

HPV and HPV vaccine knowledge among HPV-vaccinated women in North-eastern Romania

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Summary

Purpose of the study: Romania is one of the few countries where not only female children but also young women are vaccinated against human papillomavirus (HPV) ("catch-up" vaccination). The purpose of this study was to evaluate the knowledge and attitudes towards HPV, HPV vaccination, and cervical cancer among young women who were part of the HPV catch-up vaccination program. *Materials and Methods:* The authors recruited women over 16 years of age to be immunized with the HPV vaccine. They were offered a free catch-up vaccination by the Romanian government in 2010-2011. Participants were interviewed using a standard questionnaire. Through this survey, the participants offered their knowledge and opinions regarding HPV, the connection between HPV and cervical cancer, and the HPV vaccination. *Results:* Among the participants (n=120), knowledge of HPV, HPV vaccine, and cervical screening was good. Most respondents were aware of the causal relationship between HPV and cervical cancer (83.3%), the sexual transmission of HPV (81.6%), and its asymptomatic nature (68.3%). The women with a high knowledge score were more likely to have attained a high educational level, to work in the healthcare system, and to consult more health information sources. A major role in deciding to get the vaccination was the physician (gynaecologist or general practitioner) who proposed the vaccination and explained the importance of being immunized with the HPV vaccine. *Conclusion:* Knowledge regarding HPV and its relation to cervical cancer is high among women protected by the HPV vaccine. They have a positive opinion about HPV vaccines, and they recommend vaccination to other relatives or friends.

Key words: HPV; HPV vaccination; HPV knowledge; HPV catch-up vaccination.

Introduction

Human papilloma virus (HPV) represents one of the most common sexually transmitted infections worldwide. The relationship between HPV infection and cervical cancers was reported more than 20 years ago [1]. While secondary prevention of cervical cancer is offered through cervical screening, primary prevention is now possible with the HPV vaccination. Since 2006, two highly effective HPV vaccines have been available to prevent infections with high-risk HPV genotypes 16 and 18, and many industrialized countries have adopted routine HPV vaccination into their national immunization programs [2].

For the last 20 years, Romania has had the highest cervical cancer mortality rate in Europe, with rates 6.3 times higher than the average of other European Union countries [3, 4]. Due to these epidemiological data, in 2008 an HPV vaccination campaign was introduced in Romania targeting 10- to 11-year-old girls. The program has involved the recommended administration of two types of vaccine: Gardasil quadrivalent vaccine or Cervarix vaccine over six months of three doses. Gardasil vaccine protects against infection with the oncogenic HPV types 16 and 18, as well as infection with types 6 and 11, which are related to development of ano-genital warts, while Cervarix protects

against the oncogenic HPV types 16 and 18. For the rest of the population, the vaccine was available for purchase. Statistics from 2008 revealed that only 2.5% of the 110,000 eligible girls in the target population were immunized [5]. Thus, a re-launching of the vaccination campaign was planned for 2009–2010, targeting girls between 12 and 14 years of age, and also a "catch-up" population of women over 16 years of age was included [2]. Ultimately, Romanian parents rejected the vaccine so widely that the national program for primary prevention has been cancelled [5].

The high incidence of cervical cancer along with vaccination campaign failures makes it important to look for possible reasons of the failure and to investigate women's attitudes and perceptions of the HPV vaccine in Romania. Several studies have been performed to understand the reasons why parents of the daughter rejected the vaccination. Results show that parents' main reasons for not vaccinating their daughters were fear regarding side effects, the belief that the vaccine represents an experiment that uses their daughters, the belief that the vaccine embodies a conspiracy theory that aims to reduce the world's population, and general mistrust in the ineffective healthcare system [5].

Little is known about HPV knowledge and attitudes among women who were part of the HPV catch-up vacci-

Revised manuscript accepted for publication May 30, 2016

nation program. This study intended to evaluate the knowledge about HPV and attitudes towards HPV vaccination among vaccinated women and to discover the main reasons for accepting or demanding the vaccination. These reasons could provide ideas for structuring future health communication campaigns regarding the HPV vaccine, especially if a new re-launching of the vaccination program will be scheduled in the future.

Materials and Methods

This cross-sectional study was conducted among 120 HPV-vaccinated women from rural and urban areas during a period from October 2015 to January 2016. Written consent was obtained from the participants, and they received information regarding the study. The study was approved by the ethics committee of the University of Medicine and Pharmacy "Grigore T. Popa" Iasi, Romania.

The questionnaire consisted of four questions: (1) socio-demographic and socio-economic factors like age, marital status, level of education, number of children, income, (2) awareness and knowledge about HPV infection, (3) awareness and knowledge attitude about the HPV vaccine, and (4) sources for information. The questionnaire was pretested on 20 women before the study was conducted in order to assess the clarity of the questions.

Data analysis was performed using the "Statistical Package for Social Science (SPSS). After all data were entered into SPSS, they were reviewed for the accuracy of data entry. Basic descriptive statistics and frequency calculations were performed on all variables. Both descriptive and analytical methods were used. Chi-square test was performed to explore the relation between socio-demographic and economic factors and the study outcome variables.

Results

The study included 120 women. The mean age of the study population was 24 years (32.35 ± 12.78); 97 were < 35 years of age and 23 were ≥ 35 years of age. Ninety-eight participants were from urban areas and 22 from rural areas. The principal socio-demographic characteristics are presented in Table 1.

Participants were asked if they had knowledge regarding HPV; 115 (95.8%) declared that they had heard about HPV. Ninety-eight women (81.6%) reported that HPV is transmitted through sexual intercourse and 100 women (83.3%) reported that HPV is one of the causes of cervical cancer among women. Regarding genital warts, 25 participants (20.8%) reported that HPV could be the cause of the warts. Eighty-two (68.3%) women knew about the asymptomatic nature of HPV infection.

Risk factors for HPV transmission were known in different proportions: multiple sexual partners 76 women (63.3%), not using condoms 56 (46.6%), early onset of sexual activity 21 (17.5%), and multiple partners of the male partner 48 (40%).

One hundred two women (85%) were in general positive about receiving the vaccination. The main reasons for accepting or demanding the HPV vaccination were: protec-

Table 1. — *Socio-demographic characteristic of the participants.*

Variable		Number	%
Age (years)	17-25	32	26.6
	25-35	65	54.2
	over 35	23	19.2
Marital status	Single	40	33.3
	Married	63	52.5
	Concubinage	10	8.3
	Divorced	7	5.8
Education level	Primary	10	8.3
	Secondary	21	17.5
	University degree	89	74.2
Number of children	No children	60	50
	1	39	32.5
	2-3	20	16.6
	>3	1	0.8
Occupation	Employee	81	67.5
	Student	11	9.2
	Social aid	4	3.3
	Without occupation	24	20

tion against cervical cancer (97 women), having a relative or close friend diagnosed with cervical cancer (23 women), and advice from healthcare professionals (45 women).

More than half (67.5%) of the women did not know the target population or the precise recommended ages for vaccination (although most responses such as "young women" and "adolescents" were broadly correct). In the opinion of 65 (54.1%) of the participants, no other screening methods are necessary after vaccination.

Participants source of information about HPV were healthcare providers (31.3%), Internet (33%), and television (11%). The number of sources listed was multiple in more than 20% of cases.

Discussion

The present study is one of the first, to the best of the authors' knowledge, to assess knowledge about HPV and the HPV vaccine in Romania in a group of HPV-vaccinated women. These women were vaccinated through a catch-up vaccination program offered by the Romanian government between 2010-2011.

The study found a good awareness of HPV among the participants. From 120 vaccinated women, 115 had heard about the virus. The studies from the literature show very different grades of awareness and knowledge among the general population or specific target groups. In some studies, there are good levels of awareness like in the study by Jain *et al.*, while other studies revealed a low level of awareness [6]. In a Danish study, 10% of the participants reported to have heard of HPV [7] and Maier *et al.* stated that 20.22% of adolescents in Romania had heard about

HPV [8]. In the present study, the high level of awareness regarding HPV among vaccinated women could be explained by the information received before vaccination from the health practitioner and from the vaccination campaign organized by the Minister of Health. Another possible explanation could be the high educational level of the vaccinated women, (74.1% of them had received higher education or students at the time of vaccination were enrolled in higher education). Also an important percentage of the vaccinated women from the present study were healthcare employees with a good level of information in the domain of health. Most women were aware that HPV is a sexually transmitted disease and 98 of the participants (81.6%) declared that they knew that HPV could be sexually acquired.

The present study found a good awareness regarding the relationship between HPV and cervical cancer (83.3%). This good level of knowledge of the connection between HPV and cervical cancer can be explained by the fact that the vaccine was promoted as a cervical cancer vaccine.

Deficiencies in knowledge were noted for risk factors for HPV infection, such as early onset of sexual activity. A relatively low number of our participants (20.8%) were aware of the relationship between HPV and genital warts. This could be explained by the fact that basically the vaccine was promoted primarily for use against cervical cancer. This is in accordance with knowledge in the general population according to the meta-analysis by Coles *et al.* who showed that knowledge surrounding HPV and genital warts was generally poor [9].

The information regarding HPV vaccine focused on two main problems: knowledge regarding the benefits of HPV vaccination and factors that convinced the women to be vaccinated. More than half (67.5%) of the women did not know the target population or the precise recommended ages for vaccination (although most responses such as “young women” and “adolescents” were broadly correct). More than half of the vaccinated women believed that after vaccination no other screening methods are necessary. From this perspective, it is important to correctly educate the women before and after vaccination. It is important to explain that screening for cervical cancer should not be interrupted, although it is possible that the vaccination will change the mode of the screening in the future.

The main reason for requiring or accepting the vaccination was knowledge of the relationship between HPV and cervical cancer; 87% of the vaccinated women knew the relation between HPV and cervical cancer, and this was one of the principal reasons for accepting the vaccination. Another important factor for requiring vaccination (although not reimbursed by the government) was the presence in the family or a close relation diagnosed (or even dead) with cervical cancer.

Regarding the source of information and trust, the participants declared that healthcare professionals along with television and the Internet provided most of the informa-

tion. Healthcare professionals played an important role in women making the decision to receive the vaccination. Media, a common source of information, influenced the decision regarding vaccination. At the same time, some negative information from the media was partly responsible for the failure of the HPV vaccination in Romania. In 2013, Penta and Băban conducted a study to explore the content and quality of HPV vaccine media coverage in Romania [10]. They analysed 271 media reports (from newspapers, magazines, videos, and informational websites) published online between November 2007 and January 2012. Overall, results indicated that 31.4% of the materials were neutral, 28% were negative or extremely negative, 17% were mixed, while 23.6% were positive towards the vaccine. In the media, elementary information about the vaccine and HPV was constantly left out, and sometimes inaccuracies were found. Negatively disposed reports were more likely to contain incorrect data about vaccine efficacy and less likely to provide comprehensive information about the vaccine and HPV-related diseases [10]. The media needs more rigorous standards when communicating about the HPV vaccine. It is necessary to avoid the transmission of inaccurate information, especially given that it is not easy to reject false information [11]. The most dominant vaccine-related concerns were side effects and insufficient testing, and according to a study conducted by Craciun and Băban [5], these were the same reasons for parents to reject the vaccine for their daughters. The study of Pența and Băban suggests that educational interventions are greatly needed as a response to suboptimal and incomplete media coverage of HPV vaccination. In this way, media could be used to educate the public with evidence-based information about the vaccines. The present study suggests that one important factor in education is represented by healthcare professionals, because they can play an important role in educating people. In the next campaign, they should be more actively involved in the education. Improving communication between health officials and mass media might represent a useful strategy [12]. In this way, media could be used to educate the public with evidence-based information about the vaccines.

Before launching a new HPV vaccination program, it will be crucial to establish good and proper communication between health professionals and the media. The present study shows that general practitioners and gynaecologists play an important role in women making the decision to receive the vaccination. At the same time, they should provide correct information regarding the benefits but also limitations of the vaccination. As was seen by the present authors, there is a false belief among vaccinated women that the vaccine provides full protection against cervical cancer and that no cervical screening is necessary after one is vaccinated.

Limitations of the study include the fact that the sample was not representative of the general Romanian population,

because recruitment was limited to one region of the country. It will be beneficial to explore other parts of the country to identify factors that played an important role in the decision regarding HPV vaccination.

Conclusion

The present study discovered a good level of awareness about HPV and a positive attitude toward vaccination among HPV-vaccinated women. An important role in accepting the vaccination was played by healthcare professionals. Improving communication between health officials and the mass media might represent a useful strategy if a re-launching of the HPV vaccination campaign will take place in the future.

Acknowledgements

This study was financially supported by the University of Medicine and Pharmacy “Grigore T. Popa” Iasi, by internal grant – no. 30883/30.12.2014 – titled “First effects of HPV vaccination in Romania - a cross-sectional study in the northeastern part of the country”.

References

- [1] Bosch F.X., Manos M.M., Muñoz N., Sherman M., Jansen A.M., Peto J., *et al.*: “Prevalence of human papillomavirus in cervical cancer: a worldwide perspective. International biological study on cervical cancer (IBSCC) Study Group”. *J. Natl. Cancer Inst.*, 1995, 87, 796.
- [2] Dorleans F., Giambi C., Dematte L., Cotter S., Stefanoff P., Mereckiene J., *et al.*: “The current state of introduction of human papilloma virus vaccination into national immunisation schedules in Europe: first results of the VENICE2 2010 survey”. *Euro Surveill.*, 2010, 15, 19730.
- [3] Ferlay J., Bray F., Pisani P., Parkin DM.: “GLOBOCAN 2002: Cancer incidence, mortality and prevalence worldwide”. *IARC Cancer Base*, 2004, 5, version 2.0. Lyon: IARC Press.
- [4] Todorova I., Baban A., Alexandorva-Karamanova A., Bradley J.: “Inequalities in cervical cancer screening in Eastern Europe: perspectives from Bulgaria and Romania”. *Int. J. Publ. Health*, 2009, 54, 222.
- [5] Craciun C., Băban A.: “Who will take the blame?”: understanding the reasons why Romanian mothers decline HPV vaccination for their daughters”. *Vaccine*, 2012, 30, 6789.
- [6] Jain N., Euler G.L., Shefer A., Lu P., Yankey D., Markowitz L.: “Human papillomavirus (HPV) awareness and vaccination initiation among women in the United States, National Immunization Survey-Adult 2007”. *Prev. Med.*, 2009, 48, 426.
- [7] Nielsen A., Munk C., Liaw K.L., Kjaer S.K.: “Awareness of human papillomavirus in 23 000 Danish men from the general male population”. *Eur. J. Cancer Prev.*, 2009, 18, 236.
- [8] Maier C., Maier T., Neagu C.E., Vlădăreanu R.: “Romanian adolescents’ knowledge and attitudes towards human papillomavirus infection and prophylactic vaccination”. *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 2015, 195, 77.
- [9] Coles V.A., Patel A.S., Allen F.L., Keeping S.T., Carroll S.M.: “The association of human papillomavirus vaccination with sexual behaviours and human papillomavirus knowledge: a systematic review”. *Int. J. STD AIDS*, 2015, 6, 777.
- [10] Penca M.A., Băban A.: “Mass media coverage of HPV vaccination in Romania: a content analysis”. *Health Educ. Res.*, 2014, 29, 977.
- [11] Gilbert D.T., Krull D.S., Mallone P.S.: “Unbelieving the unbelievable some problems in the rejection of false information”. *J. Pers. Soc. Psychol.*, 1990, 59, 601.
- [12] Payne J.G., Schulte S.K.: “Mass media, public health, and achieving health literacy”. *J. Health Commun.*, 2003, 8, 124.

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