

ANALYSIS OF STUDENTS' KNOWLEDGE ABOUT HUMAN PAPILOMAVIRUS

ANÁLISE DO CONHECIMENTO DE ESCOLARES SOBRE PAPILOMAVÍRUS HUMANO

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ABSTRACT

Introduction: The human papillomavirus is the main risk factor for cervical cancer and is also a risk factor for oropharyngeal and penile cancer. Adolescence is the period of greatest risk of infection by the virus, because many people begin the sexual life during this period. Information about human papillomavirus is fundamental for prevention. **Objective:** To evaluate the adolescent's knowledge about human papillomavirus and to disseminate information about prevention, transmission, and infection. **Methods:** Cross-sectional study that was carried out in a school with 390 participants, who were aged 11–18 years. A questionnaire with objective questions, descriptive analysis, and the χ^2 test were used. The statistical significance level was established as $p < 0.05$. Informative lectures were carried out after the data analysis. **Results:** A total of 188 participants were females. The average age was 14.4 years. Among the participants, 91.28% had already heard about human papillomavirus and 91.54% of them answered that it is a virus. A total of 43.08% participants knew what the acronym stood for. The sexual intercourse was indicated by 81.03% of the participants as the main route of transmission; however, only 48.46% indicated that both genders could be infected. With regard to prevention, 59.48% of participants mentioned condom use, 12.56% of them alluded to late start of sexual activity, 53.38% of them mentioned vaccination, and 28.02% of participants indicated sexual education. Mainly female participants referred to vaccination and condom use ($p < 0.05$). The clinical symptoms of this infection were correctly indicated by 70% of the adolescents. **Conclusion:** Most of the participants were aware of the basic information about human papillomavirus. However, their awareness of the possibility of both genders becoming infected and about prevention is poorer. Female participants showed higher knowledge level.

Keywords: communicable disease control; Papillomaviridae; adolescent; sexually transmitted diseases.

RESUMO

Introdução: A infecção pelo papilomavírus humano é o principal fator de risco para o câncer de colo uterino e fator de risco também para câncer de orofaringe e pênis. A adolescência constitui o período de maior risco de infecção pelo vírus, pois é nela que muitos iniciam a vida sexual. Informações sobre o papilomavírus são fundamentais na sua prevenção. **Objetivo:** Avaliar o nível de conhecimento dos adolescentes acerca do papilomavírus humano e informar sobre prevenção, transmissão e infecção. **Métodos:** Estudo transversal, realizado em um colégio, tendo 390 participantes, de idade entre 11 e 18 anos. Utilizou-se questionário com perguntas objetivas, análise descritiva e teste do χ^2 . O nível de significância foi estabelecido em $p < 0,05$. Realizaram-se palestras informativas após análise de dados. **Resultados:** Um total de 188 participantes eram do sexo feminino. A idade média foi de 14,4 anos; 91,28% já ouviram sobre papilomavírus humano e 91,54% responderam que é um vírus. Dos participantes, 43,08% souberam o significado da sigla e 81,03% apontaram as relações sexuais como principal maneira de transmissão, contudo, somente 48,46% apontaram que ambos os sexos podem ser infectados. Sobre prevenção, 59,48% se lembraram do uso de preservativo, 12,56% do início tardio da atividade sexual e número reduzido de parceiros, 53,38% da vacinação e 28,20% da educação sexual. Vacinação e preservativos foram lembrados principalmente pelo sexo feminino ($p < 0,05$). Um total de 70,00% dos adolescentes souberam as manifestações clínicas da infecção. **Conclusão:** A maioria dos participantes conhece as informações básicas sobre o papilomavírus humano. Todavia, o conhecimento é menor sobre ambos os gêneros poderem ser infectados e formas de prevenção. As participantes do sexo feminino apresentaram maior nível de conhecimento.

Palavras-chave: controle de doenças transmissíveis; Papillomaviridae; adolescente; doenças sexualmente transmissíveis.

INTRODUCTION

Human papillomavirus (HPV) presents more than 100 serotypes, of which approximately 40 infect the genital tract and 18 of these cause most of the uterine cancers⁽¹⁾. In 1983, Harald zur Hausen found that types 16 and 18 are present in 70% of the biopsies performed in cervical cancer patients⁽²⁾. HPV is usually sexually transmitted; however, it can also be transmitted through contact and via mother to fetus⁽³⁾. It is manifested through benign or malign skin lesions, epidermodysplasia verruciformis and benign or malign mucosae lesions⁽³⁾. In men, the asymptomatic form of manifestation is the most common, although there is a chance of symptom

manifestation. Thus, the male sex is considered a virus spreader⁽²⁾. It is worth noting that the infection has high prevalence in both sexes, 75–80% of the population will be infected throughout their lives, and half of the new cases are found in the three first years of sexual activity⁽⁴⁻⁶⁾.

HPV infection is considered the main risk factor for cervical cancer, which is the second most common cancer in Brazilian women⁽⁷⁾. In 1 year, HPV is responsible for approximately 500 thousand new cases of cervical neoplasm worldwide, causing approximately 231 thousand deaths of women⁽⁸⁾. Furthermore, this infection is also a risk factor for oropharyngeal and penile cancers, which is manifested in men^(9,10).

The use of condoms, the reduced number of sexual partners, periodic gynecological examinations, and prophylactic vaccines against HPV are the main protection factors against the development of cervical cancer and of HPV-associated diseases⁽¹¹⁾.

Adolescence is the period that presents the greatest infection rates⁽¹¹⁾, because many people initiate their sexual lives during this period. Specific information about HPV is essential to prevent diseases associated with the virus.

This study was carried out at *Universidade do Vale do Itajaí* (UNIVALI) – Itajaí (SC), Brazil.

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OBJECTIVE

To assess the level of adolescents' knowledge about human papillomavirus and to promote the dissemination of information about its prevention, transmission, and infection.

METHODS

The Ethics and Research Committee of the *Universidade do Vale do Itajaí* (UNIVALI), under protocol no. 910.774, approved the research. Data remain under absolute secrecy, and they followed the standards established in the Resolution of the Brazilian National Health Council no. 466/12.

This is a cross-sectional and multicenter study conducted with 390 students aged between 11 and 18 years at *Colégio de Aplicação* from UNIVALI, in Itajaí, Santa Catarina, Brazil. Data collection was carried out after parents or guardians signed the free informed form and the adolescents signed a consent form. Participants who did not attend the collection day and who did not sign the Consent Form were excluded from the research, as well as those who did not receive parents' authorization.

For data collection, a questionnaire including objective questions was used to assess the level of knowledge about HPV, including questions such as: "What sex (male and/or female) can be infected with HPV?;" "What is the main route of HPV transmission?;" "What are the methods for prevention of HPV?;"

In addition to the descriptive analysis, the χ^2 test was applied to establish homogeneity of proportions with a significance level of $p < 0.05$.

Informative lectures were given after data analysis with the aim of clarifying the main doubts of students, as well as to increase their level of knowledge about HPV.

RESULTS

Among 390 participants, 188 were female (48.20%) and 202 were male participants (51.79%). The mean age among the interviewed adolescents was 14.41 years – 14.39 for female participants and 14.44 for male participants. The participants' minimum and maximum age was 11 and 18 years, respectively.

The study shows that 91.28% of the students had already heard about HPV, and the highest percentage was found for female participants (96.81%). Male participants' percentage was 86.14%.

When students were questioned where or by whom they had heard about HPV, the most frequent answer was "school," which was chosen by 33.59% of them. The second most common source of information was "television" (21.03%) and the third was "parents" (11.54%). The amount of male participants who answered "never heard," who "do not remember," or who used "the internet as a source" was higher compared with female participants, with a statistically significant difference ($p < 0.05$). In addition, in the comparison of sexes, the number of female students who received information by physicians is statistically significant compared with male participants (**Table 1**).

Most of the students knew that HPV is a virus, therefore totaling 91.54%. In despite of it, only 43.08% were aware that HPV means human papillomavirus.

Of the total of interviewed adolescents, 81.03% indicated sexual intercourses as a route of transmission. Female participants had a higher rate of correct answers (92.02%), compared with male participants (70.79%), which is a statistically significant difference ($p < 0.05$). Among the participants, 33.85% of the students answered that only women could be infected with HPV and 48.46% of the students answered correctly that both sexes could be infected (**Table 2**).

The use of condoms was indicated as a prevention action by 59.48% of the 390 interviewed adolescents. Late onset of sexual activity and decreased number of partners were indicated by only 12.56% of the interviewed adolescents. Among interviewed adolescents, 55.38% indicated vaccination as a HPV prevention. On the other hand, 28.20% of them indicated sexual education. The values of $p < 0.05$ show a statistical significance between the level of knowledge of female students and that of male students (**Table 3**).

Of the 390 adolescents, 70.00% were aware that cancer, skin, and mucosa lesions could be possible manifestations of the disease. Once again, female students were more aware of that (78.72%), compared with male students (61.88%).

Table 1 – Source of information about HPV.

Variables	Female sex n (%)	Male sex n (%)	Total n (%)	p-value
Never heard about it	6 (3.19)	27 (13.37)	33 (8.46)	0.0003*
School	69 (36.70)	62 (30.69)	131 (33.59)	0.2090
Parents	25 (13.30)	20 (9.90)	45 (11.54)	0.2900
Television	40 (21.28)	42 (20.79)	82 (21.03)	0.9060
Internet	8 (4.26)	21 (10.40)	29 (7.44)	0.0210*
Newspapers	10 (5.32)	6 (2.97)	16 (4.10)	0.2420
Friends	6 (3.19)	3 (1.49)	9 (2.31)	0.2620
Physicians	17 (9.04)	2 (0.99)	19 (4.87)	0.0002*
Does not remember	7 (3.72)	19 (9.41)	26 (6.67)	0.0240*

HPV: human papillomavirus; *significant values.

DISCUSSION

Three hundred and ninety students participated in the study, 48.20% female and 51.79% male adolescents. Interviewed adolescents were aged between 11 and 18 years, with mean age of 14.41 years. Age range and sex distribution from this study are different of other outcomes. In a study conducted in Piauí with 218 interviewed subjects, the age range was between 17 and 34 years (78.00% female)⁽¹²⁾. On the other hand, in Ribeirão Preto, São Paulo, only women between 17 and 19 years were interviewed⁽¹³⁾; and at a private university from Pernambuco backcountry, a study included participants aged between 21 and 25 years, of which 65.70% were female⁽¹⁴⁾. The differences observed among this study and other studies occur owing to different methodologies adopted. This study is relevant because it collects data from a heterogeneous population regarding sex and younger age. This is due to the possibility of both sexes becoming infected by the virus and to the early onset of sexual activities.

Among the participants, 91.28% had already heard about HPV, which is similar to what was found in Piauí research, in which 87.00% knew about the virus⁽¹²⁾. However, in a study conducted with students from the third year of high school at an educational institution from São Gonzalo, Rio de Janeiro, Brazil, only 57.75% of the participants were aware of the virus⁽¹⁵⁾. The difference between this study and the one carried out in São Gonzalo possibly occurred because data from the latter were collected in 2006, a period when there were only few HPV prevention and vaccination campaigns. Similarity with the study carried out in Piauí may be explained because data were collected in 2014, close to the data collection of this study, in 2015, after the campaigns conducted by the Brazilian Ministry of Health (acronym in Portuguese – MS).

In this study, the main sources of HPV information were school, television, and parents, from the most to the least mentioned. Similar results were found in a cross-sectional study carried out in Portugal; however, in another order, as follows: family was the first source of

information, followed by school, and television⁽¹⁶⁾. It is extremely important for health promotion purposes to know the path of information toward its target population, that is, to know what media should be used so that more people can acquire more knowledge of a subject. The more comprehensive the information media is, the greater the effectiveness of the health promotion policy and the higher the number of people who will benefit from it. It is noteworthy the fact that 6.67% of the interviewed individuals did not remember and 8.46% had never heard about HPV, being statistically significant the fact that most of these participants were men. Other two statistically significant results is that female participants receive more information from physicians than male participants, and male participants use more the Internet as a source of knowledge acquisition. The fact that participants receive more information from physicians may be explained by the lower search of male participants for health professionals.

At *Colégio de Aplicação* of UNIVALI (CAU) from Itajaí, Brazil, 91.54% of the participants knew that HPV is a virus, which is close to the result found among participants from a research performed at a university in Pernambuco backcountry, in which 93.40% of participants also knew the fact⁽¹⁴⁾. Therefore, it is assumed that the majority of population knows that it is a virus. However, only 43.08% of the CAU students know what the acronym stood for, in contrast with 60.30% in the research carried out in Ribeirão Preto, São Paulo⁽¹³⁾.

Sexual intercourses were indicated as the route of transmission by 81.03% of the participants, which is higher than the value found in Portugal, in which 64.00% answered correctly⁽¹⁶⁾. Although it has not been approached in the questionnaire, HPV can be transmitted not only during sexual intercourse, but also through contact and through mother to fetus⁽⁴⁾. It is noteworthy that by knowing the possible routes of transmission, more search for prevention and care will be promoted.

In the study carried out in Piauí, 68.00% of the interviewed university students consider that both sexes can be infected with the HPV⁽¹²⁾. On the other hand, in this study, 48.46% of the interviewed people declared that men and women are more inclined to infection and 33.85% stated that only women are at such risk. Although almost half of them answered correctly, a significant number of participants believe that only women can be infected. It is assumed this misunderstanding occurs because the MS firstly determined that vaccination would be available in the Brazilian Unified Health System (in Portuguese – *Sistema Único de Saúde* – SUS) for free only for female adolescents aged 9 to 11 years⁽¹⁷⁾. The seriousness of this issue is that unclarified doubts may discourage male individuals from caring for disease prevention. However, it is noteworthy that although men usually present the asymptomatic form of the infection, they could be a great spreader of the virus, and therefore present chances of having the symptoms⁽³⁾.

Table 2 – Who can be infected with HPV.

Variables	Female sex n (%)	Male sex n (%)	Total n (%)
Who can be infected with the virus?			
Only men	1 (0.53)	31 (15.34)	32 (8.21)
Only women	77 (40.95)	55 (27.22)	132 (33.85)
Men and women	100 (53.19)	89 (44.05)	189 (48.46)
Do not know how to answer	10 (5.31)	27 (13.36)	37 (9.49)

HPV: human papillomavirus.

Table 3 – HPV prevention.

Variables	Female sex n (%)	Male sex n (%)	Total n (%)	p-value
Condom	139 (79.93)	93 (46.03)	232 (59.48)	0.0000*
Late sex activity and low number of partners	28 (14.89)	21 (10.39)	49 (12.56)	0.1810
Vaccination	128 (68.08)	88 (43.56)	216 (55.38)	0.0000*
Sexual education	62 (32.97)	48 (23.76)	110 (28.20)	0.0430*

HPV: human papillomavirus; *significant values.

The study aimed at analyzing adolescents' knowledge about HPV, considering that adolescence is the period that presents the highest risk of this virus infection⁽¹¹⁾. This is due to the risk factors for virus infection, among which the high number of sexual partners and the early onset of sexual activity, which increase virus exposure, stand out⁽¹⁸⁻²⁰⁾. Although of great importance, only 12.56% of the participants mentioned that late onset of sexual activity or decreased number of partners is relevant method of prevention. In order to handle this lack of knowledge, more effective sexual education would be necessary; however, only 28.20% of the participants consider this initiative would facilitate prevention, being female participants those who noticeably mentioned this alternative more frequently than men. The use of condoms as a method for disease prevention was mentioned by 59.48% of the students. This is slightly below the result found in São Gonzalo, Rio de Janeiro, in which 65.50% of the participants had the same opinion⁽¹⁵⁾. Although most students deem necessary to use condoms for prevention, this number is still low, considering it is ideal that all people have a safe sexual activity. Among the participants, 55.38% consider vaccination as a method of prevention. Considering that only a few more than half of them mentioned vaccination, the lectures offered to students after the analysis of the questionnaires emphasized the importance of vaccine. The quadrivalent form used at SUS(sigla em português) vaccination campaign offers protection against serotypes 6, 11, 16, and 18, and confers 100% efficacy to prevent diseases associated with oncogenic viral forms⁽²¹⁾. It is important to emphasize that both quadrivalent and bivalent forms of the vaccine have led to a significant decrease in the incidence of persistent infections⁽²¹⁾. Results indicate that most participants who mentioned condoms and vaccination for prevention are female, with statistically significant results. Thus, it is assumed that the male sex is not being effectively involved in prevention campaigns against HPV.

HPV can be manifested as benign or malign skin lesions, epidermodysplasia verruciformis, and benign or malign mucosae lesions⁽⁴⁾. In the questionnaire administered, 70.00% of the participants answered that cancer, skin, or mucosae lesions are possible consequences of the infection. This percentage is high and differs from a study in Ribeirão Preto, São Paulo, in which 54.30% of the interviewed nursing students did not know the correct answer.

HPV has an estimated prevalence of 32.1%⁽²²⁾. It has been estimated that 4 million adolescents aged 15 and 17 years become sexually active every year in Brazil⁽¹²⁾. Therefore, adding the onset of sexual life during adolescence to the greater risk of infection, it becomes very important that adolescents receive guidance about the transmission and prevention of sexually transmitted diseases (STDs). Since HPV is the most frequent STD worldwide⁽²²⁾, knowledge about the virus needs to be comprehensive. Furthermore, campaigns including the male audience directly are necessary, as their level of knowledge is poorer.

In this study, in addition to the assessment of the adolescents' level of knowledge, the conduction of lectures enabled to disseminate information and to provide more opportunities for the participants to learn. During the lectures, themes with the greatest knowledge gap were approached, and some incorrect concepts and common prejudice regarding the theme were demystified.

Most of the study participants know basic information about HPV. However, the level of knowledge was lower about the possibility of both sexes becoming infected and about prevention methods. Therefore, this study shows that health promotion and STD prevention campaigns should be stimulated. They would therefore increase society's knowledge, encouraging them to adopt prevention actions, as infection rates are high and lack of information facilitates the growth of the infection. In addition, it is worth noting that health policies should include both sexes and aim at informing and making population aware of the virus transmission, its infection risks, and possible consequences, as well as the importance of vaccination against HPV.

CONCLUSION

Most of the study participants know basic information about HPV. Nevertheless, knowledge about the possibility of both sexes becoming infected and its prevention methods is poor. Female participants showed higher level of knowledge.

Conflict of interests

The authors declare no conflict of interests.

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