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Original Research

Knowledge and Health Beliefs of Nursing Students Toward Human Papilloma Virus and Vaccine Use

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Objective: Human Papilloma Virus (HPV) infection is the most common sexually transmitted among young people of both sexes. It is also the main cause of cervical cancer. This study aimed at assessing students' knowledge and health beliefs about HPV infection and the use of the vaccine.
Methods: The sample of the cross-sectional study was 120 randomly selected nursing students from the Faculty of Public Health, University of Vlore "Ismail Qemali" Albania. Anonymous, self-administered questionnaire based on the literature and Health Belief Model, was used for data collection in May 2017. The questionnaire included assessment questions for students' knowledge and health beliefs about HPV and vaccine use. Also, questions about socio-demographic characteristics were included. Data analysis included the calculation of averages, frequencies, and confidence intervals. P values ≤0.05 were accepted as statistically significant.
Result: Mean age 20.3±2.2 years, 92.44 % of students were female. 65.83% of students know that HPV is a sexually transmitted infection and a vaccine is available to prevent it. Ambiguities and uncertainties exist in regard to screening with Pap test after vaccination. Perceived benefits are high for 50.83% of students. Perceived severity appeared low as only 25% of students agree that they may be affected by HPV. Statistical association, p =0.0347 was found between perceived risk and the year of study. The parents' role in vaccination against HPV have a strong statistical association, p=0.0058 with the year of study as only 8.33 % of students in the third year agree with the fact that that parents do not allow them to be vaccinated against HPV.
Conclusion: The study noted the student's ambiguity and misconceptions about HPV infection. Low severity and lack of knowledge about the vaccine emphasizes that identifying their current level of knowledge and the main source of information are essential to provide comprehensive and appropriate health education.

Introduction

Human papillomavirus (HPV) is a group of viruses that are extremely common worldwide. HPV is mainly transmitted through sexual contact and most people are infected with HPV shortly after the onset of sexual activity. Cervical cancer is caused by sexually acquired infection with certain types of HPV. Vaccines against HPV 16 and 18 have been approved for use in many countries [1].

About 527,624 new cervical cancer cases are diagnosed annually in World (estimates for 2012). Cervical cancer ranks as the 4th leading cause of female cancer in the World. Cervical cancer is the second most common female cancer in the women aged 15 to 44 years in World. It is established that well-organized cervical screening programs or widespread good quality cytology can reduce cervical cancer incidence and mortality. The introduction of HPV vaccination could also effectively reduce the burden of cervical cancer in the coming decades. HPV vaccination policies for the female population in the World differ from country to country. Albania has not an HPV vaccination

programme [2].

Although the majority of sexually active adults will be infected with HPV at least once in their lives, it is sexually active women less than 25 years of age who consistently have the highest rates of infection. Besides youth and gender, common risk factors for HPV infection include a high number of sexual partners and co-infection with *Chlamydia trachomatis* or herpes simplex virus. Most HPV infections are cleared by the immune system and do not result in clinical complications. In cases of low-risk HPV infection consist of genital warts, and clinical manifestations of high-risk HPV infection include abnormal Pap test results, low-grade squamous intraepithelial lesions, high-grade squamous intraepithelial lesions, and cervical cancer. New prophylactic HPV vaccines promise to dramatically reduce the incidence of HPV infection, genital warts, and cytological abnormalities [3].

Different studies have shown that attitude, acceptability, and knowledge of HPV vaccination among university students influence in the use of the vaccine [4][5][6].

Therefore, it is essential to increase the knowledge and awareness of health risks regarding HPV infection among teenage girls who have received the HPV vaccine [7].

HPV vaccination is recommended for 11 and 12-year-old girls. It is also recommended for girls and women age 13 through 26 years of age who have not yet been vaccinated or completed the vaccine series; HPV vaccine can also be given to girls beginning at age 9 years. Center Diseases Control (CDC) recommends 11 to 12-year-olds get two doses of HPV vaccine to protect against cancers caused by HPV. The HPV vaccine is also licensed for use in boys and men. It has been found to be safe and effective for males 9 -26 years. The HPV vaccine has been licensed by the Food and Drug Administration (FDA). The CDC has approved this vaccine as safe and effective. However, it is important that women continue to be screened for cervical cancer, even after getting all recommended shots of the HPV vaccine. This is because the vaccine does not protect against all types of cervical cancer (CDC, 2017).

Regular cervical cancer screening (Pap and HPV tests) and follow-up can prevent most cases of cervical cancer [8].

A study among students found that physicians and parents were influential regarding their HPV-vaccination decision physicians and parents were influential regarding their HPV-vaccination decision even though personal perceptions played an important role as well [4]. Another study found that knowledge of the dangers of HPV infection was significantly associated with the willingness to be vaccinated(???).

In addition, a systematic review found that overall European adolescents had a poor understanding of basic HPV and HPV vaccine knowledge. There was a limited appreciation of more detailed HPV knowledge and uncertainty existed regarding the level of protection offered by the vaccine and the need for cervical screening post vaccination [9].

However, the human papillomavirus (HPV) vaccine represents substantial progress towards cervical cancer prevention, little is currently known about nursing student’s beliefs in the city of Vlore regarding the knowledge and understanding of HPV vaccine.

Materials and Methods

In a cross-sectional study, the knowledge, health beliefs about human papillomavirus and vaccine use of a total of 120 Nursing Students of Faculty of Public Health, University of Vlore “Ismail Qemali”, Albania was assessed by an anonymous self-administered questionnaire based on literature and Health Belief Model (Becker MH, 1974). The sample was randomly selected from the

population of nursing students in the Faculty of Public Health before lectures in May 2017. The questionnaire was administered by the researchers. A questionnaire divided into three sections was used for the data collection. The first section of the questionnaire included questions about socio-demographic details of students. The second section included a series of questions assessing their knowledge about HPV infection and the third section included questions about the students' beliefs and attitudes toward vaccine use. Questions included yes/no; true/false and Likert type scaling (ranging from 1-disagree, 2 -don`t know to 3-agree) answers.

Ethical Considerations

An approval to conduct the study was obtained from the ethical committee of the research unit at Faculty of Public Health. Voluntary participation was assured. Agreement to complete the questionnaire worked as informed consent. Students were assured about the confidentiality and anonymity of the collected data and that it will be only used by the researchers for the purpose of the current study. Also, oral consent was obtained from each participant after they were fully informed of the plan and goals of the study.

Data analysis

The analysis results of participant`s demographics and outcome variables were summarized using descriptive statistics, expressed as mean, Standard Deviation (SD) for continuous variables and percent for categorical variables. Cross-tabulation (MxN) tables and Chi-square tests were used to analyze the data. A P value ≤ 0, 05 was considered statistically significant. Data were analyzed using EpiInfoTM 7 software version 7.1.3.10 (CD-C Epi Info^{TM}).

Results

Participant’s characteristics

A total of 120 nursing students of Bachelor level were the sample study. Mean age 20.3±2.2years (range 18-32). According to Table 1, 92.44 % of students were female. Most of the students were single (92.44%), 43.33% were third years and 59.17% of students had an average grade of 7-8.

Characteristics	Percent (%)	Frequency (n)
Gender		
Marital status		
Year of study		

Academic performance		

Table 1. Participant's characteristics.

Knowledge for HPV infection and prevention with a vaccine

Almost all students knew of Human Papilloma Virus (Table 2). The main source of information was their lecturers (69.17%), internet (51.67%) and television/radio (24.67%). No statistical significance, $p>0.05$ was found between knowledge for HPV infection and socio-demographic characteristics of participants (Table 1). According to Table 2, most students know that HPV is a common infection (65%) and that many people have it but are not aware (74.17%). In addition, students are uncertain if both genders are affected by HPV infection, while most of them know that HPV can cause cervical cancer and genital warts. Although most students (65.83%) know that HPV is a sexually transmitted infection and a vaccine *is* available *to* prevent HPV (75%). Ambiguities and uncertainties exist in regard to screening with Pap test after vaccination because about 36% of the students think that Pap test is unnecessary if you are vaccinated with HPV. The level of knowledge on whether boys' vaccination protects girls from HPV infection appears the same as 64.17% of students reported that as false.

Variables	**Yes** **N (%)**	**No** **N (%)**
Knowledge for HPV	113(94.17)	7(5.83)
Source of information	**n**	**%**
Variables	**False** **N (%)**	**True** **N (%)**
HPV is a common infection and many people are infected	42(35.00)	78(65.00)
Many people have HPV but they don`t know	31(25.83)	89(74.17)
Only women can be infected by HPV	65(54.17)	55(45.83)
An HPV infection can cause cervical cancer	24(20.00)	96(80.00)
Genital warts can be caused by HPV infection	37(30.83)	83(69.17)
HPV is a sexually transmitted infection	41(34.17)	79(65.83)
There is no cure for HPV	87(72.50)	33(27.50)
A vaccine is available to prevent the human papillomavirus (HPV)	30(25.00)	90 (75.00)
Pap testing is unnecessary if one person	77(64.17)	43(35.83)

had an HPV vaccine		
Boys' Vaccination protects girls from HPV infection	50(41.67)	70(58.33)

Table 2. Knowledge for HPV infection and prevention with the vaccine.

Health beliefs about HPV infection and vaccine use

Table 3 summarized the responses to health beliefs about HPV infection/ vaccine use, and the statistical relationship with the study year, the only character that appeared in statistical relation, $p<0.05$. Perceived benefits are high for 50.83% of students while 40% of them do not know what health benefits the use of vaccines have, $p>0.05$. In addition, 76.67 % of students agree that HPV vaccination can prevent HPV infection. Perceived severity appeared low as only 25% of students agree that they may be affected by HPV. Statistical association, $p = 0.0347$ was found between perceived risk and the year of study. 38 third-year students and 35 first-year students agree that they would be very scared if that got HPV. Perceived barriers against vaccination are low as nearly the same percentage of students have responded that they don`t know if the vaccine is painful and if the vaccination against HPV could promote sexual intercourse at an early age, respectively 40.83% and 50%. The two variables of health beliefs that have strong statistical significance are the year of study and religion, as 36 third year students disagree while only 15 students of first-year have the same response, $p=0.0034$. The parents' role in vaccination against HPV appears to have a strong statistical association, $p=0.0058$ with the year of study, as only 8.33 % of students agree with the fact that that parents do not allow them to be vaccinated against HPV, and all these students are in the third year.

Variables	**Disagree (1)** **N (%)**	**Don`t know(2)** **N (%)**	**Agree** **(3)** **N (%)**	**Chi-square**	**p -value**
The HPV vaccine is as good for health as other vaccines	11(9.17)	48(40.00)	61(50.83)		>0.05
HPV vaccination can prevent HPV infection	6(5.00)	22(18.33)	92(76.67)		>0.05
Do you think you can be affected by HPV	28(23.33)	62(51.67)	30(25.00)		>0.05
I'm going to be very worried if I get HPV	12(10.00)	20(16.67)	88(73.33)	10.3636	0.0347
An HPV infection can result in very serious illness	13(10.83)	35(29.17)	72(60.00)		>0.05
Getting the vaccine is annoying and painful	47(39.17	49(40.83)	24(20.00)		>0.05
The vaccination against HPV could encourage people to have more sexual partners	47(39.17)	59(49.17)	14(11.67)		>0.05
The vaccination against HPV could promote sexual intercourse at an early age	51(42.50)	60(50.00)	9(7.50)		>0.05
My religion does	61(50.83)	47 (39.17)	12(10.00)	15.7201	0.0034

not allow me to take HPV vaccine					
My parents do not allow me to be vaccinated against HPV	64(53.33)	46(38.33)	10(8.33)	14.514	0.0058

Table 3. Health beliefs about HPV infection and vaccine use by year of study.

Discussion

While a majority of students, who took part in the study knew of HPV infection, the present study has identified a number of critical gaps in regard to vaccine use against HPV as well in their personal perception regarding the infection. The majority of students refer that they are aware of HPV infection. Referring to the results of the study, this may be related to the fact that 43.33% of them were in their third year of study and 69.17% of students referred that they gather information from lecturers, even though no statistical association was found between HPV knowledge and the year of study, Table 2. Our data are similar to other studies developed in university students, which lead us to believe that knowledge is associated with education, and the level of education is associated with more awareness about HPV virus [10].

Except for lectures, the source of information is the same with a study which found that adolescents who received information about HPV vaccines from television advertisements, the Internet, clinicians, and mothers had higher knowledge about HPV vaccines and more positive perceptions. Assuring the accuracy of messages from these sources will be essential [11].

Based on the results of the study, students' knowledge can be considered good in some variables but low or uncertain in others, Table 2.

For 65% of the students, it is true that HPV infection is common and many people are infected. 65.83% of students know that HPV is a sexually transmitted infection. In these variables, our students have better knowledge in comparison to a survey conducted with 18-to 25 year–old students, where the majority of them did know that HPV is sexually transmitted [12].

According to Table 2, 72.50% of students think the fact that there is no cure for HPV is false. Even though there is no treatment for the virus itself, there are treatments for the health problems that HPV can cause: genital warts can be treated with prescription medication. If left untreated, genital warts may go away, stay the same, or grow in size or number (CDC, 2017).

Only 25 % of the students in the study don't know that a vaccine is available to prevent the HPV. The results are the same with a study conducted in undergraduate students between the age group 16–26 years, where students from biology had more knowledge and awareness about cervical cancer and vaccines than students from other fields of study [13].

About 36 % of students responded that Pap testing is unnecessary if one person had an HPV vaccine. HPV vaccine greatly reduces the risk of cervical cancer, the projections for women who have, and haven't, had the vaccine shows that in 1,000 women not vaccinated against HPV, 30 women without screening get cervical cancer and in 1,000 women vaccinated against HPV, 10 women without screening get cervical cancer. And in both cases, less than 1 women with screening get cervical cancer [14]. The students in the study are uncertain if boys' vaccination protects girls from HPV infection since 41.67% have responded false and 58.33% true. Common types of sexually transmitted HPV can cause cervical cancer in women as well as genital warts and other cancers in men and women. Vaccinating all girls against cervical cancer will also indirectly prevent most boys

from contracting the virus. However, several countries also offer the vaccine to boys to ensure their direct and immediate protection from genital warts and forms of HPV-related cancer that affect both men and women [15]. In addition, the results are consistent with a study in which the majority of respondents were unaware that vaccinating boys with HPV can help protect girls against HPV infection [7].

Health beliefs of students about HPV infection and vaccine use by year of study are presented in Table 3. As seen from the results about half of the students responded that HPV vaccine is good for health as well as other vaccines, but 40% don't know the benefits of the vaccine in health and about 10 % disagree with this fact. The results revealed a lack of information and awareness about the HPV vaccination. The same results were found in a study about perspectives on HPV vaccination among girls, boys, and parents. The results indicate that focus should be placed on increasing awareness and knowledge, in particular among those in a modifiable phase [16]. 76.67 % of students agree with the fact that HPV vaccination can prevent HPV infection, while 18 % of the nursing students' part of the study responded don't know. Perceived susceptibility of the students in the study is low because only 25% of them agree that they can be affected by HPV infection, 51% of students responded don't know and 23% disagree with this fact. No statistical association was found between health beliefs about HPV infection, vaccine and year of study, $p>0.05$. A study among female students found that perceived barriers and no general benefits were more likely to be reported by students who were unvaccinated [17]. Another study conducted in adolescent women in college found that the perceived risk of HPV infection was moderate, with relatively lower susceptibility to HPV infection than to cervical cancer ($p < .001$) [18].

Perceived fear of students in the study appears high. 73.33% of students responded that would be very worried if they got HPV. Statistical correlation was found with the year of the study, $p=0.0347$. Students in the first year have higher perceived fear. In addition, 60 % of students agree with the fact that HPV infection can result in very serious illness. That is explained by the fact that students in the second and third year of studies are more informed. A study found that adolescents who received information about HPV had higher knowledge about HPV and more positive perceptions [11].

The knowledge and beliefs of students about HPV vaccine use are low. 40.83% of students have responded that they don't know if getting vaccinated is annoying or painful. Also, 49.17 % of students don't know if the vaccination against HPV could encourage people to have more sexual partners. About 50% of students had responded don't know on whether vaccination against HPV could promote sexual intercourse at an early age. No statistical association was found between health beliefs and year of study, $p>0.05$. Compared with other routinely recommended adolescent vaccines human papillomavirus (HPV) vaccine uptake has been lower [19] and Girls who received HPV vaccination had higher rates of sexually transmitted infections before and after vaccination compared with their unvaccinated peers, suggesting that vaccination does not promote unsafe sexual activity [19].

For the two last variables of health beliefs, statistically associated with the year of the study was found, $p=0.0058$ for the variable my parents do not allow me to be vaccinated against HPV and $p=0.0034$ for the variable my religion does not allow me to uptake HPV vaccine. About fifty percent of students disagree with the two variables cited above.

As cited in previous studies the results confirm that health beliefs predict HPV vaccine acceptability [20]. A study in undergraduate students found that perceived susceptibility, severity, benefits, and vaccine safety concerns predicted vaccine acceptance. Multiple dimensions of perceived barriers showed differing impacts on vaccine acceptance. In addition, interpersonal information sources were effective in boosting various health beliefs for HPV vaccination [21].

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