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Assessment of women's knowledge about HPV vaccination in the light of the HPV infection as a risk factor for cervical cancer

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Abstract

Introduction Cervical cancer (CC) is one of the most prevalent malignancies of female reproductive tract. In Poland in 2017 CC accounted for 3.0% of all newly registered tumour cases among women, and was the eighth most common female malignancy. Persistent infection with carcinogenic human papillomavirus (HPV) is the leading risk factor. Currently, it is believed that infection with the human papillomavirus (HPV), especially its oncogenic types 16 and 18, is of fundamental importance in the development of cervical cancer. Vaccination prevents from infection with certain types of viruses, and consequently the development of cancer induced by a given type of virus. Therefore, their efficacy can be measured only in the long term, in a large cohort of vaccinated adolescents reaching the age characterized by the peak incidence of these cancers.

Purpose The objective of the study was to evaluate knowledge about CC, as well as awareness of HPV and HPV vaccination among female respondents.

Material and method The research was conducted on the group of 1,260 survey respondents, who filled out the Internet questionnaire. The obtained results were analysed and checked on the basis of scientific literature.

Results The percentage of respondents who select human papillomavirus infection as a risk factor for the cervical cancer is 75.9%. The onset of intercourse at an early age was considered a risk factor by only 24.6%, while a large number of sexual partners by 45.4%. Women were also asked about knowledge of HPV vaccination. Only 73.8% of them heard about it and 26.2% declare unawareness of this type of vaccination.

Conclusions Health promotion campaigns and educational programs are necessary in order to reduce cervical cancer burden and should be directed particularly towards those who have demonstrated low cervical cancer knowledge and low awareness regarding HPV and its vaccine.

Key words HPV virus; HPV infection; cervical cancer; vaccines; vaccination;

Introduction

Cervical cancer (CC) is one of the most prevalent malignancies of female reproductive tract. In 2018, 570,000 new cases and 311,000 deaths were estimated worldwide [1]. In Poland in 2017 CC accounted for 3.0% of all newly registered tumor cases among women, and was the eighth most common female malignancy. At the same time, CC is the ninth leading cause of cancer-related death among Polish women. However, it is ranked third in incidence and second in mortality among females between 15 and 44 years of age [2]. This indicates that CC is an age-related disease, especially affecting women of reproductive age.

Cervical cancer has slow progression. When it is diagnosed in the early stages it is highly treatable with a 5-year relative survival rate of up to 92%. Besides, it is the first cancer to have an identified agent essential for its development, human papillomavirus (HPV) infection [3].

Currently, it is believed that infection with the human papillomavirus (HPV), especially its oncogenic types 16 and 18, is of fundamental importance in the development of cervical cancer.

Persistent human papillomavirus (HPV) infection is the most important factor in the development of cervical neoplasm. In 1996, HPV was globally recognized as a causative organism of cervical carcinoma by the World Health Association, the European Research Organization on Genital Infection and Neoplasia and the National Institutes of Health Consensus Conference on Cervical Cancer [4]. Papillomaviruses are very widespread among humans. Sexual contact and direct genital skin contact are the main ways of transmission of the virus. In women, most HPV infections are seen between the ages of 16 and 26. Every sexually active woman is exposed to HPV and very young people are particularly susceptible to infection [5,6].

The vast majority of infections are transient. Persistent infection with oncogenic types of the virus leads to the development of cervical cancer [6]. High Risk HPV (HR-HPV) is associated with 90% to 99.7% cases of cervical carcinoma. Two oncogenic and most common types of the virus: HPV16 and HPV18 are responsible for the development of as many as 70-80% of global cases of cervical cancer[4]. It should be emphasized that apart from the development of cystic fibrosis, infections with these viruses can also lead to other neoplasms, including anus, penis, vulva as well as mouth and larynx [7]. Other risk factors that increase the probability of disease include smoking tobacco, multiple vaginal deliveries, the use of oral contraceptives by women smokers, early sexual initiation, multiple sexual partners, positive history for sexually transmitted diseases, certain autoimmune diseases and chronic immunosuppression [7].

In women, early prevention of HPV infection is part of the primary prevention of cervical cancer [7]. The effective prevention is only choice for stopping the new incidence. The well-known Pap smear screening method is widely available, cheap and has good specificity for the detection of precancerous lesions with a proven impact on reducing CC prevalence and mortality rates [8]. Alongside these secondary prevention methods, since 2006 there has also been a primary prevention option available—the HPV vaccine[3,7].

Vaccines against HPV infection are now considered to be the first cancer vaccines. The HPV vaccines contain virus-like particles obtained by genetic recombination. Three HPV vaccines are available: 2-valent (Cervix), 4-valent (Gardasil) and 9-valent (Gardasil 9) formulations [9]. Active immunization is carried out with the required three number of doses. They may reduce the incidence of both squamous cell carcinoma and adenocarcinoma.

Most of the recommendations advise routine HPV vaccinations in both girls and boys, most often indicating the age range of 9-13 years. Vaccination is also recommended for teenagers and adults [3, 10]. The American Advisory Council on Immunization (ACIP) now recommends routine immunization of all 11-12 year old boys with the vaccine against 4 types of HPV or 9 types of the virus [3].

In Poland, vaccination against HPV infection is not a part of the mandatory immunization program. It is one of the recommended not refunded vaccinations [10].

Vaccination prevents from infection with certain types of viruses, and consequently the development of cancer induced by a given type of virus. Therefore, their efficacy can be measured only in the long term, in a large cohort of vaccinated adolescents reaching the age characterized by the peak incidence of these cancers.

However, the outcomes of vaccination should be very carefully evaluated due to the possibility of inadequate interpretation or incorrect data. Vaccine immunity is believed to be long-term, but is not a substitute for screening that should be performed regularly by women (pap smear) [7].

Purpose

The objective of the study was to evaluate knowledge about CC, as well as awareness of HPV and HPV vaccination among female respondents.

Material and methods

The research was conducted on the group of 1,260 survey respondents, who filled out the Internet questionnaire. The study was conducted from 7th July 2019 to 17th September 2020. Participation in the experiment was voluntary. The results were analysed and checked on the basis of scientific literature. The results were statistically processed using for this program Microsoft Office Excel.

Results

1260 women filled out the Internet questionnaire. The majority of participants is 18-25 years old (62.1%). 37.6% of the respondents live in a city with more than 100,000 inhabitants, 25.8% in a smaller city, while in rural areas 36.5% of them. The majority of women declare that they are sexual active (76.5%) [Table 1].

Variable		N	(%)
Age (years)	< 18	10	0.8%
	18-25	782	62.1%
	26-35	283	22.5%
	36-45	83	6.6%
	46-65	74	5.9%
	> 65	28	2.2%
Place of residence	The city over 100.000 residents	474	37.6%
	The city 20-100.000 residents	222	17.6%
	The city below 20,000 residents	103	8.2%
	Village	460	36.5%
Education	Higher	720	57.2%
	Secondary	480	38.1%
	Vocational	27	2.1%
	Primary	32	2.5%
Sexual active	Yes	962	76.5%
	No	295	23.5%
Number of sexual partners	None	202	16%
	1-3	785	62.4%
	4-10	202	16%
	>10	70	5.6%

Table 1. Characteristics of the study group

Women were asked with a multiple-choice question what are the risk factors for cervical cancer [Figure 1.]. The percentage of respondents who select human papillomavirus infection is 75.9% (n=956). Moreover, 45.4% (n=572) choose that a large number of sexual partners may affect the development of cervical cancer and 24.6% (n=310) point out early sexual intercourse as the another risk factor.

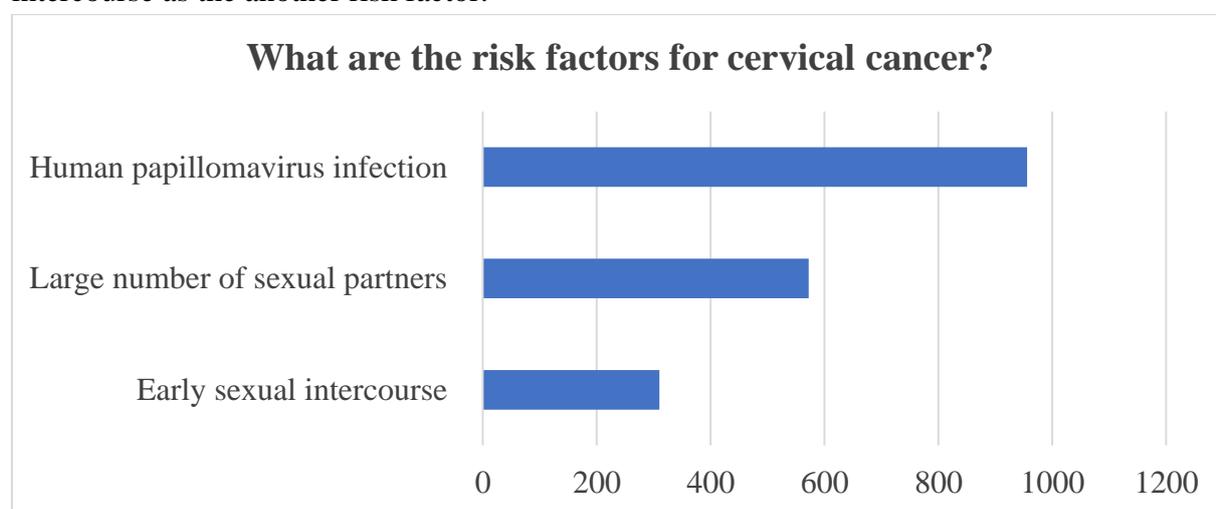


Figure 1. The risk factors for cervical cancer.

The women were also asked if they have ever heard about the HPV vaccination? Surprisingly, only 73.8% (n=929) of them heard about it and 26.2% (n=330) declare unawareness of this type of vaccination [Figure 2.].

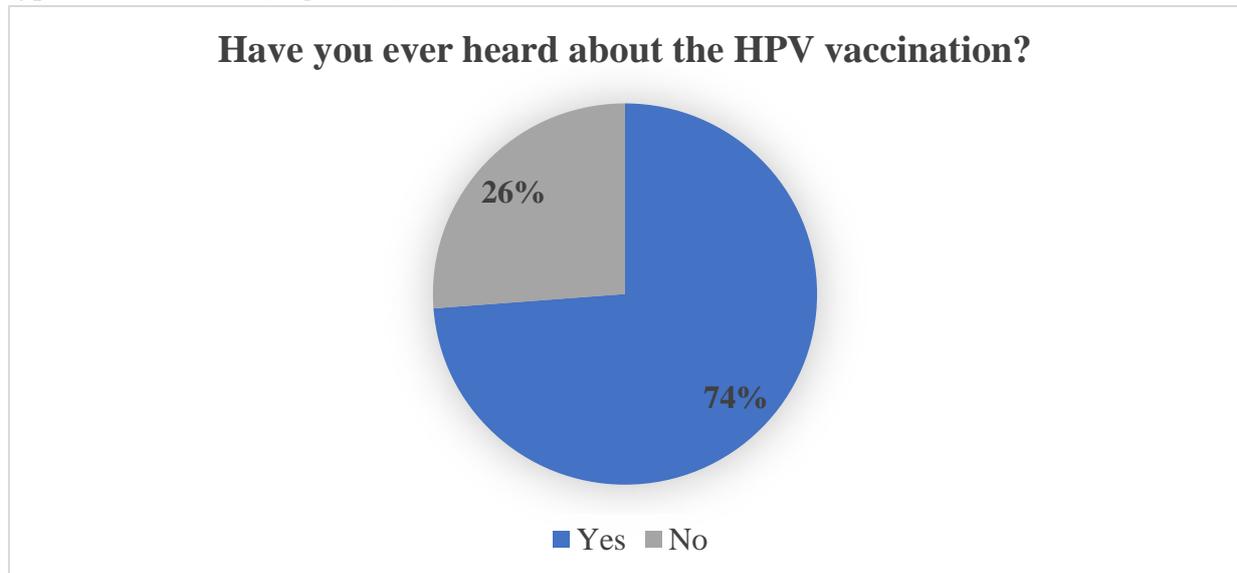


Figure 2. Knowledge about HPV vaccination.

Discussion

The analysis of the responses given by the respondents in the questionnaire made it possible to assess the level of their knowledge about the risk factors for cervical cancer.

The presented results show that among the surveyed women there is a fairly good knowledge of the CC risk factor, which is the HPV virus. Women are aware that a large number of sexual partners in life may increase the risk of infection and, consequently, the development of neoplastic changes. They are also aware of the dangers of starting sex life early. It is especially important when intercourse begins in the absence of adequate sexual education and HPV vaccination.

Most of the respondents (n=929, 74%) showed knowledge of the existence of the HPV vaccine. This may be correlated with the fact that most women report being sexually active, so they can have a better understanding of sexually transmitted diseases.

A similar study was conducted in Serbia between December 2018 and March 2019 [3]. Participants were female, first-year college students at the University of Niš. The average age of the study population was 19.13 (min 17, max 29), with the majority of the subjects coming from urban areas (75.7%). Out of 1,616 female respondents the total number of participants that had heard of HPV infection was 788 (48.8%), with a significantly higher percentage of medical students being aware of this infection. When it comes to HPV vaccine, the overall awareness was quite low (21.3%), whereas an even lower percentage of students had heard of both HPV and its vaccine (14.2%). only one fifth of the students knew about the existence of the HPV vaccine and only 14.2% knew about both HPV and its vaccine [3].

In 2013, a study of the knowledge of female students about the risk factors for cervical cancer was conducted by Ulman-Włodarz et al. [8].

Half of the respondents did not know about HPV infection as the main risk factor for cervical cancer, the correct answer was given by only 43% of the respondents. In the study group, 15% of female students did not know about the existence of the HPV vaccine. 85% of women knew about the HPV vaccination [8].

Ulman-Włodarz et al. showed that in the group of women surveyed, 49% of the respondents knew that HPV is the main cause of the development of CC, and every second knew that this virus is transmitted through sexual contact or direct contact with the skin of the genital area. 59% of respondents were aware that they could be vaccinated against HPV [8].

In study by Li et al. [11] they analyzed the knowledge, perception of HPV and HPV vaccine, and the use of information sources for relevant resources from the health care providers' perspective. They conducted a large-scale survey with 1394 participants covering three big cities in China. Majority of the respondents were females (85.7%). When asked "How do you judge your understanding or the level of your knowledge about HPV and HPV vaccine?", around 52.2% of the respondents answered that they thought they know these two topics well and 46.5% excellently [11].

Research conducted in April and May 2007 by Nowicki et. al included a group of 207 randomly selected women [6]. The women were divided into two groups. The first group consisted of women professionally related to medicine, and the second group of women not professionally related to medicine. According to 64 (48.9%) women in the first group and 54 (34.4%) in the second group, HPV infection is the main cause of cervical cancer. In both groups, the majority were in favor of immunization against HPV and would not increase risky sexual behavior after vaccination.

In the light of the own results and the cited studies, there is still insufficient awareness of persistent HPV infection and the associated cancer risk. Comparing the studies conducted in Serbia and China with the Polish studies, women in Poland show greater awareness of the existence of HPV vaccination as an element of cervical carcinoma prophylaxis.

Cervical cancer is an important disease that requires attention even at the time of adolescence, keeping prevention in view which is especially important. CC still represents the most common gynecological cancer worldwide. Therefore, public education is needed for a better understanding of CC, its risk factors and for better disease prevention.

Despite the great advances in modern medicine, no type specific medication is available for HPV infections. It should be emphasized that the HPV vaccine is an element of prophylaxis - it does not cure the already acquired papillomavirus infection, but only reduces the risk of a new infection and subsequent carrier. For this reason, its effectiveness decreases after sexual intercourse begins.

Poland is one of the EU countries in which HPV vaccinations are not included - as compulsory - in the immunization calendar, and paid vaccinations are carried out as part of primary health care. The percentage of vaccinated girls in Poland is estimated at 7.5-10%.[10]. Recommendations emphasize the need to achieve a high vaccination coverage level in target populations - WHO indicates that achieving a high vaccination coverage level in girls (> 80%) reduces HPV infection in boys [3,10]. Vaccination of both girls and boys has a positive effect on the reduction of HPV infections in the general population. The factor having a significant influence on the effect is the lack of previous HPV infection, also described as "lack of sexual initiation"[10].

Women are able to avoid cervical carcinoma by applying correct health behaviors, avoiding risk factors and vaccinating against HPV. It is important to Additionally apply the principles of secondary prevention, i.e. self-observation and regular cytodiagnosics [6].

Conclusions

The knowledge of women in this study about human papillomavirus infection and HPV infection prophylaxis is moderate to low.

In order to improve the epidemiological situation of cervical cancer in Poland, efforts should be intensified towards increased education, with particular emphasis on healthcare professionals as promoters of pro-health behavior.

It is necessary to expand educational activities, especially with regard to the main factors causing cervical cancer in order to reduce the incidence and fear of screening itself in the prevention of cervical cancer. Improving knowledge on HPV and HPV vaccine could be regarded as a crucial and practical way to reduce uncertainties and enhance belief in vaccination.

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