Knowledge on and Attitude Toward Human Papillomavirus Infection and Its Vaccine in a Turkish Subpopulation

Türk Kadınlarının HPV Enfeksiyonu ve Aşısı Hakkında Bilgi ve Tutumları

Anıl ONAN, MD,[a]
Seçil ÖZKAN, MD,[b]
Ümit KORUCUOĞLU, MD,[a]
Nur AKSAKAL, MD,[b]
Çağatay TAŞKIRAN, MD,[a]
Remzi AYGÜN, MD,[b]
Haldun GÜNER, MD[a]

Departments of
[a]Obstetrics and Gynecology,
[b]Public Health
Gazi University Faculty of Medicine,
Ankara

Geliş Tarihi/*Received:* 10.05.2008
Kabul Tarihi/*Accepted:* 11.07.2008

Yazışma Adresi/*Correspondence:*
Ümit KORUCUOĞLU MD,
Gazi University Faculty of Medicine,
Department of Obstetrics and
Gynecology, Ankara,
TÜRKİYE/TURKEY
korucu23@yahoo.com

ABSTRACT Objective: To assess the levels of knowledge and attitudes held by a sample group of women in Turkey, concerning HPV infection and the vaccine developed against the virus. **Material and Methods:** A self-created questionnaire investigating the baseline characteristics, demographic properties and knowledge on and attitude toward HPV infection and vaccine was applied to 1808 women. **Results:** Among 1808 participants, 448 (24.8%) claimed they had already heard about HPV infection and 439 about the HPV vaccine (24.3%). Of the 439 women who had already heard about the vaccine, 270 (61.5%) told they required more information about the vaccine before they could decide to get the vaccine, 11.0% indicated that they would have the vaccine if their insurance covered it and they would not pay for the vaccine and 6.0% declared that they would immediately get vaccinated. When women were asked whether they would get their daughters vaccinated, 76.4% told they would. Lack of knowledge was the most common reason for refusal to get their daughter vaccinated. **Conclusion:** This study has confirmed the need for further education about HPV infection and its vaccine in our population.

Key Words: Human papillomavirus vaccine, TA; uterine cervical neoplasms; infection

ÖZET Amaç: Türkiye'deki bir grup kadının HPV enfeksiyonu ve aşısı hakkındaki bilgi düzeylerini ölçmek ve tutumlarını tespit etmektir. **Gereç ve Yöntemler:** On beş yaşın üzerinde 1808 kadının dahil edildiği bu çalışma Eylül-Aralık 2007 tarihleri arasında Ankara'da gerçekleştirilmiştir. Katılımcılara, demografik özelliklerini, HPV enfeksiyonu ve aşısı hakkındaki bilgi ve tutumlarını sorgulayan sorular içeren anketler yüz-yüze görüşme tekniğiyle uygulanmıştır. **Bulgular:** Katılan 1808 kadından 448 (%24.8)'i daha önce HPV enfeksiyonunu, 439'u da (%24.3) daha önce HPV aşısını duyduklarını belirtmişlerdir. Aşıyı daha önce duyan 439 kadından 270 (%61.5)'i aşıyı kendilerine yaptırmaya karar verebilmeleri için aşı hakkında daha fazla bilgiye ihtiyaç duyduklarını, %11'i aşıyı eğer sağlık güvenceleri karşılarsa yaptıracaklarını ve %6'sı aşıyı hemen yaptıracaklarını belirtmiştir. Kadınlara kız çocuklarını aşılatıp aşılatmayacakları sorulduğunda %76.4'ü aşılatmayacağını söylemiştir. Bunun en sık sebebi olarak aşı hakkında yeterli bilgiye sahip olmamayı göstermişlerdir. **Sonuç:** Bu çalışma, toplumumuzda HPV enfeksiyonu ve aşısı hakkındaki eğitim programlarının yaygınlaştırılmasının gerekliliğini ortaya koymuştur.

Anahtar Kelimeler: HPV aşısı; servikal kanser; enfeksiyon

Turkiye Klinikleri J Med Sci 2009;29(3):594-8

Human papillomavirus (HPV) infection is the most common sexually transmitted infection with a prevalence of up to 75% among sexually active adults.[1] Although the infection is mostly asymptomatic, some oncogenic HPV types may lead to the development of cervical dyspla-

sias and cancer. High-risk HPV types including 16, 18, 31, 33, 35, 39, 45 and 51 are detected in 99% of cervical cancers.[2]

HPV is a nonenveloped, double-stranded DNA virus that belongs to the Papillomaviridae family. The HPV genome encodes proteins that comprise the viral capsid, against which most of the host humoral immune response is directed. The major capsid protein, L1, can self assemble into pentamers and subsequently into virus-like particles (VLPs) when independently expressed in cultured cells and induce high titers of type-specific and protective neutralizing antibodies. Consequently, HPV vaccines based on type-specific VLPs that lack DNA and are not infectious have been developed. In June 2006, the quadrivalent HPV vaccine against types 6, 11, 16 and 18 was licensed for use among females aged 9 to 26 years against HPV induced diseases, including persistent infection, warts, dysplasias and anogenital cancers.

The aim of the current study was to assess the levels of knowledge and attitudes held by a sample group of women in Turkey, concerning HPV infection and the vaccine developed against the virus. To our knowledge, this is the first international report in our country investigating the subject. In addition, this is among the reports in the literature investigating the attitude toward HPV vaccine including a high number of participants.

MATERIAL AND METHODS

This descriptive study, including women over 15 years old, was performed between September and December 2007, in Ankara, capital city of Turkey. A total number of 58.922 women over 15 years old who were living in the areas covered by six "Primary Health Care Centers" of Ankara were enrolled in the study. With a confidence interval of 95%, a standard deviation of 2%, and an expected 50% incidence of knowledge on HPV infection and vaccine, the target sample size was calculated to be 2307 by using Epi Info statistical program. The coverage rate of the study was 78.3% with 1808 participants who could be interviewed out of the predetermined 2307. Institutional Review Board (IRB) approval was obtained from the "Local Ethics Committee" in Gazi University Faculty of Medicine. Informed consent was obtained for each participant.

A self-created questionnaire investigating the baseline characteristics, demographic properties and knowledge on and attitude toward HPV infection and vaccine was applied to 1808 women. The questionnaires were applied by medical doctors and intern doctors of the public health department via a face-to-face interview. In order to achieve standardization, a brief course was applied to all medical doctors and intern doctors before the study, providing them with the information about the questionnaire and data collection.

Data were characterized by means, standart deviations and percents and were analyzed by SPSS 10.0 computer program. A p value of <0.05 was considered significant.

RESULTS

The questionnaire was applied to 1808 women. The mean age of the participants was 37.6 ± 13.0 (minimum 15, maximum 87). Of the participants, 1488 (82.3%) were married, 207 (11.4%) were single, 113 (6.3%) were divorced/widow. Sixty-four women (3.5%) were illiterate, 33 women (1.8%) were only literate, 624 (34.5%) were primary school graduates, 765 were (42.3%) high school graduates and 322 (17.8%) were university graduates. Out of 1808 women (11.3%), 204 did not have any social insurance (Table 1).

Among 1808 participants, 448 (24.8%) claimed they had already heard about HPV infection and 1360 (75.2%) told they had never heard about the HPV infection (Table 2). The way of transmission for the HPV infection was questioned among the 448 participants who claimed they had already heard about the infection. The question was in the form of multiple choice and possible ways indicated were sexual transmission, airway, via food, via blood and blood products, from toilets and from the common use of towels or daily affairs. Participants could select more than one way of transmission. The most common way of transmission stated by 339 participants (75.4%), was sexu-

TABLE 1: Baseline characteristics and demographic data

Age	
(mean + standard deviation)	37.6 + 13.0
Marital status	
Married	1488 (82.3%)
Single	207 (11.4%)
Widow/divorced	113 (6.3%)
Educational status	
Illiterate	64 (3.5%)
Literate	33 (1.8%)
Primary school	624 (34.5%)
High school	765 (42.3%)
University	322 (17.8%)
Social insurance	
(+)	1604 (88.7%)
(-)	204 (11.3%)

al transmission. Among these 339 participants, 262 indicated that the sexual route was the only way of transmission for HPV infection. Fifty-five (12.1%) participants claimed blood and its products, 48 (11.6%) participants toilets and 41 (9.2%) participants towels to be transmission routes for HPV infection. Eighty-nine of 448 women (19.9%) did not know the way of transmission for HPV infection (Table 2).

Another question asked to the 448 participants who had already heard about the infection was whether the virus had a predilection for gender. Two hundred and thirty eight women (53.1%) indicated that the virus could infect both men and women.; 6 (1.3%) thought that the infection occurred only in men and 132 thought the infection occurred only in women (29.5%). Seventy-two (16.1%) participants did not have an idea on this issue (Table 2).

Subsequently, participants were asked if they had already heard about the HPV vaccine and 439 of 1808 (24.3%) participants replied they had already heard about the vaccine. The rest (75.7%) had never heard about the vaccine. The most common source for this information was the television in 335 participants (76.3%) and 225 of those (51.3%) notified the television as the sole source of information. Other indicated sources of information were family, friends, health services, internet and magazines, each around 5%.

The dosing scheme of the HPV vaccine was stated as only 1 dose by 30 (6.8%) participants, 2 doses by 20 (4.6%) participants, and 3 doses by another 30 (6.8%) participants; 359 (81.8%) participants did not know the dosing scheme of the HPV vaccine (Table 2). Four hundred and ten out of 439 (93.4%) participants declared they did not know the price of the vaccine. The rest of participants had an idea about the price, but various prices in a very wide range were indicated (the range was around 10-1000 US dollars). When the correct timing of the vaccine was questioned, 79.2% of those who had already heard about the vaccine told they did not know, 4.6% indicated "10 years old", 4.1% indicated "just before marriage" and 0.5% indicated the "postmenopausal period".

Following the questions on knowledge, attitudes toward the vaccine were investigated. The opinions of women were asked about being vaccinated. Of the 439 women who had already

TABLE 2: Summary of knowledge of participants on HPV and its vaccine

Have you heard of HPV?	
Yes	448 (24.8%)
No	1360 (75.2%)
How do you think you get HPV?	
Sexually	339 (75.4%)
Other	144 (32.9%)
Don't know	89 (19.9%)
Is HPV an infection which affects	
Both men and women	238 (53.1%)
Only women	132 (29.5%)
Only men	6 (1.3%)
Don't know	72 (16.1%)
Have you heard of HPV vaccine?	
Yes	439 (24.3%)
No	1369 (75.7%)
How many doses are required?	
One dose	30 (6.8%)
Two doses	20 (4.6%)
Three doses	30 (6.8%)
Don't know	359 (81.8%)

heard about the vaccine, 270 (61.5%) told they required more information about the vaccine before they decided to get the vaccine; 11.0% told they would be vaccinated if their insurance covered it and they would not pay for the vaccine and 6.0% indicated that they would immediately be vaccinated. The remaining participants did not have any idea on this issue (Table 3). When women were asked whether they would get their daughters vaccinated, 146 of 439 (33.3%) women told they did not have any daughter, 224 (51.1%) women told they would and 68 (15.5%) women told they would not get their daughters vaccinated. Of those 68 women against the vaccination of their daughters, 46 (68.7%) told they did not have enough information about the vaccine, 11 (16.4%) women thought their daughter was sexually inactive and one woman (1.5%) declared she had anxieties about the side effects of the vaccine (Table 3). When women were asked whether they would get their sons vaccinated, 29.5% told they did not have any sons, 188 (43.6%) told they would and 116 (26.9%) told they would not get their sons vaccinated. Of those 116 women against the vaccination of their sons, 80 (69.6%) told they did not have enough information about the vaccine, 11 (9.6%) women thought their son was sexually inactive and one woman (0.9%) declared she had anxieties about the side effects of the vaccine (Table 3).

TABLE 3: Summary of attitudes of participants toward HPV vaccine

Would you be vaccinated?	
Need more information	270 (61.5%)
Yes, if insurance covers	48 (11.0%)
Yes	26 (6.0%)
Don't know	95 (21.5%)
Would you get your daughter vaccinated?	
Don't have any daughters	146 (33.3%)
Yes	224 (51.1%)
No	68 (15.5%)
Why wouldn't you get your daughter vaccinated?	
Don't have enough information	46 (68.7%)
Think their daughter is sexually inactive	11 (16.4%)
Fear of side effects	1 (1.5%)
Would you get your son vaccinated?	
Don't have any sons	129 (29.5%)
Yes	188 (43.6%)
No	116 (26.9%)
Why wouldn't you get your son vaccinated?	
Don't have enough information	80 (69.6%)
Think their son is sexually inactive	11 (9.6%)
Fear of side effects	1 (0.9%)

DISCUSSION

More than a year passed since the quadrivalent vaccine against HPV infection has been licensed by the United States Food and Drug Administration, but the current level of knowledge on and attitude toward the vaccine in the community remain controversial. Previous data suggested that knowledge on HPV and its association with cervical cancer was low in the general population.[3,4] Few studies have been performed to investigate the level of knowledge on and attitude toward the HPV vaccine, and limited data is actually available.[5-9] The most important limitation concerning these studies was the relatively small sample size. The current study was performed with a larger sample size than those of previous studies in order to be more representative of the whole population and is expected to shed light on the current level of knowledge on and attitude toward HPV vaccine in the community.

Only one fourth of women surveyed had heard of HPV infection (24.8%). Although this is consistent with the previously reported low level of knowledge on HPV infection in the community,[3,4] the ratio is significantly lower. This can be attributed to the fact that our population is conservative and sexual issues are mostly taboo, especially for women. Participants who were aware of the HPV infection mostly knew that it was a sexually transmitted disease (75.4%); however, 19.9% of those who had already heard about the infection told they did not know the way of transmission. Interestingly, only half of women who had already heard about the HPV infection knew it could affect both men and women. Thus, most people in our population lack enough information on HPV infection. However, HPV infection is a major issue in our population as the incidence of cervical cancer announced by the Ministry of Health increased from 0.7/100.000 in 1996 to 3.87/100.000 in 2007.

The number of participants who were aware of the HPV vaccine was similar to the number of participants who were aware of the HPV infection itself (24.3%). In other words, almost all participants who were aware of the infection were also aware of its vaccine. Women who had already heard about the vaccine indicated the television as the most common source of information (76.3%). Further questions on HPV vaccine proved that women lacked sufficient knowledge on HPV vaccine and they required more information. The "Advisory Committee on Immunization Practices (ACIP)" recommends three doses of HPV vaccination at 11-12 years old. However, only 6.8% of those who had already heard about the HPV vaccine correctly stated that three doses were required and 81.8% did not know the dosing scheme. Only 4.6% of women who had already heard about the vaccine stated "around 10 years" as the correct timing for the vaccination and most of the participants were unaware of the correct timing for the HPV vaccine. Moreover, participants were mostly unaware of the price of the HPV vaccine.

As the final part of analysis, the attitudes of participants toward HPV vaccine were investigated. Women mostly refused to get an immediate vaccine and the most common reasons for that was lack of information; in addition, they did not know whether their insurance covered the vaccine. Although women were mostly unwilling for an immediate HPV vaccine for themselves, they were not against vaccination of their daughters. Of the 293 women who had a daughter, 224 told they would get their daughter vaccinated (76.4%). The most common statement of those who were against vaccination of their daughters was that they lacked sufficient information about the vaccine.

There are still outstanding issues to be addressed regarding HPV vaccines. Should the vaccine be applied only to females or should males be covered too? Is the vaccine cost-effective, providing its high-price and necessity to continue pap smear testing due to diversity of HPV types other than those four covered by the vaccine? What is the duration of efficacy of the vaccine, as follow-up studies cover only five years up to now? What is the ideal frequency of pap smear testing after the vaccine? Are boosters required? In conclusion, lack of information on HPV vaccine and its price remain major obstacles for its widespread acceptance. This study has confirmed the need for further education about HPV infection and its vaccine in our population.

REFERENCES

1. Koutsky L. Epidemiology of genital human papillomavirus infection. Am J Med 1997; 102(5A):3-8.
2. Walboomers JM, Jacobs MV, Manos MM, Bosch FX, Kummer JA, Shah KV, et al. Human papillomavirus is a necessary cause of invasive cervical cancer worldwide. J Pathol 1999;189(1):12-9.
3. Holcomb B, Bailey JM, Crawford K, Ruffin MT 4th. Adults' knowledge and behaviors related to human papillomavirus infection. J Am Board Fam Pract 2004;17(1):26-31.
4. Yacobi E, Tennant C, Ferrante J, Pal N, Roetzheim R. University students' knowledge and awareness of HPV. Prev Med 1999;28(6):535-41.
5. Giles M, Garland S. A study of women's knowledge regarding human papillomavirus infection, cervical cancer and human papillomavirus vaccines. Aust N Z J Obstet Gynaecol 2006;46(4):311-5.
6. Gerend MA, Lee SC, Shepherd JE. Predictors of human papillomavirus vaccination acceptability among underserved women. Sex Transm Dis 2007;34(7):468-71.
7. Zimet GD. Improving adolescent health: focus on HPV vaccine acceptance. J Adolesc Health 2005;37(6 Suppl):S17-23.
8. Lee PWH, Kwan TTC, Tam KF, Chan KKL, Young PMC, Lo SST, et al. Beliefs about cervical cancer and human papillomavirus (HPV) and acceptability of HPV vaccination among Chinese women in Hong Kong. Prev Med 2007;45(2-3):130-4.
9. Chan SS, Cheung TH, Lo WK, Chung TK. Women's attitudes on human papillomavirus vaccination to their daughters. J Adolesc Health 2007;41(2):204-7.