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Awareness and Knowledge About HPV and HPV Vaccine Among Romanian Women

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Abstract Cervical cancer is one of the most prevalent gynecological malignancies worldwide. Romania has the highest incidence of this type of cancer in Europe. A successful prevention strategy has to consider the primary prevention measures (including health education on human papilloma virus (HPV) infection but also vaccination). The aim of this study was to assess the knowledge and attitudes of Romanian women about HPV and HPV vaccine. We conducted a cross-sectional study survey of 454 women using an anonymously completed questionnaire covering the awareness and knowledge of HPV infection and attitudes to vaccination. We also analyzed the discussions and conclusion from a focus group of healthcare professionals regarding (1) HPV and HPV awareness and attitude, and (2) suggestions for improving HPV vaccine knowledge and acceptance. 69.2% of women were aware about HPV but their knowledge was minimal and incomplete. While 62.3% had heard about HPV vaccine, only 50.7% had a positive attitude toward it. The main barriers to vaccination were the fear of side effects, the perception that is risky, and the financial concerns. Deficiencies in knowledge were noted for vaccine, genital warts, or risks factors for HPV infection like the early onset of sexual life. The information regarding HPV and vaccine is not always accurate and complete, and only 50.7% of women have a positive attitude toward the vaccine. More educational programs and clearer communication are needed to raise awareness and knowledge regarding HPV and HPV vaccine.

Keywords HPV · HPV vaccination · HPV knowledge

Introduction

Human papilloma virus (HPV) represents one of the most common sexually transmitted infections worldwide. The relationship between HPV infection and cervical cancers was described more than 20 years ago [1]. While secondary prevention of cervical cancer is offered through cervical screening, primary prevention is now possible through the HPV vaccine, as well as through health education.

One of the long-term effects of a successful HPV vaccination program is a reduction of cervical cancer incidence and mortality. This means that HPV vaccination has great public health value, but in order to benefit from the entire potential of this preventive measure, the authorities and decision makers need to find appropriate ways to promote HPV vaccination, starting with increasing awareness and knowledge about HPV infection and HPV vaccine among the general population.

For the last 20 years, Romania has had the highest cervical cancer mortality in Europe, with rates 6.3 times higher than the average of European Union countries. Cervical cancer is the second highest cause of cancer death in Romanian women, after breast cancer, and the first cause of death by cancer in the 25–44-year age group. Besides mortality rates steadily

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increasing during the last two decades, cervical cancer incidence rates have also risen from 15.7 cases per 100,000 in 1982 to 31.5 in 2000. Most cases are diagnosed in the advanced stages of the disease [2]. The main reason for the high incidence and mortality rates due to cervical cancer is the lack of a cervical screening program. Romania did not have a population-based screening program until 2012, when the National Screening Program was launched for women 25–64 years of age. Other reasons that can explain the high incidence of mortality from cervical cancer are lack of screening opportunities and the deterioration of the medical system [3].

Because of these epidemiological data, in 2008, a HPV vaccination campaign was introduced in Romania targeting 10–11-year-old girls. Statistics from 2008 revealed that only 2.5% of the 110,000 eligible girls in the target group were vaccinated [4]. Thus, a re-launching of the vaccination campaign was planned for 2009–2010, targeting girls between 12 and 14 years old; also, a "catch-up" population of women 16–26 years old was included [5]. Ultimately, Romanian parents rejected the vaccine so widely that the National program for primary prevention has been canceled [4].

The high value of incidence for cervical cancer along with vaccination campaign failures makes it important to look for possible reasons for this and to investigate women's attitudes and perceptions of the HPV vaccine in Romania. Our study aimed to evaluate knowledge regarding HPV and beliefs and attitudes of women toward the HPV vaccine and to provide ideas for future health communication campaigns.

Methods

This cross-sectional study was conducted among 454 women from rural and urban area during a period from April to July 2015. In rural areas, the women completed the questionnaire at a general practitioner's office and in urban areas, in a gynecologist's office. Written consent was obtained from all the participants, after they were informed about the study.

The questionnaire consisted of questions grouped in four parts: (1) socio-demographic and socioeconomic factors like age, marital status, level of education, number of children, and income—6 questions; (2) awareness and knowledge about HPV infection—16 questions; (3) awareness and attitude about HPV vaccine—11 questions; and (4) sources for information—2 questions. The questionnaire was pretested on 20 women before being used in the main study in order to assess the clarity of the questions.

In 2016, a workshop was organized in Iasi regarding "Latest updates on Colposcopy, HPV diseases and Cervical cancer." As a part of this event, there was a discussion group with 86 medical doctors from all regions of the country, from different specialties (gynecologists, pathologists, general practitioners) as well as other important decision-making people (a vice-rector of the University of Medicine and Pharmacy from Iasi; representatives of pharmaceutical companies). The discussion topics were (1) HPV and HPV awareness and attitude, and (2) suggestions for improving HPV vaccine knowledge and acceptance.

Statistical Method

Data analysis was performed using Statistical Package for Social Science (SPSS) 18.0 standard version. After all questionnaire data were entered into SPSS, they were checked for accuracy. Descriptive statistics were performed on all variables (means and frequencies). Both descriptive and analytical methods were used. The chi-square test was performed to explore the relation between socio-demographic and socioeconomic factors and the study outcome variables (awareness and knowledge).

Results

Socio-demographic Characteristics

Four hundred fifty-four women were included in the study. The mean age of the study population was 33.4 years (33.4 +/− 7.8). Two hundred twelve (46.7%) participants were from rural area and 242 (53.3%) from urban area. The main socio-demographic characteristics are presented in Table 1.

HPV Awareness and Knowledge

Participants were asked if they had heard about HPV. Three hundred fourteen (69.2%) of them declared that they heard about HPV. Two hundred forty-nine women (54.8%) reported that HPV is transmitted through sexual intercourse and 243 women (53.5%) reported that HPV is one of the causes of cervical cancer among women. Regarding genital warts, 120 participants (26.4%) reported that HPV could be the cause of them. Two hundred nine (46%) participants declared that multiple sexual partners represent a risk for HPV infection. Risk factors for HPV transmission were known in different proportion: multiple sexual partners—209 (46%), non-use of condoms—130 women (28.6%), early onset of sexual life—43 (9.5%), and multiple male partners—5 (1.1%).

The awareness regarding HPV was different in urban area compared with rural one. One hundred eighty-five out of 242 women from urban area (76.5%) were aware about HPV,

Table 1 Socio-demographic characteristic of the participants

Variable	Number	Percent
Marital status		
Single	75	16.5
Married	349	76.9
Concubinage	15	3.3
Divorced	9	2.0
Widow	6	1.3
Education level		
Primary	189	41.6
Secondary	153	33.7
University degree	112	24.7
Number of children		
No children	162	35.7
1	118	26.0
2–3	146	32.2
>3	28	6.2
Occupation		
Employee	228	50.2
Student	21	4.6
Retired	4	0.9
Social aid	22	4.8
Without occupation	179	39.4

while in rural area, 129 out of 212 women (60.8%) heard about HPV.

HPV Vaccination

Three hundred thirty-seven women (74.2%) were positive about the vaccination practice in general (no matter the type of vaccine) and 283 participants (62.3%) had heard about the HPV vaccine. Only 230 responders (50.7%) agreed with HPV vaccination. The reasons for rejecting HPV vaccine are given in Table 2. The main barriers against HPV were fear of side effects—110 (55.8%) and the impression that there is "no need because no active sexual life"—26 (13.2%). Other reason included financial concerns—9 (4.6%), fear of needles—6 (3%), lack of time—4 (2%), not knowing where the vaccine is available—16 (8.1%), or different unspecified reasons.

Table 2 Main reasons for non-accepting HPV vaccination

Reason	Percent
Fear of side effects	55.8
High price	4.6
Fear of injections	3.0
They consider that they do not need it	13.2
They do not know where they can get the vaccine	8.1
Different other reasons	15.2

Source of Information

Participants' sources of information about HPV were healthcare providers—135 (29.7%), internet—106 (23%), and television—78 (17%). More than 92 (20%) of subjects have used multiple sources for information.

Workshop Focus Group Results

A total of 86 people participated in the discussion group during the workshop "Latest updates on Colposcopy, HPV diseases and Cervical cancer." The participants were represented by medical doctors from all regions of the country, from different specialties (gynecologists, pathologists, and general practitioners), and decision-making people from local and national institutions (a vice-rector of the University of Medicine and Pharmacy from Iasi; representatives of Pharmaceutical Companies, vive-president of the Romanian Society of Obstetrics and Gynecology, president of the Romanian Society of Colposcopy).

The discussion group identified themes related to two main topics: (1) HPV and HPV awareness and attitude, and (2) suggestions for improving HPV vaccine knowledge and acceptance. After the discussion group during the "Latest updates on Colposcopy, HPV diseases and Cervical cancer" workshop, we identified the same general problems related to "HPV awareness and knowledge," "HPV vaccination," and "source of information" among populations from the different regions of our country.

Discussion

The present study is one of the first to assess awareness and knowledge about HPV and HPV vaccine in Romania. This research provides a detailed picture of both rural and urban area, knowing the educational and economic difference between them in our country.

The study found a good awareness of HPV and HPV vaccine among the participants. 69.2% and 62.3%, respectively, of the women declared that they heard about HPV and HPV vaccine. The awareness regarding HPV was slightly greater in urban women than in rural women. The level of HPV awareness is very heterogeneous in the literature; various reports showed very different degrees of awareness and knowledge among the general population or specific target groups. In some studies, there are good levels of awareness [6, 7] while other studies revealed a low level of awareness [6–8]. In a Danish study, 10% of the participants reported having heard of HPV [9]. Also, Gotttvall stated that 13.5% of students in Sweden had heard about HPV [10]. In Romania, a possible reason for this good level of awareness could be due to the vaccination campaign organized by the Ministry of Health.

Even if this campaign proved to be a failure, there has been a lot of public debate, both in the press and on TV, which could be a possible reason for the high level of awareness we found regarding HPV and HPV vaccine.

Deficiencies in knowledge were noted for vaccine, genital warts, or risks factors for HPV infection (like early onset of sexual contact). More than a half (68%) 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). Regarding genital warts, only 26.4% of the participants know that they are HPV-related disease. These data are in accordance with the metaanalysis of Coles who showed that knowledge surrounding HPV and genital warts was generally poor [11]. In our study, the knowledge gaps about HPV-related diseases occur among participants with higher educational level as well as lower ones. Also, we had no significant difference between rural and urban areas. These knowledge gaps will require educational programs in both rural and urban areas. There are many possible ways to educate population regarding HPV and HPV-related diseases.

Another important aspect, which we tried to cover, was the information and attitude toward the HPV vaccine. Unfortunately, the first attempt of campaign vaccination in Romania has failed. Our study revealed that 62.3% of the participants heard about HPV vaccine and only 50.7% would agree to HPV vaccination. The main barriers to vaccination are represented by the fear of side effects following vaccination and the perception that the vaccine is risky. After the vaccination campaign failure in Romania, a study regarding the mother's beliefs about the vaccine was made in 2012 [4]. According to this study, the mothers considered that the failure of the campaign could be explained in terms of poor organization and erroneous underlying assumptions. The main reasons for not vaccinating their daughters were the perception that the vaccine is risky, the belief that the vaccine represents an experiment that uses their daughters as guinea pigs, the belief that the vaccine embodies a conspiracy theory that aims to reduce the world's population, and the general mistrust in the ineffective health system [4]. People felt they have unclear information about the mechanism through which the vaccine works; the efficacy of the vaccine, safety, and side effects; and the schedule through which it is applied. Mothers stated they would need clear, factual information about the HPV vaccine and its link to cervical cancer in order to motivate them to accept it for their daughters [4]. A study in Hungary (also an Eastern European country) on acceptability of the HPV vaccine revealed among participants the absence of information and high levels of distrust in the health system and in health specialists in Hungary [12]. Our study revealed that the same belief that the "vaccine is risky" still persists among women even after a few good years after the HPV campaign was introduced in Romania. Lack of knowledge about HPV may make it difficult for women to make appropriate decisions. Therefore, clear and sustained educational programs may be needed in both rural and urban areas before starting a new vaccination campaign.

Regarding the source of information and trust, the participants stated that healthcare professionals along with television and Internet provided most of the information. The problem is that the Internet does not always provide the most accurate information.

Some possible explanations for the lack of information about HPV and HPV vaccine, which were identified after the discussion group during the "Latest updates on Colposcopy, HPV diseases and Cervical cancer" workshop, were the following: the education campaign for healthcare professionals was insufficient; professionals did not transmit the information and knowledge further to population, parents, and educators (in school); there is still an important need for knowledge for all involved in the process of cervical cancer prevention, whatever their role; and there are still questions that demand an answer, like "*Do you think that there was enough research about safety of this vaccine*?;" "*After the vaccination, my daughter will never develop cervical cancer*?;" or "*My 12 year old vaccinated daughter will be protected after 5–6 years when she will start her sex life*?"

Another issue targeted by the discussion group at the workshop was related to "suggestions for improving HPV vaccine knowledge and acceptance." The proposed measures to improve HPV vaccination rates through a high level of HPV vaccine knowledge and acceptance were the following: continuing medical education courses for healthcare professionals (doctors, nurses, etc.) and involvement of mass media in HPV education campaign for the general population. A very important point is to give the appropriate and correct information in order to raise the awareness and the responsibility among all those involved (healthcare professionals, educators, population, parents, girls, boys, mass media, and decision-making factors). The importance of healthcare professionals in education regarding HPV infection was explored previously by other studies, which came to the same conclusion [13]. All over the country, there was an agreement that there is a strong need for further education strategy, taken into account all the participants in this process, the special cultural and educational conditions from our country, and the attitude of the community. Medical doctors thought that an important role in education has to be for rural area which is disadvantaged in a number of ways that may affect health education. However, our study suggests that there is little difference between rural and urban women with regard to HPV infections and vaccine.

There is evidence that raising public awareness and knowledge are important tasks in Romania. Without proper communication, vaccines can have little impact in reducing incidence of HPV infections and cervical cancer. Education on HPV should include information regarding safety and efficacy.

Thus, an education campaign focused on patients is necessary to improve attitudes toward acceptability of the vaccine.

Limitations of the study include the fact that the sample was not a representative of the general Romanian population because recruitment was limited to one region of the country. After the discussion group during the "Latest updates on Colposcopy, HPV diseases and Cervical cancer" workshop, we identified the same general problems related to "HPV awareness and knowledge," "HPV vaccination," and "source of information" among populations from the different regions of our country, but a further extended quantitative and qualitative research which will involve also other areas of the country will be more relevant for the issue.

Our results are relevant for the northeastern part of Romania and are helpful for the public health authorities from this region but could be a support for other regions to start the research of the level of knowledge among their specific population. The study included only non-vaccinated women (probably related to the failure of the national campaign), which was unintended because this was not an exclusion criterion in our current research. The level of knowledge among vaccinated women is being studied and will be published separately. It is possible that among the vaccinated population, the level of knowledge to be superior to the values found in the current study. Another limitation is represented by the fact that uninsured population (with no access to GP or gynecologist) was not included in the study. We will develop a future extended research taken into account all the limitations we found in this current study.

Conclusions

Our study reports a good level of awareness but a low level of knowledge and limited positive attitude toward vaccination with HPV. More educational programs and clearer communications are needed to raise awareness and knowledge regarding HPV and HPV vaccine. These programs should be targeted at both healthcare professionals and the general population (male and female). For the first category (which includes general practitioners, gynecologists, dermatologists, epidemiologists, infectious diseases specialists, school physicians, and oncologists), there is a need to improve the level of knowledge about HPV infection (risk factors, diagnostic, prevention, and consequences), cervical cancer, and HPV vaccination and the duty to inform the individuals from the population about HPV vaccination possibility. Continuing medical education (CME) is an important way to give appropriate information to these specialists but also can developed different projects which are human resources oriented (training courses). To succeed with HPV immunization, the population has to cooperate. The other category, the population (which means women, but also men, with a very important role in the transmission of HPV infections), is very important to be educated in order to obtain the expected results after the implementation of a preventive measure like HPV vaccination. The population has to know what vaccination is, which are the indications and the contraindications, and what the effects of HPV vaccination are. They have to understand many things like why there is a need to vaccinate 9–12-year-old girls to avoid a disease with sexual transmission, why there is a need for three doses, how long is the protection after vaccination, the safety and efficacy of HPV vaccine, the fact that they will be protected against the infections with 16 and 18 HPV types (which produce more than 70% of cervical cancers), and the fact that usually the men circulate the HPV and women develop the disease. There are many modes which can be used to transmit the information to the population including TV, internet materials, and discussions with health professionals (especially general practitioner and gynecologist) during consultations. Also, educational campaigns in schools can be used to provide specific information about HPV infections and HPV vaccination for parents. The school physicians take the main role in this kind of education.

So, there is a need for a multidirectional education campaign and those who are directly involved in the development of cervical cancer prevention strategies should promote and support such a cost-efficient measure of primary prevention, which is also a helper for the success of the other primary preventive measures—HPV vaccination.

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