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# Level of student's knowledge of prevention HPV depending on university profile

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## Abstract

HPV is the most common sexually transmitted. They can lead to the formation of benign skin lesions, as well as to the development of malignant tumors. HPV infection affects both men and women, among others, by starting early initiation of sexual intercourse without mechanical protection, multiple pregnancies and births, smoking, oral sex type. Among women, persistent infection with oncogenic type of HPV can lead to dysplasia, and then to the development of cervical cancer. A key factor in preventing the occurrence of HPV infection and subsequent consequences, is the knowledge and application of the principles of prevention.

Purpose of research: Assessment the level of students knowledge of Lublin universities about the prevention of HPV infections depending on the profile of the university.

Material and Methods: The study included 108 students of Lublin universities with a medical profile - Medical University (UM - 64%) and the humanities - Marie Curie University (UMCS - 36%). Technique was used and architectural survey questionnaire.

Results: Larger belief that condom fully protects against HPV erroneously presented UMCS students (11%) than UM (3%). Early sexual initiation as a factor indicating HPV infection significantly more students of a medical profile (87%) than in the humanities (18%). Students UMCS (33%) rarely combine with HPV infection by skin to skin contact, in combination with the UM students (68%), which also provides a pathway of invasion.

Conclusions:
1.Knowledge of young adults about the prevention of HPV and the health consequences of this infection is incomplete.
2.Students in profile non-medical universities have very large deficits knowledge.
3. It is necessary to promote better knowledge on the prevention of HPV infection among young adults.
4. Promote a sense of responsibility for their own health and others, indicating the need to undergo periodic testing, prevention and treatment of sexually transmitted infections.

**Keywords:** HPV; level of knowledge; cervical cancer

## Admission

The human papillomaviruses (HPV humanpapillomavirus-) are derived from papilloma viruses of the family constituted by a heterogeneous group of viral DNA. HPV viruses are the most common sexually transmitted. Papilloma virus multiplication occurs in differentiating squamous epithelium leading to infection only active proliferating epithelium of the skin and mucous membranes [1]. In terms of oncological HPV viruses are divided into a group of small risk- low oncogenic associated with a low risk of cervical cancer, the most common HPV 6, HPV 11, HPV 13, HPV 32. That kind of viruses cause both women and men the presence of benign lesions, especially warts (usually HPV 6, HPV 11), as well as changes in the mucosa of the mouth, larynx, conjunctiva or genitals. Group of the high risk- high oncogenic, for example HPV 16, HPV 18, HPV 31, HPV 33, HPV 35 is responsible for the development of malignant tumors. With the largest share in the creation of cervical cancer are HPV 16 and HPV 18.

Studies indicate that persistent infection with oncogenic HPVIt is a major causative factor leading to dysplasia and cervical cancer. According to the National Cancer Registry, cervical cancer is now the third most common cancer incidence in women [2]. In Poland, the peak incidence is in the 6th decade of life, but in recent years has increased the number of younger women (from 35 to 44 years old) who are diagnosed with cervical cancer. In Poland also recorded one of the lowest in Europe, the percentage of 5-year survival, which was 48.3%. Cure depends primarily on the stage of cancer at diagnosis, so it is very important to detect early lesions [2].

A key factor in preventing the occurrence of HPV infection and subsequent consequences, is the knowledge and application of the rules. Prevention should be started prior to sexual initiation.

HPV infection affects both men and women through early sexual initiation, chronic inflammation, intercourse without mechanical protection, multiple pregnancies and births, low level of personal hygiene, smoking, sex type of oral, decreased immunity, lack of antioxidants in the diet, skin breakdown. The risk of infection increases with the number of sexual partners and frequency relationship to be completed [4,5,6]. These factors increase the risk of infection with oncogenic types of HPV, which studies have shown have high association with the development of gonadal tumors. For cervical cancer is 95- 99.7% and 88% of colorectal cancer [1].

HPV infection can occur in the form of latent subclinical or clinical. The clinical manifestations of infection with human papilloma virus depend on the affected anatomical area and the severity of the change. They include benign epithelial or cutaneous precancerous or early cancerous which may cause symptoms as itching, baking, purulent vaginal discharge. Malignancies, such as invasive cervical cancer can metastasize or invade other organs, then you may experience symptoms such as abdominal pain, vaginal discharge and vaginal bleeding. High oncogenic HPV types also predispose to the formation of cancer of the vulva,

anus, penis, and Bowen's disease (carcinoma of noninvasive). In addition, HPV infection predisposes the development of cancers of the head and neck, causing cancer of the mouth, palate.

Prevention of HPV infection refers to activities that lead to the elimination or limitation of infection and allow for early detection of infection. Primary prevention includes educating young people about sexual life and vaccination against human papilloma virus HPV. Vaccinations are recommended for girls and boys aged 11-12 years, and for young men and women who have not yet begun sexual intercourse. In Poland there are three HPV vaccines HPV 2-valent, 4-valent and 9-valent against the most common types of high and low oncogenic types 6, 11, 16, 18 [8]. It not protect of the entire spectrum of oncogenic HPV infection, so is necessary to perform control cytology, even in vaccinated women.

Secondary prevention in Poland supports the Population Program for Prevention and Early Detection of Cervical Cancer, whose primary objective is research Pap of women between 25 and 59 years old. Women who have early-onset sexual intercourse should do a Pap test no later than three years after sexual initiation. Pap smear allows to detect precancerous changes, and at the time of the neoplastic process [9]. Only through knowledge and implementation of prevention in both sexes is possible to minimize factors predisposing the development of disease and early detection of pathological changes.

**Objective of the work**

Assessment of the level of knowledge of students of Lublin universities about the prevention of HPV infections depending on the profile of the university.

**Material and methods**

In a study in March 2018 was attended by 108 polish students of Lublin universities medical profile- Medical University of Lublin (63.9%, n = 69) and humanistic - Maria Curie Sklodowska University in Lublin (36.1%, n = 39). For the most part these were women-87% (n = 94) men were 13% (n = 14). Most of the respondents were from rural farming 45.4% (n = 49) and the district town and reduced 23.1% (n = 25) and of Provincial least 13% (n = 14). The students were between the ages of 20 to 35 years, diverse in terms of fields of study. The greater part were people studying at the Medical University (UM) at the nursing n = 69, and the other at the University of Marie Curie on the spatial n = 39.

The study used a survey method diagnostic tool was the original questionnaire consisting of 15 questions relevant (including 7 complex - multiple choice) and specifications. Statistical analysis was performed using the software Statistica 12 PL. Results are presented as the percentage of frequencies and, a common relationship between the qualitative data and the variables evaluated by a nonparametric test $Chi^2$ Pearson. Participation in the study was voluntary and anonymous.

**Findings**

Presenting the respondents' knowledge about the prevention of HPV, made an objective assessment based on student responses to the questions in ankiecie. Respondents knowledge were examined in terms of knowing risk factors for cervical cancer, symptoms and prevention activities.

**And the prevention of HPV infections Diagnosis of HPV infection**

Identification of human papillomavirus by a Pap smear was most often indicated by a medical school students (89.9%, n = 62), less the non-medical university students (53.8%, n = 21), statistically significant correlation, $p < 0.00002$ . Tests for the presence of HPV pointed medical students often than non-medical, but the correlation was not significant (87% (n = 60)

vs. 71.8% (n = 28), p> 0.05. Statistically significant different subjects about the indications blood as an opportunity to diagnose an HPV. More often been indicated by non-medical university students than medical faculty (18.8% (n = 13) vs. 38.5% (n = 15), p <0.03.
The majority of all respondents (78.7%) knew that the most common HPV infection occurs at an early age after the start of sexual life (medical students: 82.6% (n = 57), non-medical college students: 71.8% (n = 28)), p> 0.05.
There has also been studied in relation to the assessment of the knowledge of who should perform diagnostic testing to detect the presence of the infection caused by the HPV virus. Most of the patients (04/03) indicated sexually active women independent of the number of partners (medical university students: 79.7% (n = 55) and non-medical university students: 66.7% (n = 26)), p> 0.05 . Significantly different responses were obtained regarding the participation of women in the age qualifying them for screening. It has been indicated by the significantly more than non-medical students of medical schools (43.5% (n = 30) vs. 20.5% (n = 8)), p <0.02. Every third respondent (36.1%) indicated that participation in the diagnostic test for the detection of infection caused by the presence of the HPV virus should take men regardless of age (34.8% (n = 24) medical school students and 38.
Medical students significantly more often than non-medical pointed out the following ways to prevent HPV infection - which can cause cancer in the future: vaccination against HPV (100%, n = 69 vs. 71.8%, n = 28, p <0.00001), the use of condoms (87% (n = 60) vs. 64.1% (n = 25) p <0.005),monogamy - having a permanent sexual partner (89.9% (n = 62) vs. 35.9% (n = 14)). p <0.00001), health education (84.1% (n = 58) vs. 53.8% (n = 21)p <0.001). Preventing HPV infection on the road resignation of oral sex was identified by one student medical school (1.4% of them) and two non-medical college students (5.1% of them), the relationship was not statistically significant, p> 0.05). Cancellation of anal sex prevent infection by a medical school student (1.4% of them) and three non-medical institution (7.7% of them), p> 0.05; Tab. 1.

Tab. 1. Prevention of HPV infection by the tested

| How can you prevent HPV infection? | Together | College | |
|---|---|---|---|
| | | Medical | Non-medical |
| vaccination against HPV | 97 | *** 69** | *** 28** |
| | 89.8% | **100.0%** | **71.8%** |
| use a condom | 85 | *** 60** | *** 25** |
| | 78.7% | **87.0%** | **64.1%** |
| monogamy (constant sexual partner) | 76 | *** 62** | *** 14** |
| | 70.4% | **89.9%** | **35.9%** |
| health education | 79 | *** 58** | *** 21** |
| | 73.1% | **84.1%** | **53.8%** |
| oral sex | 3 | 1 | 2 |
| | 2.8% | 1.4% | 5.1% |
| anal sex | 4 | 1 | 3 |
| | 3.7% | 1.4% | 7.7% |

* Statistically significant dependencies, p <0.05, repeated response

They looked at in more detail indicated by the students unions to prevent HPV infections through the use of barrier contraception - condoms. Students indicated the extent to which the use of condoms reduces the risk of HPV infection. The total protection is indicated by 10.3% (n = 4) and non-medical students of 2.9% (n = 2) non-medical. Reducing the risk of infection

it is often indicated by the medical college students than non-medical (95.7%, n = 66 vs 87.2%, n = 34). No action security condom pointed one respondent studying at the medical school and one non-medical studying at the university. The reported differences in the responses were not statistically significant, p = 0.248.

Respondents indicated a group of women, which can and should be vaccinated prophylactically against HPV. Most often indicated a group of women, who should benefit from vaccinations were women between 12 and 15 years of age and people who have not started sexual intercourse, it indicated 59.4% of college students and 10.3% of non-medical health. Part of the respondents (26.1% of students in medical schools and 33.3% of non-medical college students) indicated that HPV vaccination is recommended for women after the start of sexual intercourse. The answer "do not know" showing lack of knowledge of recommendations for HPV vaccination of women indicated 7.3% of students in medical schools and 33.3% of non-medical college students. Respondents select group of women who should undergo vaccines against HPV also pointed out other recommendations, among other things, a century after the age of 40 and after menarche. Indicated the recommendations for the implementation of vaccination against HPV were significantly different in the group of students of medical and non-medical (p <0.00001).

Examined whether respondents are aware that in Poland, a program of early detection of cervical cancer. Significantly more college students than non-medical care (84.1% (n = 58) vs 61.5% (n = 24)) were aware of the functioning of the program in Poland, early detection of cervical cancer, P <0.03. In addition, respondents indicated how often do you participate in the program depending on the age of women. Stating that the implemented program in Poland includes women aged between 25 and 59 years of age, where the survey is carried out at least every three years chosen 34.8% (n = 24) students of medical colleges and 41% (n = 16), non-medical . In addition, 15.4% (n = 6) non-medical college students indicated that the program currently does not work. Presented correlation is statistically significant, p <0.05.

The most common way indicated HPV infection was sexual contact, it indicated 95.7% (n = 66) medical school students and 92.3% (n = 36), non-medical college students, p> 0.05. Significantly different way indicated HPV infection - contact: skin- skin (infection of the tissues of the labia, scrotum, anal area), it indicated 68.1% (n = 47) medical school students and half less, because 33.3% (n = 13) non-medical college student, p <0.001. Every fifth respondent also pointed the way droplet 18.8% (n = 13) medical school students and 25.6% (n = 10), non-medical college students. Hematogenous was indicated by 39.1% (n = 27) medical school students and 56.4% (n = 22), non-medical college students, p> 0.05.

**Levers HPV infection**

An evaluation of the factors that contribute to infection with HPV. Early initiation of sexual intercourse as a risk factor significantly more pointed medical students than non-medical (87% (n = 60) vs. 17.9% (n = 7)), p <0.00001.Intercourse without mechanical protection (condoms) were significantly more often indicated by studentsmedical schools than non-medical 98.6% (n = 68) vs. 89.7% (n = 35)), p <0.04. Skin breakdown conducive for HPV infection by 45.5% (n = 30) of medical college students and 23.1% (n = 9), non-medical college student, p <0.04. Reduced resistance has been recognized as one of the factors of HPV infection also significantly more often by students medical schools than non-medical (53.6% (n = 37) vs. 30.8% (n = 12)), p <0.03. Bigthe number of sexual partners as a factor for HPV infection was more often indicated by students University Medical College than the non-medical (94.2% (n = 65) vs. 84.6% (n = 33), p> 0.05. In a manner not statistically significantly differ the responses indicates the effect of lack of hygiene, increased risk of infection HPV agent is often indicated by medical students than non-medical institution (47.8% (n = 33) vs. 38.5% (n = 15)).Type of sexual favor oral HPV infection by 55.1% (n =

38) students medical schools and 41% (n = 16) non-medical college student, p> 0.05. Students also pointed out other factors detailed in Table 2.

Tab. 2 Factors conducive to HPV infection by respondents

| Which promotes HPV infection? | Together | College | |
|---|---|---|---|
| | | Medical | Non-medical |
| early sexual initiation | 67 | *** 60** | **7 *** |
| | 62.0% | **87.0%** | **17.9%** |
| intercourse without mechanical protection (condom) | 103 | *** 68** | *** 35** |
| | 95.4% | **98.6%** | **89.7%** |
| skin breakdown | 39 | **thirty*** | **9 *** |
| | 36.1% | **43.5%** | **23.1%** |
| lowered immunity | 49 | *** 37** | *** 12** |
| | 45.4% | **53.6%** | **30.8%** |
| a large number of sexual partners | 98 | 65 | 33 |
| | 90.7% | 94.2% | 84.6% |
| smoking | 3 | 2 | 1 |
| | 2.8% | 2.9% | 2.6% |
| insufficient hand hygiene | 18 | 14 | 4 |
| | 16.7% | 20.3% | 10.3% |
| multiple births | 7 | 4 | 3 |
| | 6.5% | 5.8% | 7.7% |
| lack of personal hygiene | 48 | 33 | 15 |
| | 44.4% | 47.8% | 38.5% |
| type of oral sex | 54 | 38 | 16 |
| | 50.0% | 55.1% | 41.0% |

* Statistically significant dependencies, p <0.05, repeated response

**Knowledge of the symptoms of HPV infection**

Respondents evaluated the evidence of symptoms of infection with human papilloma virus. Changes in the genital area significantly more often been pointed out by students medical schools than non-medical (85.5% (n = 59) vs. 56.4% (n = 22)), p <0.001. The stench of burning and intimate surroundings significantly more often been pointed out by students medical schools than non-medical (71% (n = 49) vs. 48.7% (n = 19)), p <0.03. Significantly differ indicating respondents relating purulent vaginal discharge. Indeed, it often indicated medical students than non-medical (55.1% (n = 38) vs. 17.9% (n = 7)), p <0.002. Every fifth medical university student (18.8%, n = 13) and non-medical (23.1%, n = 9) indicated that persistent infection with HPV has no specific symptoms, p> 0.05. Details in Table 3.

Table 3. Symptoms of HPV infection by the respondents

| What are the symptoms of HPV infection? (Multiple answers) | Together | College | |
|---|---|---|---|
| | | Medical | Non-medical |
| and the stench of burning of intimate | 68 | *** 49** | *** 19** |
| | 63.0% | **71.0%** | **48.7%** |
| purulent vaginal discharge | 45 | *** 38** | **7 *** |
| | 41.7% | **55.1%** | **17.9%** |
| changes in the genital area | 81 | *** 59** | *** 22** |
| | 75.0% | **85.5%** | **56.4%** |
| bad mood | 10 | 6 | 4 |
| | 9.3% | 8.7% | 10.3% |
| the lack of specific symptoms | 22 | 13 | 9 |
| | 20.4% | 18.8% | 23.1% |

* Statistically significant dependencies, p <0.05

**The consequences of HPV infection**

Tested knowledge of the consequences of persistent HPV infection among college students of different educational profile. Cervical cancer as a consequence of HPV infection was mentioned significantly more often by college students than non-medical care (95.7% (n = 66), 69.2% (n = 27)), p <0.0002. Almost half of the indicated cancer work, significantly more pointed than the college students medical non-medical (56.5% (n = 39) vs. 30.8% (n = 12)), p <0.01. Other selected symptoms were not significantly different frequency among the students of the medical non-medical terms. Rash indicated 19.4% of the subjects, impaired liver function 8.3%. The consequence of HPV infection - a tumor located in the head and neck (eg. the lips, tongue, throat) often pointed college students than non-medical care (27.5% (n = 19) vs 20.5% (n = 8)), p > 0.05.

**Discussion**

Higher level of knowledge of preventive medical college students possess when compared with non-medical university students. This is probably due to the fact that medical school students acquire theoretical knowledge about the prevention of infection with HVP during vocational training.

In studies Błazucka U. and H. Cieślak students participated Medical University of Warsaw, as in our study, which examined students at the Medical University in Lublin (POI) [10]. The surveyed studying at the University of Warsaw have comparatively high knowledge about the routes of transmission of HPV, as students of UM. In our study, the survey also contains a wrong answer, providing the possibility of HPV infection through contact with animals. It incorrectly indicated a 5% students of non-medical profile. During sexual intercourse the most common mechanical protection against HPV was a condom. As many as 14.3% of male respondents and 4.3% of women in our study were unaware of the fact that it does not provide complete protection against HPV infection.

The prevalence of HPV in the human population is high, therefore it is very important to know the consequences of infection. The greatest knowledge in this field have both a university student in Warsaw and Lublin. Research and H. U. Błazucka and Cieślak own and show that the vast majority of students were aware that HPV infection can cause cervical cancer [10]. Among the students of Lublin universities such medical knowledge had 95.7%, while the 90% of the Warsaw university students. Assessed students from medical schools do not know, however, what other consequences may cause such an infection. Few people at the University of Warsaw (3%), HPV infection was associated with tumors localized in the area

of head and neck, as well as with cancer of the penis. Among the students of the universities in Lublin granted the answer UM 53.7% and 18.5% UMTS. In our study, some students of medical universities and non-medical mistakenly associate HPV infection with liver cirrhosis (12.5%) and influenza (3.1%).

A Pap smear is the most effective of readily available method for detecting changes in the cervix. It allows you to find precancerous changes and abnormalities in cells. In his studies of E. Mędrela- Kuder she took the women studying physiotherapy at the Academy of Physical Education in Krakow and at the direction of Chemical Technology in Cracow University of Technology [12]. The results obtained in the work of E. Mędrela- Kuder has shown that the majority of medical school students (98.8%) and non-medical (97.5%) correctly indicated the Pap test as a way to diagnose HPV. Similarly, students in their studies also show a high level of knowledge on the subject -83.1% (UM 89.9%, 53.8% UMTS).

The study Błazucka and H. Cieślak show low levels of awareness of respondents on the risk factors of HPV infection [10] .In studies Błazuckiej and H. Cieślak only one (1% of respondents) responded that reduce the amount of sex partners to help prevent infection. Among the students of Lublin universities 83.1% thought so. Moreover, in these studies does not include other risk factors. Our findings reveal a high level of knowledge about the various risk factors for HPV infection in medical college students. Over 90% of students most often stated to factors such as cohabitation without mechanical protection and a large number of sexual partners. Only a few percent of the college students of medical and non-medical associated anal intercourse and oral infection with HPV.

The high level of knowledge about immunization against HPV infection represent the students of medical university in Lublin. In our study, 100% of the respondents had knowledge of the three vaccines available in Poland: walentanej-2, 4-valent and 9-valent. As used against most common types of HPV high and niskoonkogennym 6, 11, 16, 18. Studies E. Mędrela- Kuder show that 92.5% of women students physiotherapy and 60% of chemical technology know of the existence of vaccines [12].

Research conducted by Szynol A. et al., Allow us to conclude that the knowledge of young people in the field of HPV infection is high, but insufficient. Learners also have interest and need for education in the topic tackled [11]. Our results are consistent with the results of the above authors. Perhaps this is due to the fact that young people are still early starts having sexual intercourse without having sufficient knowledge of the risks, such as infection with HPV or cervical cancer.

The results show that the knowledge of students in the field of HPV infections and prevention is relatively high, but still incomplete. The majority of respondents were studying at the medical direction. They should represent a broad range of knowledge and have awareness of the dangers posed by HPV. These people are often the first or even the only source of information for people potentially at risk of infection. It is necessary to conduct effective education of all young adults and adolescents, especially not in contact with professional medical knowledge in the course of education.

**Conclusions**

1. Knowledge young adults about the prevention of HPV and the health consequences of this infection is incomplete.
2.Studets profile non-medical universities have very large deficits knowledge.
3. It is necessary to promote better knowledge on the prevention of HPV infection among young adults.
4. Promote a sense of responsibility for their own health and others, indicating the need to undergo periodic testing, prevention and treatment of sexually transmitted infections.

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