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Knowledge levels of adolescent girls about *human papilloma* virus and its vaccine

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Abstract

Aim: The aim of our study was to evaluate the level of knowledge of the adolescent girls who presented to our clinic about *human papilloma virus* (HPV) infection and HPV vaccine.

Material and Methods: Five hundred and one adolescent girls aged between 13 and 18 years who presented to the gynecology outpatient clinic between March 2012 and March 2013 were asked to answer the questions of the questionnaire about HPV and HPV vaccine. The "Participant Information Form" and "HPV Information Assessment Form" were used by examination of the related literature by the investigators. The data obtained were entered into the computer using the SPSS 16.5 program and evaluated. Descriptive statistics were shown with mean, standard deviation, number and percentage values.

Results: The mean age of 501 subjects who were included into the study was 15.92 years. 390 subjects (77.8%) who were included in the study had no information about HPV. 111 subjects (22.2%) stated that they heard of HPV before or had information about HPV. The mean age of the subjects who had information about *human papilloma virus* was found to be 16.52 years. The mean age of 390 subjects (77.8%) who had no information about *human papilloma virus* was 15.75 years. It was found that only one of the subjects (0.9%) was vaccinated with HPV vaccine. When the subjects who did not wish to be vaccinated were asked for the reason, 40.9% stated that the reason was inadequate information, 26.4% stated that the reason was high cost, 16.4% stated that the reason was the fact that they did not consider themselves at risk and 16.4% stated that the reason was the fact that they were afraid of side effects.

Conclusions: In our study, it was found that the adolescent girls who constituted our study group had insufficient information about HPV and HPV vaccine. Verbal, written and visual communication tools and internet should be used intensively and efficiently for the objective of introducing HPV vaccine and teaching the precautions related with prevention of cervix cancer in terms of public health. Primarily pediatrician and gynecologists and family physicians who give service for the adolescence age group should be supported to develop appropriate attitudes and behaviors related with HPV vaccine and infection. (Türk Ped Arş 2014; 49: 142-7)

Key words: Adolescent, *human papilloma virus*, *human papilloma virus* vaccine

Inroduction

Cervical cancer which is observed with second highest frequency in women after breast cancer caused to more than 250 000 deaths in 2005 80% of which occured in developing countries (1). In our country, it is the 9th most common cancer among all cancers of women and its incidence is 4.5/100 000 according to 2003 data (2). It is the 13th most common cause among the causes of mortality related with cancer in Turkey (3).

The most important risk factor in cervical cancer is being infected with human papilloma virus (HPV). Human papilloma virus is a sexually transmitted disease which affects 30-50% of sexually active women. Human papilloma virus has more than 100 types which cause to benign proliferations including verruca, epithelial cysts, hyperkeratosis, anogenital, orolaryngeal and pha-

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ryngeal papillomas or invasive malignencies. 6-11 HPV types which are known to be low-risk types cause to genital verruca and 16-18 HPV types which are known to be high-risk types may cause to serious health problems including cervical or other anogenital cancers (4-7). Scientific evidence in recent years show that 15 cancerogenic HPV types which cause to persistent HPV infections are the main cause in development of cervical cancer. Currently, HPV DNA is found in more than 99% of cervical cancer cases and in more than 94% of cervical intraepithelial neoplasia (CIN) cases (8-11).

In prevention of cervical cancer, secondary protection methods including screening with Papanicolau (PAP) smear and early diagnosis are used. In this context, primary protection has also become possible with authorization of quadrivalent HPV vaccine against types 6, 11, 16 and 18 in 2006 and bivalant HPV vaccine against types 16 and 19 in 2009. Both vaccines were found to be efficient in preventing resistant infections and related cervical intraepithelial neoplasia 2 (CIN 2) in subjects who had no HPV infection, whereas they were not found to be efficient in subjects who were infected with HPV (12).

In our country, the incidence of HPV is lower compared to the values of Europe and North America. However, a gradual increase in the risk factors including a gradual decrease in the age of the first sexual relationship, multiple sexual partners and smoking in adolescents and the increased risk of sexually transmitted diseases in this age group who do not prefer protection methods during sexual intercourse render information about HPV and HPV vaccine which will provide primary protection of cervical cancer more important for our country (3, 13).

In developing countries including our country, the risk of having cervical cancer for a life time is about 3% (14-16). It primarily affects the patient group who have low socioeconomical conditions and who can not benefit from ordinary investigations-treatment methods. In this study, adolescent girls aged between 13 and 18 years were addressed and they were asked to answer the questions of the questionnaires related with HPV and HPV vaccine. The knowledge levels of adolescents about the subject were tried to be evaluated based on these results and the actions which should be taken in terms of preventive medicine were reviewed.

Material and Methods

The study was conducted between March 2012 and March 2013 in Süleymaniye Maternity Education and Research Hospital. Adolescent girls who presented to the Gynecology and Emergency outpatient clinic because of different causes were included in the study.

Since the number of adolescent girls aged between 13 and 18 years in the community is not known, the population size was calculated assuming the condition where the community was not known. Accordingly, since there is no such study conducted with adolescent girls aged between 13 and 18 years in our country, it was assumed that the rate of knowledge of HPV in the female population was 26% based on the study of Güvenç et al. (17). With an accuracy of 95%, Z=1,96 and d^2 value was taken as 0.04. Accordingly, the population size was found to be $n=1.96^2$, 0,26, $0.74/0.04^2=463$ by using the $n=Z^2$ a/2. p(1- p)/ d^2 equation. Taking approximately 10% more of this value the population size was determined to be 500.

The "Participant Information Form" and "HPV Information Assessment Form" which were developed by the investigators by examination of the related literature were used in the study. The "Participant Information Form" is composed of the questions questioning the demographic properties of the participants. This form questions different sociodemographic properties of the participants including the age and education and working status of the parents. The "HPV Information Assessment Form" is compsed of a total of 14 questions. The contents of the questions were prepared by reviewing the similar studies in the literature. With the assessment form it was questioned if the participants heard of HPV, where they got information about transmission routes, the diseases caused by HPV and information about HPV, protection methods, if they heard of HPV vaccine, if they were willing to get vaccinated and what the reasons were if they were not willing. Approval was obtained for the conduction of the study from Süleymaniye Women's and Children's Diseases Education and Research Hospital Education Planning Committee on 02.22.2012. before application, the objective of the study and how the questionnaires would be filled in was explained to all participants by the investigators and consent was obtained from the participants. Collection of the questionnaire forms lasted approximately for 15-30 minutes.

Statistical analysis

The data obtained were evaluated in computer environment using Statistical Package for the Social Sciences (SPSS Inc, Chicago, USA) 16.5 program. Descriptive statistics were expressed as mean, Standard deviation, number and percentages. In comparison of the groups in terms of continuous variables (age), Student's t test was used. Chi-square test was used in determining the relations between categorical variables. The results were considered significant when the p value was found to be <0.05 in a confidence interval of 95%.

Results

The ages of 501 subjects who were included in the study raged between 13 and 18 years. The mean age was 15.92±1.43

years. 390 subjects (77.8%) included in the study had no information about HPV. 111 subjects (22.2%) stated that they had heard of HPV before or had information about HPV. When the demographic properties of 111 subjects who had knowledge of HPV were examined, their mean age was found to be 16.52±1.12 years. The mean age of 390 subjects (77.8%) who had no information about HPV was 15.75±1.56 years. A statistically significant difference was observed between the two groups (p:0.000, CI 95%, 0.487-1.067). When the education status of the subjects who had information about HPV was examined, it was found that 4.5% were studying in the primary school, 11.7% were studying in the secondary school, 57.7% were studying in high school and 26.1% were studying in the university. When the rates of continuance of studying of these subjects were examined, it was found that 82.9% continued their education and 17.1% discontinued their education. 94.5% of the subjects who had knowledge about HPV were single and 5.4% were married (Table 1). When the familial properties of the subjects who had knowledge about HPV were examined, it was observed that the mothers of 17.1% were illiterate, the mothers of 46,8% were graduates of primary school, the mothers of 31.5% were graduates of high school and 4.5% were graduates of university. When the education states of the fathers were examined, it was observed that 4.5% were illiterate and 52.3% were graduates of university.

When the education states of the subjects who had no knowledge about HPV were examined, it was observed that 12.6% were graduates of primary scool, 30.6% were graduates of secondary school, 50.4% were graduates of high school and 6.4% were in the university. 70.4% of the subjects were still continuing their education and 29.6% discontinued their education. 90.9% of the subjects were single, while 9.1% were married (Table 1). When familial education levels of these subjects were examined, it was observed that 19.3% were illiterate, 69.9% were graduates of primary school, 9.5% were graduates of high school and 1.3% were graduates of university. When the education levels of the fathers were examined, it was observed that 6.4% were illiterate, 50.6% were graduates of primary school, 38.3% were graduates of high school and 4.6% were graduates of university. When the education levels of the mothers of the subjects who had and did not have knowledge about HPV were compared (the mothers were divided into two groups as the ones who were educated up to secondary school and the ones who were educated at high school and above), a significant difference was observed between the two groups (p: 0.001 and p: 0.000, respectively) (Table 2). The education level of the mothers of the subjects who had knowledge about HPV was higher. When the education levels of the fathers of the two groups were compared (the fathers were divided into two groups as the ones who were educated up to secondary school and the ones who were educated at high school and above), no significant difference was found between the groups (p: 0.516, p: 0.607, respectively) (Table 3).

Table 1. Demographic data of adolescent girls in terms of HPV knowledge

		HPV knowledge (+) Mean±SD	HPV knowledge (-) Mean±SD	p
Age		16.52±1.12	15.75±1.56	0.001
		Number (%)	Number (%)	
Number of subjects	Number and (%)	111 (22.2)	390 (77.8)	0.001
	Primary school	5 (4.5)	49 (12.6)	0.001
	Secondary school	13 (11.7)	119 (30.6)	
	High school	64 (57.7)	197 (50.4)	
	University	29 (26.1)	25 (6.4)	
Marital status	Single	105 (94.6)	355 (90.9)	0.226
	Married	6 (5.4)	35 (9.1)	

HPV: *Human papilloma* virus; HPV knowledge (+): subjects who had knowledge about HPV; HPV knowledge (-): subjects who did not have knowledge about HPV; %, percentage; p<0.05: statistically significant; Mean±SD: mean±standard deviation.

Table 2. HPV knowledge of adolescent girls according to the maternal education status

		HPV knowledge (+)	HPV knowledge (-)	p
		Number (%)	Number (%)	
Maternal education status	Primary school and secondary school	71 (63.9)	348 (89.2)	0.001
	High school and university	40 (36.1)	42 (10.8)	

HPV: *Human papilloma virus*; HPV knowledge (+): subjects who had knowledge about HPV; HPV knowledge (-): subjects who did not have knowledge about HPV; %, percentage; p<0.05: statistically significant; Mean±SD: mean±standard deviation.

Table 3. HPV knowledge of adolescent girls according to the paternal education status

		HPV knowledge (+)	HPV knowledge (-)	p
		Number (%)	Number (%)	
Paternal education status	Primary school and secondary school	63 (56.8)	223 (57.1)	0.516
	High school and university	48 (43.2)	167 (42.9)	

HPV: *Human papilloma virus*; HPV knowledge (+): subjects who had knowledge about HPV; HPV knowledge (-): subjects who did not have knowledge about HPV; %, percentage; p<0.05: statistically significant.

Among the subjects who had knowledge about HPV, 55% answered the question "Is HPV a sexually transmitted disease?" correctly, while 15.3% answered as "I don't know". The question of 'Does HPV lead to verruca in the genital area?' was answered correctly by 32.4%, while 55.9% answered as "I don't know". 34.2% of the subjects knew that HPV caused to cervical cancer, whereas 61.3% reported that they had no knowledge about this subject. When the subjects were asked where they got the information about HPV, 39.6% reported that they obtained information from written and visual media, 19.8% reported the they obtained information from the internet, 18.9% reported that they obtained information from healthcare workers, 17.1% reported that they obtained information from school and 4.5% reported that they obtained information from friends. The rate of having heard of HPV vaccine was found to be 11.7% in the group who have heard of HPV infection before.

The question of 'Does HPV vaccine provide protection both against cervical cancer and genital warts?' was answered by only 5.4% subjects as "yes, true" and 87.4% answered as "I don't know". The question of 'Can the vaccine be administered in any age group?' was answered by 88.3% as "I don't know". The question which asked ways of protection from HPV was answered by 77.5% as "I don't know". When the most efficient protection method was asked to the subjects who knew the methods of protection against HPV, 8.1% answered as monogamousness and 8.1% answered as condom. The question if HPV vaccine was protective was answered by only 7.1% as yes and 76.6% of the subjects reported that they did not know the most efficient method of protection against HPV.

When the subjects who had knowledge about HPV where they heard of HPV vaccine, 88.3% reported that they had no idea. 3.6% of the subjects answered as written-visual media, 2.7% answered as healthcare workers, 2.7% answered as the internet, 1.8% answered as school and 0.9% answered as friends. When the subjects were informed that HPV vaccine was not reimbursed by the government, 6.3% reported that they would be vaccinated, 8.1% reported that they would not be vaccinated and 85.6% reported that they were uncertain. It was found that only one subject was vaccinated (0.9%) with HPV vaccine. When the subjects who did not wish to be vaccinated were asked the reason for this, 40.9% aswered as insufficient information, 26.4% answered as high cost, 16.4% answered as not finding herself at risk and 16.4% answered as fear of side effects.

Discussion

Cervical cancer especially affects the female group with a low socioeconomical status who can not benefit from regular investigations-treatment services. In developed countries, the disease is diagnosed before the stage of invasive cancer because of successful applications in screening programs. Therefore, cervical cancer which is observed as the 2-3rd most common cancer in developing countries is observed as the 10th most common cancer in developed countries (14).

Female deaths related with cervical cancer in the community may be decreased with raising the awareness of the community about the subject. However, studies have shown that an important portion of the community do not know the risk factors which cause to cervical cancer (18, 19). Unawareness of the risk factors prohibit protection and use of diagnostic and therapeutic methods (20).

In our study, the levels of knowledge about HPV and HPV vaccine were evaluated in adolescent girls. In the study performed by Güvenç et al. (17) in 2007 on a female population, the rate of having heard of HPV was found to be 25.8%. When all subjects in our study were considered, only 4.5% had knowledge about HPV. We related the great difference between the two studies to the fact that our case group was consisted of only adolescent girls. In our study, a statistically significant difference was observed in the mean age between the groups who had knowledge and who did not have knowledge about HPV. The mean age of the groups who had knowledge about HPV was significantly higher compared to the other group (16.52-15.75, respectively). When the familial education levels of the adolescents who had knowledge and who did not have knowledge about HPV were examined, it was observed that the education level of the mothers in the group with knowledge was higher (p: 0.000 and p: 0.001, respectivley) (Table 2) and there was no significant difference in the education levels of the fathers between the two groups (p: 0.516 and p: 0.607, respectively) (Table 3). Raising the awareness of the community in this area and drawing the attention of especially adolescent girls who are the primary target population and their parents (especially mothers) to the subject and increasing the level of knowledge are important.

In the study conducted by Tarwireyi et al. (21) with nurses in 2003, it was found that 86.6% of the nurses did not know that HPV was a risk factor for cervical cancer. In our study, only 34.2% of the subjects who had knowledge about HPV did know that HPV casued tok cervical cancer. When all participants were considered, the rate of the subjects who did know that HPV caused to cervical cancer was very low (6.8%). We related this finding of our study to the fact that the adolescents which constituted the study group did not get sufficient education in school and healthcare workers did not give the necessary information.

Adolescent girls are an ideal target population in vaccination and acceptance of vaccination by the parents is critical

in vaccination of this group. It is known that the success of the vaccination program is closely related with the knowledge and beliefs of the target population about the disease and vaccine. Although the protectiveness of HPV vaccine has been demonstrated clearly, studies have shown that the general population has limited knowledge about this subject. In many studies, it has been shown that the community does not have much information about HPV vaccine (22-26). In our study, the rate of having heard of the vaccine was 11.7% in the group who had knowledge about the vaccine, while this rate reduced to 2.6% when all subjects were considered.

Currently, HPV vaccines as a very efficient protective method in protection from diseases arising from viruses including mainly cervical cancer have been included in the national vaccination programs of 43 countries in the world and are being administered mainly to adolescent girls. In our country, the HPV vaccine is not administered free of charge, since it is not included in the regular vaccination program. However, these vaccines which have licence are administered when they are purchased. The extensiveness of vaccination is related with many factors including cost, attitudes of the parents and adolescent about the vaccine and recommendation and prescription of the vaccine by physicians. Studies have shown that the main obstacles in vaccination include cost, fear that vaccination will inititate sexual activity earlier and religious and social beliefs (27). In some studies, monogamousness was one of the reasons of not accepting HPV vaccine (28). In our study, only 6.3% of the participants reported that they wished to be vaccinated after they were informed that the HPV vaccine was not reimbursed by the government. When the subjects who did not wish to be vaccinated were asked the reasons, 40.9% reported insufficient information, 26.4% reported high cost 16.4% reported that they did not find themselves at risk and 16.4% reported that they were concerned about side effects. We observed that only one subject was vaccinated (0.2%) with HPV vaccine (a student studying in the first class of university whose parents were graduates of university). In contrast, Brewer et al. (28) observed that the population with a low education level accepted vaccination with a higher rate in their study.

In some studies, it was reported that giving a brief education transformed the views of 75% of the population about HPV vaccination to positive views (29). On the other hand, in a randomized prospective study, it was reported that the information form about HPV increased the level of knowledge of women about HPV, but this increase had very little effect on acception of the HPV vaccine. Therefore, the authors concluded that knowledge levels, behavior and attitudes were very important in acception of HPV vaccine and in the decision process of the parents (30).

Conclusively, we found that the knowledge levels of adolescent girls about HPV and HPV vaccine were not sufficient. The limitations of our study included the fact that our study was conducted with only adolescent girls and the case group who presented to our outpatient clinic. Therefore, we think that our results can not be generalized to the whole of Turkey. Larger scale studies throughout Turkey should be performed in the adolescent age group in relation with Human papilloma virus and HPV vaccine.

As a result of the assessment made, it was found that the knowledge levels of the adolescent girls aged between 13 and 18 years who presented to gynecology and obstetrics outpatient clinic about HPV and HPV vaccine were not sufficient. In the light of this assessment, planning of appropriate education programs in schools if necessary and informing educators about HPV in a more detailed way may increase awareness. In terms of public health, verbal, written, visual communication tools and the internet should be used intensively and in an efficient way with the objective of introducing the HPV vaccine and teaching the precautions related with prevention of cervical cancer. Development of accurate attitutes and behaviors by primarily pediatricians, gynecologists and family physicians who give service for the adolescent age group related with HPV vaccine and infection should be supported.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Süleymaniye Training and Education Hospital, Education and Coordination Committee (22.02.2012).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

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