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Editorial

Contemporary health and social challenges increasingly demonstrate that human well-being cannot be understood independently of the social, institutional and environmental conditions in which individuals and communities' function. Vulnerability may emerge at different stages of life and in different contexts – through adverse childhood experiences, health risks, unemployment, caregiving responsibilities, extraordinary events or new forms of threat associated with technological development. At the same time, these challenges reveal the importance of prevention, preparedness, accessible support systems and effective institutional responses.

The present issue of *Health & Humanity* reflects this multidimensional perspective by bringing together contributions situated at the intersection of health, social sciences, law and helping professions. Despite their thematic diversity, the studies share an interest in factors that influence the capacity of individuals and communities to respond to risk, maintain quality of life and mobilise available resources.

Several contributions draw attention to vulnerability across the life course. The relationship between adverse childhood experiences and quality of life in young adulthood highlights the possible long-term relevance of early experiences for psychological and social well-being. Questions of responsibility and preparedness also emerge in the context of population ageing, where willingness to provide family care does not necessarily correspond with sufficient practical, financial or emotional preparedness. Similarly, the transition from unemployment to employment demonstrates that formal labour-market integration does not automatically eliminate social vulnerability, particularly during the period before financial stability is achieved.

Prevention and preparedness constitute another connecting dimension of this issue. The contribution addressing human papillomavirus vaccination points to the significance of health literacy, credible information and accessible preventive interventions. The analysis of emergencies in the Komárno district broadens this perspective from the individual to the community level and underlines the relevance of communication, institutional trust, social cohesion and psychosocial preparedness in crisis situations.

The changing nature of contemporary risks is further reflected in the analysis of cybercrime and its legal regulation. Digitalisation creates new forms of vulnerability and simultaneously places increasing demands on the adaptability of legal frameworks, international cooperation and mechanisms for securing and exchanging electronic evidence.

Taken together, the contributions illustrate that vulnerability is rarely determined by a single factor. Rather, it develops through the interaction of individual experience, social relationships, material resources, information, institutional arrangements and broader societal conditions. The studies presented in this issue therefore reinforce the importance of interdisciplinary approaches that connect prevention, evidence-based intervention, social support and institutional responsibility. Such perspectives are essential for understanding contemporary challenges to health and human well-being and for developing responses that are both professionally grounded and socially sustainable.

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Generations Free from Human Papillomavirus – The Role of Vaccination in Protecting Public Health

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Abstract

Human papillomavirus (HPV) is one of the most common sexually transmitted infections worldwide, affecting the majority of men and women at some point in their lives. To date, more than 200 types of this virus have been identified, differing in both genetic structure and the level of risk they pose to human health. HPV infection can lead not only to the development of various types of warts but, with certain strains, to malignant tumors. This article aims to highlight the pivotal role of HPV vaccination in primary prevention and public health protection. The study focuses on analyzing current population vaccination rates and identifying factors that influence individual decision-making regarding the prevention of this viral disease. Research results indicate that, although awareness of HPV infection is relatively high, many respondents, despite having university-level education, experience uncertainty and a lack of reliable information. Physicians serve as the primary source of knowledge for the public, whereas the school environment and educational institutions possess untapped potential for raising awareness. The observed discrepancy between high risk perception and low vaccination rates points to the existence of barriers, specifically financial, informational, and psychological. The study emphasizes the need for coordinated communication, support for vaccination, and the enhancement of public health literacy.

Keywords: HPV, infection, human papillomavirus, prevention, vaccination

Introduction

The purpose of this article is to examine the role that vaccination against human papillomavirus plays in primary prevention and in the protection of public health. Its focus is on reported vaccination uptake and on the factors that respondents identify when describing their decisions about prevention of this viral disease. These issues are considered through a quantitative questionnaire survey, followed by discussion of the findings in relation to the studies cited in the article. The survey addresses respondents' awareness of HPV, their perceptions of the possible health consequences of infection, and their views on vaccination and other preventive measures. It also examines the sources from which respondents obtain information and the sources they regard as trustworthy. The topics covered by the questionnaire thus include both information about HPV and the respondents' reported approach to prevention. The aim is to describe these issues in the surveyed group, identify gaps in awareness and formulate recommendations for improving public information about prevention. In discussing the questionnaire findings alongside the cited studies, the authors seek to contribute to understanding the factors involved in vaccination decisions. The findings are intended to provide a basis for preventive activities in this area and for further research addressing awareness of HPV and decisions about vaccination.

Research questions (RQs):

RQ1: Are respondents' attitudes towards vaccination associated with a responsible approach to prevention?

RQ2: What type of information source has a significant influence on respondents' preventive behaviour?

RQ3: Is there a direct relationship between the level of knowledge, experience, perceptions of HPV and respondents' preventive behaviour?

Theoretical Background

Human papillomavirus (Figure 1) is among the most widespread sexually transmitted infections in the world. Several types of HPV have been identified, and the description of these types distinguishes between high-risk and low-risk genotypes. High-risk genotypes may lead to cancer, whereas low-risk genotypes mainly cause warts and respiratory papillomas. The possible manifestations of HPV infection therefore include genital warts as well as malignant tumours. Among these malignant diseases, cervical cancer is the most common. The other cancers mentioned in connection with HPV include cancers affecting the vulva, vagina, penis and anus, together with cancers in the head and neck region. The designation head and neck cancers is used as a collective term for malignant diseases affecting the oral cavity, pharynx and larynx. This description brings together the different forms of disease discussed in relation to infection with HPV.

HPV infections are usually classified into three groups, described as non-genital or cutaneous infections, mucosal or anogenital types, and epidermodysplasia verruciformis. Epidermodysplasia verruciformis is a rare genetic disorder of the skin in which the affected person has an unusual susceptibility to certain types of HPV. The description of HPV-related lesions also distinguishes between those that are visible and those that remain latent. Some

lesions can be seen, whereas others may be present in a latent state and require testing for viral DNA in order to be detected. Most HPV infections exist in this latent state. When symptoms do occur, they usually take the form of warts rather than malignant tumours. The description therefore includes both visible manifestations of infection and the latent forms for which detection requires viral DNA testing.

Prevention of this infection consists of vaccination with a 9-valent vaccine, ideally administered before puberty. This vaccine can prevent infection with the virus and, consequently, the diseases associated with that infection. The preventive role of vaccination is thus described in relation to both HPV infection itself and the diseases that may accompany it. HPV vaccination is recommended for boys as well as girls. The age range considered most appropriate for vaccination is between 9 and 14 years, with the timing depending on the national vaccination programme. The recommendation therefore concerns both sexes within the age range specified by the relevant vaccination programme. Following HPV infection, recurrences are common. The term recurrence refers here to repeated episodes of the disease, or its return after an earlier episode.

Figure 1 Human Papillomavirus



Source: Centers for Disease Control and Prevention (CDC), 2026.

Methodology

The methodological procedure used in conducting the research involved defining the research method, specifying the respondent sample and determining how the data would be collected and subsequently evaluated. The information used in the study was obtained through an anonymous questionnaire administered online. This questionnaire contained 21 questions and was sent to a random sample of respondents that included both sexes and different age groups. The collection of responses took place anonymously during January 2026. A total of 130 respondents participated in the research by completing the questionnaire. The questions were closed-ended and provided for the selection of one response option. Respondents therefore answered these questions by choosing a single option from those provided. The question concerning age was the exception to this format. For that question, respondents could provide their own answer rather than select one of the closed response options used elsewhere in the

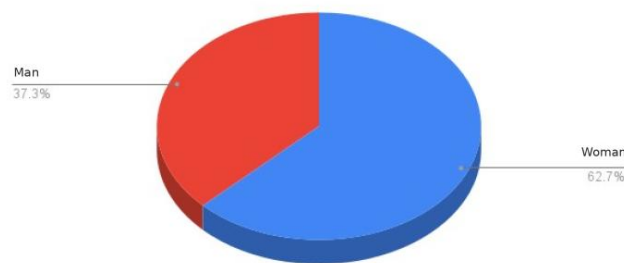
questionnaire. The responses collected through this procedure were then used for the evaluation presented in the results section.

Results

The following section presents the results obtained from the questionnaire responses. The findings are organised by question and illustrated in the accompanying charts. The descriptions address the composition of the sample, respondents' knowledge and perceptions of HPV, their reported preventive behaviour, and their views on information and vaccination. The presentation follows the research objectives set out above.

Figure 2 Demographic Composition of the Sample by Sex

1) Sex.

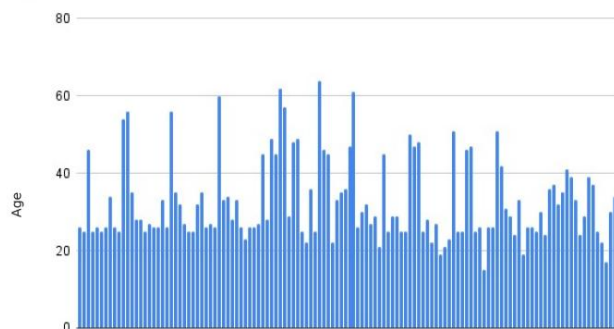


Source: authors' own processing.

Figure 2 presents the composition of the research sample in terms of the sex of the respondents. The sample comprised a total of 130 people who took part in the questionnaire survey. Within this group, 82 respondents were women, representing 62.70%, and 48 were men, representing 37.30%. The results presented in the chart therefore show that women predominated in the respondent sample. Their representation was higher than that of men among the people who participated in the research. This greater representation of women may be related to the nature of the topic addressed by the study. The questionnaire concerns a health issue, and women often show greater interest in health-related topics of this kind.

Figure 3 Demographic Composition of the Sample by Age

2) Age.

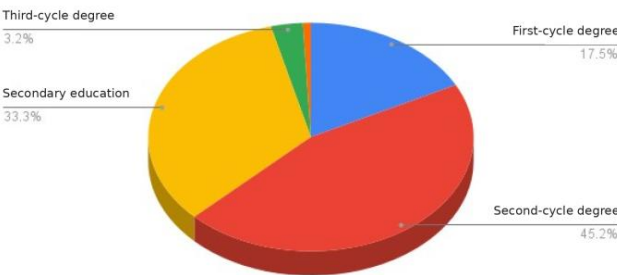


Source: authors' own processing.

Figure 3 presents the age distribution of the respondents who took part in the questionnaire survey. The youngest person in the respondent group was 15 years old, while the oldest was 64 years old. These ages define the range represented in the research sample. The mean age of respondents across the sample was 33.03 years. Within the age distribution, the largest group consisted of young adults aged 25 and 26 years. Respondents of these ages together represented 30% of the sample. The chart thus describes the age composition of the people whose answers form the basis of the questionnaire results, including the reported age range, the mean age and the most numerous age group.

Figure 4 Respondents' Educational Attainment

3) Highest educational attainment.

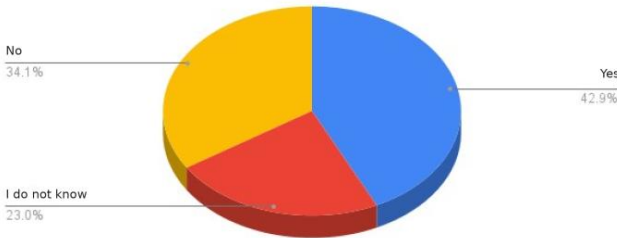


Source: authors' own processing.

Figure 4 describes the highest level of education completed by the respondents in the research sample. The largest group consisted of people who had completed a second-cycle university degree, representing 45.20% of respondents. The next largest group was made up of respondents with secondary education, who accounted for 33.30%. A further 17.50% of respondents had completed a first-cycle university degree. The remaining educational categories had the lowest representation in the sample. Respondents with a third-cycle university degree accounted for 3.20%, while those whose highest completed level was primary education accounted for 0.80%. The distribution shows substantial representation of university-educated respondents, particularly those with a second-cycle degree, alongside respondents who had completed secondary or primary education.

Figure 5 Self-assessed Knowledge of HPV and its Risks

4) Do you consider your knowledge of HPV and its risks sufficient?



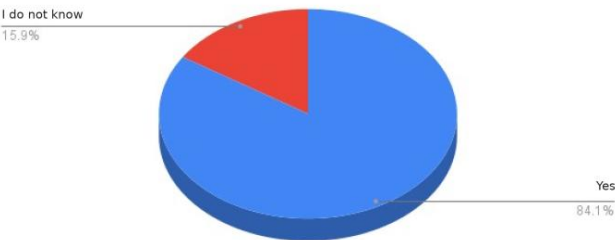
Source: authors' own processing.

Figure 5 presents the respondents' assessment of how sufficient they considered their knowledge about HPV and its risks. In answering this question, 42.90% of respondents considered their knowledge sufficient. This finding suggests a relatively good level of

awareness among respondents who assessed their knowledge in this way. Conversely, 34.10% reported that their knowledge was insufficient, indicating that they did not consider themselves adequately informed about the subject. The remaining 23% were unable to assess their level of awareness clearly. Their answer did not provide a definite assessment of whether their knowledge was sufficient or insufficient. The responses therefore include those who considered their knowledge adequate, those who considered it inadequate and those who could not clearly assess it.

Figure 6 Perceived Severity of HPV Infection and its Consequences

5) Do you think HPV infection is a disease that can have serious consequences?

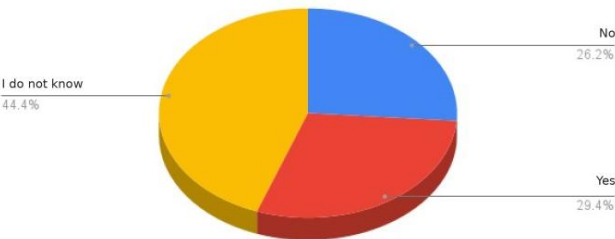


Source: authors' own processing.

Figure 6 concerns the seriousness of the diseases caused by HPV infection and respondents' assessment of that seriousness. The majority of respondents who answered the question, representing 84.10%, were aware of the seriousness of these diseases. A smaller proportion, accounting for 15.90%, expressed uncertainty when asked to assess disease severity. The reported responses therefore describe a larger group who recognised the seriousness of HPV-related disease and a smaller group who were uncertain in their assessment. None of the respondents selected the answer "I do not know". This suggests that all of the respondents had at least a basic understanding of the health risks associated with HPV, even though their assessments of the seriousness of the diseases differed.

Figure 7 Assessment of the Clarity of HPV Information

6) Do you feel that information about HPV is often unclear or contradictory?



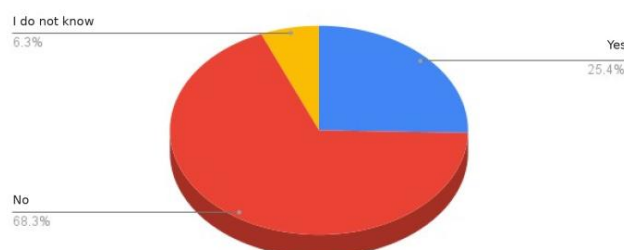
Source: authors' own processing.

Figure 7 addresses the clarity of the information available about HPV and the extent to which respondents regarded that information as contradictory. A total of 29.40% considered the information unclear or contradictory. By contrast, 26.20% did not consider the information contradictory when responding to the question. The largest group, representing 44.40%, could not provide a definite assessment of the information in this respect. The results report that the

question was answered by 129 respondents. The responses therefore describe differing assessments of the same aspect of HPV information. Some respondents identified a lack of clarity or consistency, others did not consider the information contradictory, and the most frequently selected position was an inability to give a definite assessment.

Figure 8 Personal Experience of HPV Infection

7) Have you had personal experience of HPV infection, either in yourself or in someone close to you?

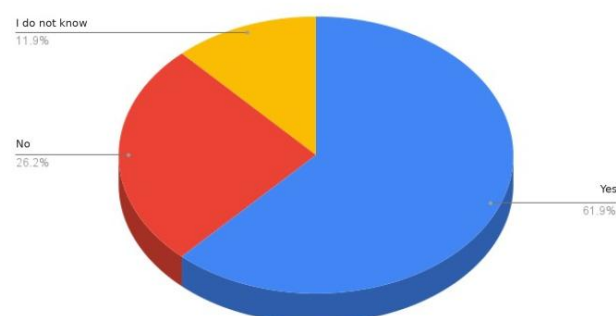


Source: authors' own processing.

Figure 8 presents responses concerning personal experience of HPV infection. The question included experience of infection in the respondent as well as experience involving someone close to them. Such an experience was reported by 25.40% of respondents. Most respondents, representing 68.30%, stated that they had not had an experience of this kind. A further 6.30% were unsure when answering the question. The result therefore distinguishes between respondents who reported an experience of HPV involving themselves or a close person, those who reported no such experience and those who could not answer with certainty. Within this distribution, reporting no experience was the most common response to the question about HPV in the respondent or their close circle.

Figure 9 Perceived Influence of Awareness on Respondents' Preventive Behaviour

8) Do you believe that your knowledge of HPV influences your preventive behaviour (e.g. attendance at preventive examinations, vaccination, use of protection during sexual activity)?



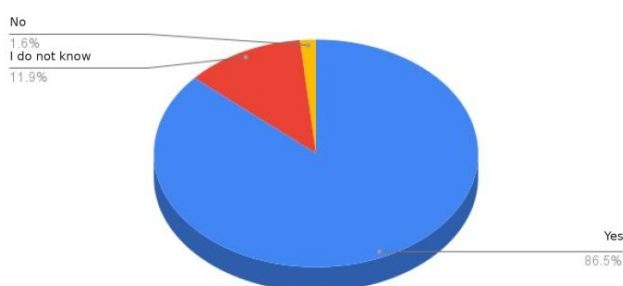
Source: authors' own processing.

In the question presented in Figure 9, respondents confirmed the assumption that raising awareness is important in relation to preventive behaviour. The majority of those who answered, accounting for 61.90%, recognised a connection between their knowledge and their willingness to undertake preventive measures. The measures concerned included preventive

examinations and vaccination. Their answers therefore related their level of awareness to their own willingness to participate in these activities. A further 26.20% reported that awareness did not influence their preventive behaviour. The remaining 11.90% expressed a neutral position on the issue. The question was answered by 129 respondents, whose responses describe the connection they perceived, or did not perceive, between information and their approach to prevention.

Figure 10 Agreement with the Description of HPV as a Serious Health Problem

9) I consider HPV a serious health problem.

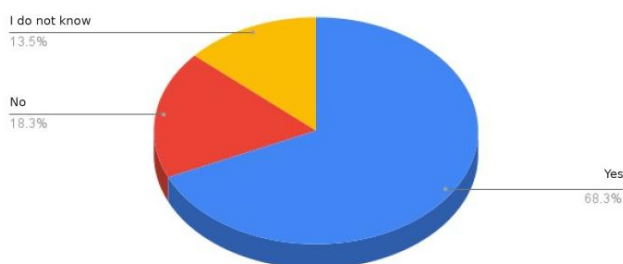


Source: authors' own processing.

Figure 10 presents respondents' degree of agreement with the statement that HPV constitutes a serious health problem. Most of those who answered the question, representing 86.50%, agreed with the statement. Their responses indicated that they regarded HPV as a serious problem in relation to health. A further 11.90% selected the answer indicating that they did not know, and therefore did not state agreement or disagreement with the proposition. Only 1.60% disagreed with the statement. Agreement was consequently the predominant response in the distribution shown in the chart. Among the other responses, uncertainty about the statement was more common than explicit disagreement with the description of HPV as a serious health problem.

Figure 11 Concern about the Potential Health Consequences of HPV Infection

10) I am concerned about the possible health consequences of HPV infection.



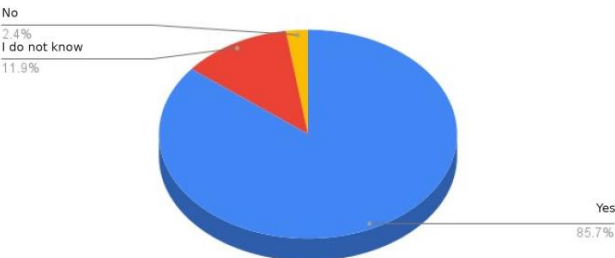
Source: authors' own processing.

Figure 11 concerns the worries respondents expressed about the possible consequences of HPV infection for their health. A total of 68.30% reported concerns about their health in connection with HPV. By contrast, 18.30% stated that they did not have such concerns when answering the question. The remaining 13.50% were unsure or were unable to assess the extent of their concern about possible health consequences. The distribution therefore includes an expression of concern, an absence of concern and uncertainty about how to assess that concern. The most

frequently reported position was concern about health in relation to HPV infection, while the other respondents reported either no concern or an inability to give a definite assessment.

Figure 12 Perceived Health Risk of HPV Infection for Men

11) Do you consider HPV infection a risk for men as well as women?

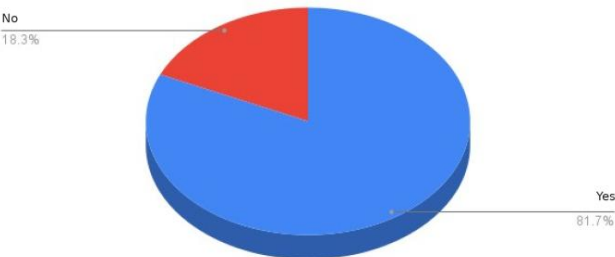


Source: authors' own processing.

Figure 12 examines respondents' views on whether HPV infection presents a health risk to men as well as to women. Most respondents, accounting for 85.70%, recognised that men are also concerned by this health risk. Their responses indicated that they did not regard HPV as an issue affecting women alone. A smaller group, representing 2.40%, considered HPV to be exclusively a women's health issue. The remaining 11.90% could not assess whether the infection also poses a health risk to men. The most frequent position among the respondents was therefore recognition of the relevance of HPV to both sexes, alongside smaller groups who regarded it as exclusively a women's issue or could not assess its relevance to men.

Figure 13 Regularity of Respondents' Attendance at Preventive Examinations

12) I regularly attend preventive health examinations.

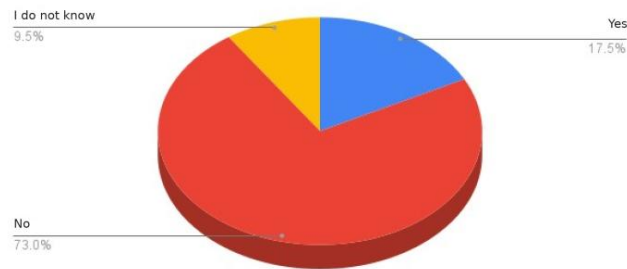


Source: authors' own processing.

Figure 13 presents the results concerning respondents' regular attendance at preventive health examinations. Most respondents, representing 81.70%, reported attending these examinations regularly. Their answers described regular participation in preventive examinations as part of their approach to health. The remaining respondents, accounting for 18.30%, neglect these examinations. The distribution presented in the chart therefore distinguishes between the larger group who attend preventive health examinations on a regular basis and the smaller group who neglect them. Regular attendance was the predominant pattern reported in response to this question about preventive examinations. These findings form the part of the questionnaire results that concerns participation in examinations, alongside the separate questions dealing with vaccination against HPV.

Figure 14 Respondents' HPV Vaccination Status

13) I am vaccinated against HPV.

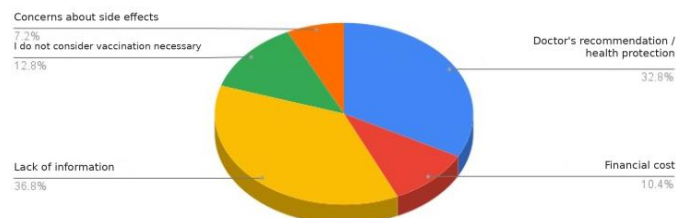


Source: authors' own processing.

Figure 14 describes respondents' reported vaccination status in relation to HPV. The largest group, accounting for 73%, stated that they had not received vaccination against the virus. A further 17.50% reported that they had been vaccinated. The remaining 9.50% were unsure of their vaccination status and could not give a definite answer about whether they had received HPV vaccination. The distribution therefore contains reports of no vaccination, reports of vaccination and uncertainty about vaccination status. Most respondents belonged to the group reporting that they had not been vaccinated. The results consequently indicate low reported uptake of HPV vaccination in the sample, with a smaller vaccinated group and a further group unable to state their status with certainty.

Figure 15 Factors Determining the Decision to Receive HPV Vaccination

14) What influenced your decision to receive or not receive HPV vaccination?

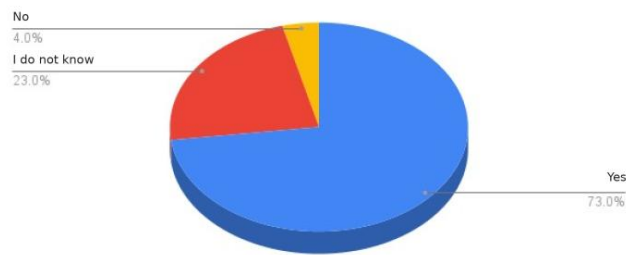


Source: authors' own processing.

Figure 15 describes the factors respondents selected in connection with their decisions about HPV vaccination. A lack of information was reported by 36.80% of respondents. The other barriers included the belief that vaccination was unnecessary, which was reported by 12.80%, and the financial cost of vaccination, reported by 10.40%. Concern about possible side effects was reported by 7.20%. The option concerning a doctor's recommendation and protection of one's own health accounted for 32.80% of responses. The question thus included considerations associated with accepting vaccination as well as factors described as barriers to it. The results state that 129 respondents answered this question. The distribution presents the factors they selected, covering information, perceived necessity, cost, possible side effects, professional recommendation and protection of health.

Figure 16 Respondents' Attitudes towards Vaccination for Health Protection

15) Do you think HPV vaccination is important for protecting health?

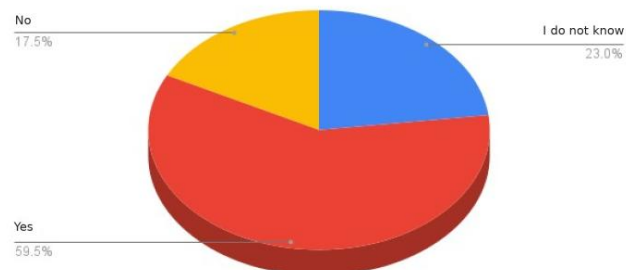


Source: authors' own processing.

Figure 16 presents the views of respondents on the importance of HPV vaccination in protecting health. The majority of those who answered the question, as many as 73%, were convinced that vaccination against HPV was important. Their responses therefore expressed a positive assessment of its importance. Only 4% considered vaccination unimportant in this respect. A further 23% were able to take a position on the importance of vaccination. The question was answered by 129 respondents. The distribution presented in the chart describes these positions in relation to the importance respondents assigned to HPV vaccination, with the largest reported group consisting of those who were convinced that vaccination had an important role in protecting health.

Figure 17 Perceived Relationship between Vaccination and Sexual Behaviour

16) Do you believe that HPV vaccination influences more responsible sexual behaviour?

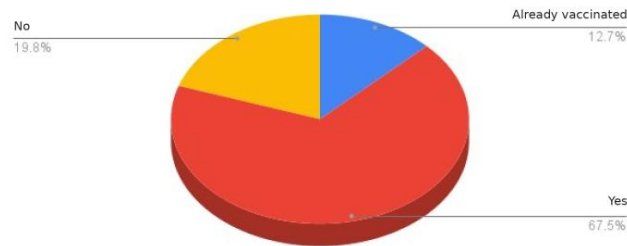


Source: authors' own processing.

Figure 17 concerns respondents' views on the relationship between vaccination and more responsible sexual behaviour. Analysis of the responses indicates that 59.50% believed vaccination had a positive influence on such behaviour. The behaviours described in this connection included regular vaccination and attendance at preventive examinations. These respondents therefore perceived a positive connection between vaccination and the responsible behaviour addressed by the question. Conversely, 17.50% did not perceive this connection. The remaining 23% were unable to take a definite position on the relationship. The reported distribution describes respondents who believed in a positive influence, those who did not see this connection and those who could not state a definite view on the matter.

Figure 18 Dependence of Vaccination on Reimbursement by Health Insurance

17) Would you consider HPV vaccination if it were fully reimbursed by health insurance?

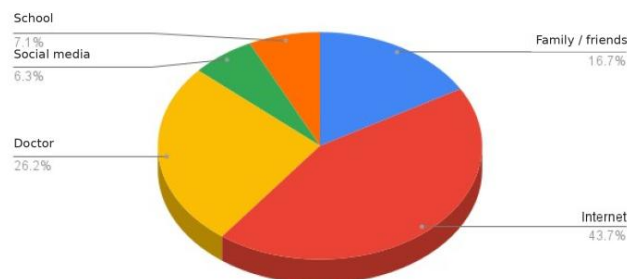


Source: authors' own processing.

Figure 18 presents respondents' answers to the possibility of HPV vaccination being fully reimbursed by health insurance. More than two thirds, representing 67.50%, stated that they would consider being vaccinated if the full cost were covered. Another 12.70% indicated that they had already received vaccination. The remaining 19.80% stated that they would not be vaccinated even if health insurance covered the costs. The distribution therefore includes willingness to consider vaccination under the specified reimbursement condition, an indication of vaccination already received and an unwillingness to be vaccinated despite full coverage. The result describes what respondents stated in response to the proposed financial condition, together with the separate response given by those who reported already being vaccinated.

Figure 19 Respondents' Primary Information Sources about HPV

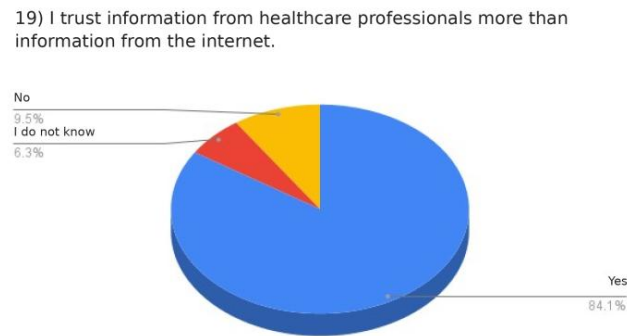
18) I obtained information about HPV mainly from:



Source: authors' own processing.

Figure 19 describes the sources from which respondents obtained information about HPV. The main source was the internet or social media, reported by 43.70%. This suggests that young people obtain information about the subject through informal channels. A doctor was cited as a source of information by 26.20% of respondents. Family and friends were the next source reported, accounting for 16.70%. School ranked last as a source of information about HPV, at 7.10%. The distribution therefore presents the sources identified by respondents, ranging from internet or social media information to doctors, family and friends, and school. Within the reported distribution, internet or social media information occupied the leading position, while school had the lowest position among the sources described.

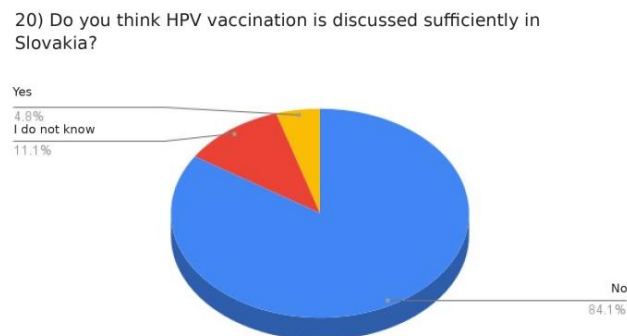
Figure 20 Trust in Information from Professionals and Online Sources



Source: authors' own processing.

Figure 20 examines the trust respondents placed in information from healthcare professionals in comparison with information obtained online. Most respondents, representing 84.10%, expressed greater trust in information provided by healthcare professionals. A further 9.50% did not express greater trust in professional information than in information from the internet. The remaining 6.30% were unable to state a definite position on this comparison. The result therefore concerns the credibility assigned to information from the sources specified in the question. The predominant response favoured information from healthcare professionals, while the other responses either did not express this preference in trust or did not provide a definite assessment of the relative credibility of professional and online information.

Figure 21 Public Discussion of HPV Vaccination in the SR

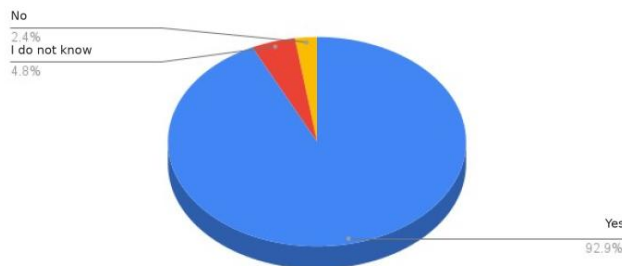


Source: authors' own processing.

Chart 20 presents respondents' assessments of the public discussion about HPV vaccination in Slovakia. Most respondents, accounting for 84.10%, considered this discussion insufficient. Their responses expressed the view that HPV vaccination was not being discussed sufficiently in the public sphere. Only 4.80% expressed satisfaction with the discussion taking place. The remaining 11.10% were unable to provide a definite assessment. The results therefore distinguish between those who considered public discussion insufficient, those who were satisfied with it and those who could not take a definite position. Within the distribution shown in the chart, the view that public discussion was insufficient was the predominant response to the question about HPV vaccination in Slovakia.

Figure 22 Support for HPV Education in Schools

21) In your opinion, should young people receive more information about HPV and vaccination while at school?

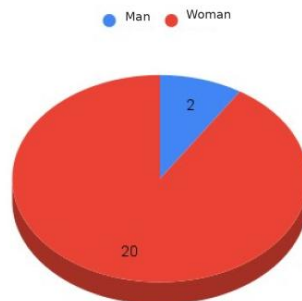


Source: authors' own processing.

Figure 22 presents the responses concerning education about HPV in the school environment. The data show almost complete agreement among respondents, with 92.20% supporting the need for education about HPV in schools. This response expressed agreement with making the topic part of education in that setting. The answer "I do not know" was selected by 4.80% of respondents, who did not give a definite position on the need for such education. The remaining 2.30% disagreed. The distribution therefore describes a large group supporting HPV education in schools and smaller groups who were uncertain or disagreed. Agreement with the need for school-based education was the predominant position expressed by respondents in answering this question.

Figure 23 HPV Vaccination by Sex

22) Difference in vaccination between the sexes.



Source: authors' own processing.

Figure 23 presents the proportion of respondents vaccinated against HPV according to sex. Within the entire research sample of 130 respondents, only 22 were vaccinated. This vaccinated group included two men, with the reported proportion of 4.30%, and twenty women, with the reported proportion of 25.30%. The results therefore show substantially higher vaccination uptake among women than among men. The vaccination rate among women is described as approximately six times the rate among men. The chart and its accompanying description present this comparison by identifying the vaccinated respondents of each sex within the overall study sample. The difference described is between the vaccination rate reported for women and the vaccination rate reported for men.

Discussion

The sample included in the study comprised a total of 130 respondents, consisting of 82 women and 48 men. The mean age of the respondents was 33.03 years. Women therefore predominated in the group that participated in the questionnaire survey. Their greater representation may indicate greater interest in the topic of HPV. This interpretation is consistent with findings from other studies that point to greater awareness among women regarding the prevention of cervical cancer. The composition of the sample, including this predominance of women, may have influenced the results obtained in the survey. The discussion of the findings therefore begins with the respondent group from which the questionnaire data were obtained.

One of the most important findings was the discrepancy between the relatively high perception of the risks associated with HPV and the low rate of vaccination. The article reports that 81.70% of respondents declared preventive behaviour, while 73% had not received vaccination against HPV. The discrepancy between knowledge and actual preventive behaviour is also confirmed by other studies. Lumia (2026) reports that as many as 89% of women in the study sample declared knowledge of HPV. Sexual intercourse was correctly identified as the main route of transmission by 87%, and 77% recognised the association of HPV with cervical cancer and other cancers. Despite this awareness, only 14% reported that they had been vaccinated. Knowledge about the specific types of vaccines was also low: only 42% knew that several variants of the HPV vaccine exist. These results closely align with the findings of our survey. They describe awareness of HPV and its consequences alongside limited vaccination uptake. General knowledge of the existence of HPV, or of the risks associated with it, does not automatically lead to acceptance of vaccination.

A Slovak survey reported by TASR (2025) also addressed awareness of vaccination against HPV. According to the findings of that survey, eight in ten parents knew that a vaccine against HPV exists. However, almost half did not know exactly what protection the vaccine provides or what it protects against. The most commonly reported sources of information were paediatricians, gynaecologists and social media. These findings draw attention to the quality and clarity of the information available, together with the extent to which people are aware of vaccination. The issue described therefore concerns both the amount of information people receive and their understanding of that information, particularly their understanding of the protection associated with the vaccine.

The most significant barriers to vaccination were a lack of information, the financial cost of vaccination, concerns about side effects, and economic and psychological barriers. Other studies provide support for these findings. Sokale et al. (2025) report that the major barriers to HPV vaccination among ethnic minorities include distrust of healthcare and concerns about the safety of the vaccine. They also include insufficient knowledge of HPV and a lack of recommendations from healthcare providers. In immigrant populations, limited awareness was accompanied by language barriers, costs, difficulties in navigating the healthcare system and cultural beliefs. These issues were significant alongside the lack of awareness already described. In Hispanic populations, the barriers included parental misconceptions concerning sexuality and an absence of recommendations from healthcare professionals. The barriers presented in the discussion therefore concern information and knowledge, views about

vaccination and healthcare, and the financial and other difficulties described in the cited research.

The Slovak findings reported by TASR (2025) also describe the reasons given by parents who refused vaccination or remained hesitant about accepting it. A total of 42% could not provide a specific reason for their position. Insufficient information was reported by 16%, while concerns about possible side effects were reported by 11%. A further 6% considered vaccination unimportant or had heard negative reports about it. Another 5% did not consider the vaccine sufficiently effective. The responses therefore include both stated reasons for refusal or hesitation and an inability to identify a specific reason. These are the reasons and responses presented in the cited survey and discussed in the article in relation to barriers to vaccination. Sokale et al. (2025) report findings from a study of racial and ethnic disparities in HPV vaccination among adults aged 18-26 years in the United States of America (USA). In that study, vaccination coverage for both sexes was below the target of 80%. The reported vaccination rate was 37.8% among men, compared with 57.2% among women. Coverage was therefore substantially lower in the male group than in the female group. The findings described in the article include both the comparison with the stated target and the difference between men and women. Neither sex reached the target in the reported results, and men had the lower vaccination rate of the two groups.

Kar et al. (2024) also reported differences between women and men in awareness of HPV and in vaccination uptake. In the study they described, awareness of HPV was reported for 64.0% of women, compared with 46.0% of men. The corresponding figures for vaccination were 16.9% among women and 6.7% among men. Women therefore had a higher level of reported awareness as well as a higher rate of vaccination in the cited sample. The difference between the sexes was present in both of the indicators discussed. Nevertheless, the overall level of vaccination coverage in the study sample was low, as noted in the discussion of these findings. The article also refers to vaccination figures reported for the Slovak Republic (SR). Folentová (2023), citing Petra Ištokovičová, an analyst at the Institute for Health Analyses, describes the proportion of girls and boys who had received at least one vaccine dose. Among those born in 2010, at least one dose had been received by 43% of girls and 22% of boys. For those born in 2009, the corresponding proportions were 34% of girls and 13% of boys. These figures concern receipt of at least one dose in the birth cohorts specified. They are included in the discussion of vaccination uptake among girls and boys in Slovakia and describe the reported proportions separately for each birth cohort.

Our further findings agree with those reported by Stephens et al. (2023). The authors conducted a population-based cross-sectional analysis in the USA, drawing on data from the national HINTS 5 survey collected between 2017 and 2020. The analysis included 15,637 adult respondents. Its aim was to assess awareness of HPV in relation to educational level and race or ethnicity. The authors demonstrated that general awareness of HPV increases with educational attainment. However, knowledge of the association between HPV and individual cancers remained insufficient, including among respondents with higher levels of education. Thus, the findings described in the study concern both the increase in general awareness with education and the continuing lack of knowledge about the connection with particular cancers (Stephens et al., 2023).

Marlow et al. (2012) provide an international comparison of knowledge about HPV and vaccination against HPV. Their study used an online comparative approach and included 2,409 respondents aged 18 to 70 years. Participants were from the USA, the United Kingdom and Australia. A validated instrument was used by the authors to assess knowledge of HPV and HPV vaccination. Awareness of HPV was higher among respondents in the USA than among those in the United Kingdom and Australia. Across all three countries, lower knowledge was associated with male sex and lower education. Gaps also remained in the more detailed knowledge respondents had about the infection. The study is therefore included in the discussion of differences in HPV awareness across these populations.

Azzi et al. (2025) examined awareness of HPV, HPV vaccination and cervical screening among women in Saudi Arabia. The research took the form of a cross-sectional online questionnaire study and involved 858 women aged 18 years and older. The topics assessed therefore concerned awareness of the infection, awareness of the vaccine and cervical screening. The findings discussed in the article describe awareness of HPV and the vaccine as limited. At the same time, the provision of vaccination free of charge was identified as a positive factor. This study is included in the discussion of financial accessibility as an issue associated with vaccination, with particular reference to the positive role assigned to free provision in the reported findings.

The discussion considers access to vaccination together with attitudes towards vaccination and awareness of HPV. A positive attitude and basic awareness may not lead to vaccination when financial or organisational obstacles remain. In these circumstances, the issue concerns the accessibility of vaccination as well as the information available about it. Support for vaccination is consequently discussed in terms of communication and also in terms of access to preventive services. The recommendations presented below address these same areas, combining attention to information and awareness with attention to financial accessibility. The discussion therefore retains the focus on both understanding vaccination and the financial or organisational obstacles described in relation to receiving it.

In our research, respondents considered a doctor to be the most important source when making a decision about vaccination. The role assigned to the doctor in this decision is therefore central to the practical discussion of the findings. If a doctor is regarded as the key authority by respondents, active communication by that doctor may be a decisive step in influencing their willingness to accept vaccination. The practical implications of the research consequently lie in strengthening the involvement of healthcare professionals in targeted education about HPV. This recommendation concerns general practitioners, gynaecologists and other healthcare professionals, whose role in communication about HPV is emphasised in the discussion.

Conclusion

Overall, the findings of the research are largely consistent with the studies discussed above. Research conducted in the USA, the United Kingdom, Australia, Saudi Arabia and the SR shows that the issues associated with HPV extend beyond basic awareness of the infection. They also concern the quality of knowledge and the credibility assigned to the sources from which information is obtained. Further issues include differences related to sex and education, the strength of recommendations from healthcare professionals and the financial accessibility

of vaccination. Our research confirmed these conclusions and showed that effective support for vaccination requires more than informing people that HPV exists. The response described in the article involves systematically building trust in professional information sources and communicating the importance of vaccination in a targeted way. It also involves strengthening the role of schools and healthcare professionals in education, while reducing the economic and psychological barriers to preventive behaviour discussed in the article.

Regarding the research questions, the findings confirm that a relationship exists between the level of knowledge, experience, perceptions of HPV and preventive behaviour, although this relationship is not clearly direct. Respondents' attitudes towards vaccination are associated with a responsible approach to prevention. At the same time, the results suggest that a positive attitude on its own is insufficient when it is weakened by uncertainty, a lack of information or concerns about vaccination. The discussion of attitudes therefore includes these circumstances alongside the positive views expressed by respondents. The type of information source has a significant influence on respondents' preventive behaviour. A doctor was perceived as the most important source of information and as the most important factor in making a decision. Social media, meanwhile, were a frequent source of information, but the information obtained through them was not always sufficiently reliable.

The recommendations for practice are as follows:

- direct educational activities also towards people with university education, with attention to awareness of HPV and vaccination;
- strengthen the role of doctors and nurses in providing information and supporting decisions about HPV vaccination;
- improve the financial accessibility of HPV vaccination through broader reimbursement from public health insurance;
- conduct nationwide media campaigns addressing vaccination safety and promoting health literacy;
- direct interventions towards groups with low participation in prevention and limited access to health services;
- monitor the effectiveness of preventive measures regularly and adapt the preventive strategy to the current needs of society;
- create and share trustworthy, professionally verified information about HPV through online platforms and campaigns in schools;
- emphasise the risks of HPV infection for men and support their involvement in prevention through awareness and testing,
- introduce systematic education about HPV into school programmes, including biology and health education classes;
- support cooperation between schools, healthcare professionals and state institutions in public education, with attention to the long-term sustainability of these activities.

Such comprehensive and coordinated measures can make a significant contribution to reducing HPV infection, increasing vaccination coverage, and improving understanding of the importance of prevention across all age groups.

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