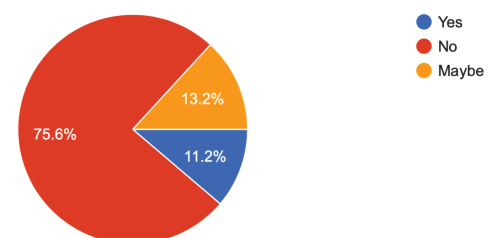


Figure 2. Risks of HPV vaccination

Are there any contraindications for the application of the vaccine?
205 responses

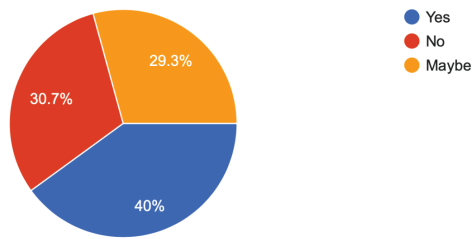


Figure 3. Contraindications to HPV vaccination

vaccination programs of both Turkey and Romania. Four other respondents who were not fully vaccinated were from Albania, Kenya, the Philippines, and Turkey. They had each received only a single dose of the vaccine at the ages of 27, 36, 28, and 26 years, respectively. The majority of the respondents (39/95, 41%) received the vaccine in their third decade of life, whereas 31 (32.6%) received it in their second decade of life and 15 (15.7%) in their fourth decade of life. Ten (10.5%) respondents did not remember when they took the vaccine. All respondents volunteered that they had been vaccinated following the recommendation. The vaccine was recommended for respondents mostly by their Ob/Gyn senior colleagues (110, 53.7%), while 82, 40.0% received recommendations from their gynecologists. Others were vaccinated because the vaccine was recommended by their national immunization guidelines (75, 36.6%), family and friends (67, 32.7%), mass/social media (54, 26.3%), or family medicine doctors (28, 13.7%) (Graphic 1). Only eight (3.9%) respondents did not know where HPV vaccination could be obtained in their countries of residence. A few had never tested for HPV (6, 2.9%), whereas 13 (6.3%) had previously tested positive for a type of HPV.

Do you have HPV vaccination?
205 responses

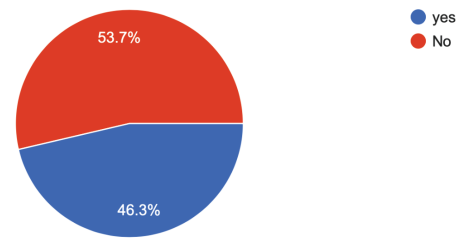


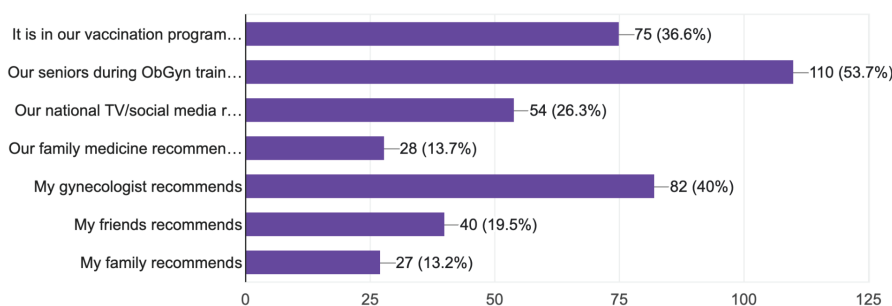
Figure 4. Rate of HPV vaccination among respondents

Prevalence of HPV Risk Factors Among the Study Participants, Screening, and Treatment

Most (186, 90.7%) respondents were non-smokers. The majority of them had multiple (two or more) sexual partners (120, 58.5%), with the number of sexual partners ranging from zero to 20.

A few (9, 4.3%) respondents reported that their countries had no routine Pap smear screening programs (no program in Albania, Kyrgyzstan, Malawi, Pakistan and Sudan; annual program but primary health care services are not sufficient in Venezuela; no regular screening in Austria but a respondent reported screening every 2-3 years in Austria), while in most countries (113, 55.1%) Pap smear is done every three years if not done with HPV screening. Three of six respondents from South Africa replied that routine Pap smear testing in their country is performed every 10 years. The majority of respondents reported that HPV screening was routinely performed in their countries every three to five years (124, 60.4%), while in some, it was not routinely performed (53, 25.8%). Most of the respondents knew how to manage HPV-positive patients (179, 87.3%).

Are you encouraged by any party to get HPV vaccination?
205 responses



Graphic 1. HPV vaccination encouraging parties

Discussion

Ob/Gyns generally have good knowledge of HPV and its vaccine, having learned about these in medical school and during their Ob/Gyn residency training⁽¹²⁻¹⁴⁾, as seen in our study. Ob/Gyns' level of knowledge of HPV and HPV vaccination influences their willingness to recommend the vaccine to clients⁽¹²⁾, and recommendation by a healthcare provider (HCP) has consistently been identified as a significant driver of HPV vaccine uptake^(15,16). This was also demonstrated in our study, where all the respondents volunteered that they had received the vaccine following recommendation, mostly by an Ob/Gyn senior colleague, their gynecologist, or family physician. In addition to recommending the vaccine, Ob/Gyns play crucial roles in educating, informing, and answering clients' questions about the vaccine, as well as correcting the misconceptions and misinformation that fuel vaccine hesitancy^(16,17). For these to be effectively performed, Ob/Gyns must have very sound knowledge of the virus and the vaccine. Adequate education and training of HCPs, including the Ob/Gyns, on HPV, the vaccine, and its importance is an important step toward eliminating CC. Medical school curricula must include modules on HPV and the HPV vaccine, its immunology, benefits, and side effects⁽¹⁷⁾. This is even more so because more than 70% of our study participants learned about HPV for the first time during medical school.

Despite the widespread knowledge of HPV and HPV immunization among the Ob/Gyns in our study, more than 50% of them had not been vaccinated. This was although the majority of them had multiple sexual partners, a prominent risk factor for HPV infection⁽¹¹⁾. Similar poor attitudes, perceptions, and uptake of HPV vaccine among Ob/Gyns have been reported by other authors^(18,19). Many unvaccinated Ob/Gyns express concerns over the safety and efficacy of the vaccine, and these concerns constitute a barrier to their recommending the vaccine to their patients^(20,21). This is despite the proven efficacy and safety of the HPV vaccine^(22,23). This further emphasizes the need for targeted educational interventions and further research to understand and address these unfounded concerns, beliefs, and misconceptions held by some Ob/Gyns. This becomes even more important as most of the respondents in our study reported that they took the vaccine following the recommendation of their Ob/Gyn colleagues. Brennan et al.⁽²⁰⁾ reported that Ob/Gyns were more likely to recommend the HPV vaccine to their patients if they believed/perceived that their other Ob/Gyns were also recommending the vaccine. Tackling the negative perceptions of Ob/Gyns about the HPV vaccine will, therefore, potentially increase the coverage and uptake of the vaccine, both among ob/gyns at individual and collective levels, as well as among the general population.

The majority of our study respondents agreed that the ideal age for HPV vaccination was before becoming sexually active, even though most of them received the vaccine in their third decade of life. The primary target population for HPV vaccination is girls

aged 9-13 years before their sexual debut⁽²³⁾. If administered in this age group, the vaccine is more than 99% effective for preventing HPV infection, and achieving a vaccine coverage rate of >80% in girls reduces the risk of HPV infection in boys^(22,23). Therefore, unvaccinated women up to the age of 45 years should receive the vaccine irrespective of sexual activity or prior exposure to HPV⁽²²⁾. Most of the Ob/Gyns in our study agreed with this recommendation. Our study also found that most of the participants had yet to complete their vaccine doses. The low completion rate of the multiple HPV dosing schedule prompted the current single dose recommendation to increase global HPV vaccine uptake⁽¹⁰⁾.

Study Limitations

This study is limited by its descriptive nature and convenience sampling technique, which predisposes the subjects to selection bias. The small sample size may also make generalization of the study findings difficult. The study did not explore the reasons for the high non-vaccination rate reported, and details of the concerns of the unvaccinated respondents. These limitations aside, to the best of our knowledge, this is the first study investigating the understanding and awareness of HPV and its vaccination among Ob/Gyn trainees and young specialists worldwide. This study provides crucial data to inform interventions and policies aimed at enhancing global understanding of HPV, and increasing HPV vaccine coverage and uptake rates. Further larger-scale research can build on the valuable groundwork that our study provides.

Conclusion

HPV vaccine uptake among Ob/Gyns globally remains poor despite their good knowledge of HPV and HPV vaccination. There is a need for targeted educational interventions and further research to better understand and address the concerns of unvaccinated Ob/Gyns. Addressing these concerns will potentially improve vaccine recommendation by these ob/gyns, an important driver of vaccine uptake, and increase global HPV vaccine coverage and uptake rates.

Ethics

Ethics Committee Approval: Ethical approval was not sought for this study because it was a completely anonymous online survey with no patient-related data.

Informed Consent: All respondents consented to participate in the study before completing the questionnaire.

Authorship Contributions

Surgical and Medical Practices: E.G.T., Concept: E.G.T., Design: E.G.T., A.E.U., P.R., F.R., Data Collection or Processing: E.G.T., Analysis or Interpretation: E.G.T., A.E.U., P.R., F.R., Literature Search: E.G.T., A.E.U., P.R., F.R., Writing: E.G.T., A.E.U., P.R., F.R.

Conflict of Interest: No conflict of interest was declared by the authors.

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