

# Assessing the risk. Containing the Threat. Examination of the Polish Youth's Opinions concerning the HPV Vaccination program-

## BACKGROUND

Vaccines are clearly one of the prime contenders for the title of the "Greatest success in public health history". Edward Jenner is considered the founder of vaccinology in the West - in 1796 the first smallpox vaccine was developed. This enabled rapid advances in the prevention of measles, polio, tetanus, among other diseases (and sometimes, as in the case of smallpox, to effective eradication of the disease). The basis of the vaccination process is acquired immunity, which creates immunological memory, allowing the vaccinated organism to eliminate pathogens, prevent their growth and spread, thus preventing disease symptoms from occurring. If an unexpected gene mutation in a different, virulent form were still to appear, the illness would nevertheless be more benign and resolve itself more swiftly than in the case of no vaccination.

Among sexually transmitted infections (STIs) in young adults, the human papilloma virus (HPV) is the most common. Genital HPV infection is responsible for both asymptomatic, or benign, and malignant lesions of the genital tract. Persistent infection by high-risk HPV types causes the development of cervical lesions and cervical cancer, which is the second most commonly found malignant tumour worldwide.

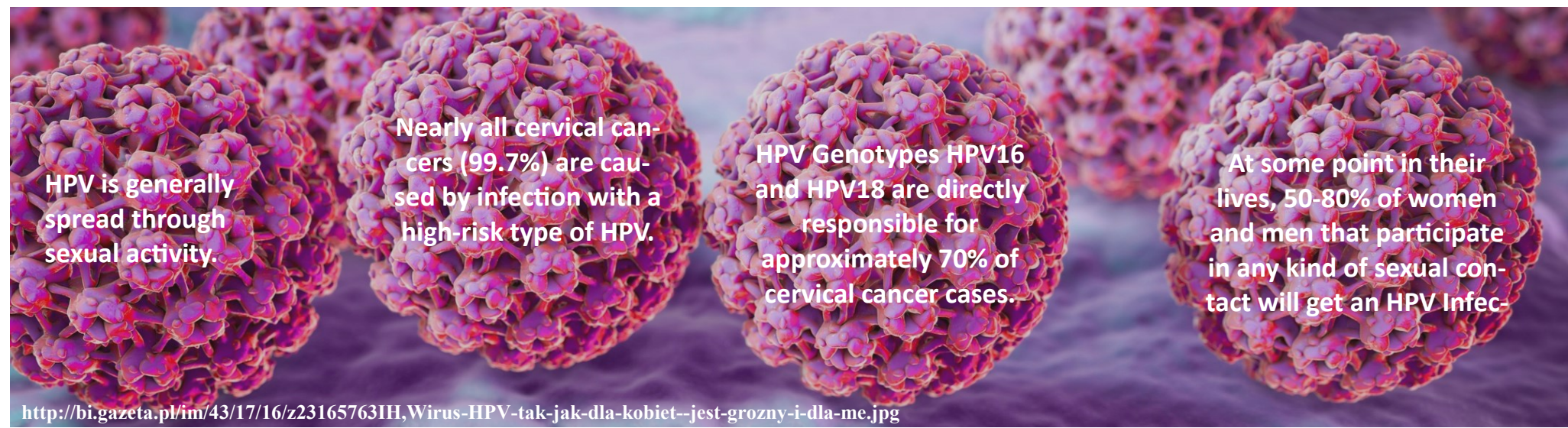
In Poland, there is an estimated 3000 cases of cervical cancer per year, of which up to 50% are usually incurable. The fact that cancer treatment is - not without good reason - considered to be completely exhausting for the treated organism is an additional argument in itself for the use of vaccines to prevent potentially malignant conditions from emerging. All types of vaccines against HPV protect against the types 16 and 18 of HPV, which are the cause of most cervical cancers. Most of them, however, similarly protect against different types of HPV, most notably 6 and 11, which also cause some anal and genital cancers.

Other HPV types have been associated with the sharp increase of precancerous conditions, cancers, and genital warts, so using vaccines helps to protect girls against both cervical cancer and genital warts.

Clinical trials show that the HPV vaccines currently administered are safe, effective, and proven to cause only mild side effects. The vaccines are recommended for young men and women. A study analysing the results of 10-year vaccination programmes in many different countries shows that universal vaccination can contribute to an up to 90% decrease in the incidence of cervical lesions. Moreover, a decline in advanced pathologies of the uterine cervix ranging up to 85% have been observed.

Regional Governments in Poland have extensively used the opportunity to broaden the access of its residents to free-of-charge public HPV vaccination programmes. Unfortunately for all of us, the opposition to vaccination that has existed for as long as the vaccination itself, has not ceased to exert its influence on the public. Increased vaccine hesitancy is considered by the World Health Organisation to be one of the 10 most prominent Threats to Global Health in 2019.

During the process of survey design, an assumption was made that the level of familiarity with issues related to the problem among the Polish youth is below adequate. The objective of the survey was to collect data about HPV vaccination rates among Polish high-school students, as well as their views regarding public information services and other sources of information that students have used in the past in order to obtain knowledge about the topic. Our survey also focuses on surveying the social awareness of threats related to HPV infection by reviewing the general state of knowledge of the issue.



## AIM & HYPOTHESIS:

The aim of the research was to assess the social awareness of threats posed by HPV infection and to collect opinions about the effectiveness of educational activities concerning HPV prevention among the Polish youth. In the research, the following hypotheses have been advanced: knowledge about subjects related to vaccines and the HPV virus among Polish youth aged 16 and 19 is deemed inadequate considering the likelihood of the infection and the threat posed by its consequences for the individual's and public health. Men present smaller awareness of the threats posed by the HPV virus in comparison to women.

## MATERIALS & METHODS

In the research, a questionnaire survey consisting of three sections was used. At the beginning of the survey, preliminary questions whose purpose was to assess differences in responses to questions among groups which differed as to the criteria of sex and age were asked. The main section incorporated 21 single-choice questions concerning, among others, knowledge about vaccines and the likely causes and consequences of HPV infection. The third section contained the declared interviewees' attitudes to the statements that appeared the most frequently in the initial assessment of attitudes towards the quality and availability of educational materials concerning anti-HPV vaccines. No questions that would collect identifiable data were included.

The survey was carried out online through Google Forms. The results were collected between 3 and 10 February, 2019. Young people between the ages of 16 and 19 participated in the research (571 women and 498 men). The questionnaire was filled out mainly by high-school students. Nearly half the answers were submitted by students of the following institutions: I Liceum Ogólnokształcące im. M. Kopernika in Lodz, Gimnazjum and Liceum Akademickie in Torun, VII Liceum Ogólnokształcące im. K.K. Baczyńskiego in Wrocław. There is no guarantee that the survey was completed honestly and that the selected questions assessed the knowledge of the interviewees comprehensively. However, the vast sampling made it possible to obtain results for persons from diverse environments, which enabled us to gain a much more accurate insight into the opinions and knowledge of Polish youths.

The average values and the standard deviation of the measured content were calculated. In an attempt to assess the normality of data distribution for particular samples, the Shapiro-Wilk test was used. The Tukey test was used to determine the statistical significance of disparities between samples. In addition, the level of correlation between the main source of the declared information and the score obtained in the knowledge test were examined. The software used to analyse the data and to graphically and statistically assess it were Microsoft Excel 2007, GraphPad Prism 8.0.0, and Statistica 13.1.

## RESULTS - Survey and Analysis

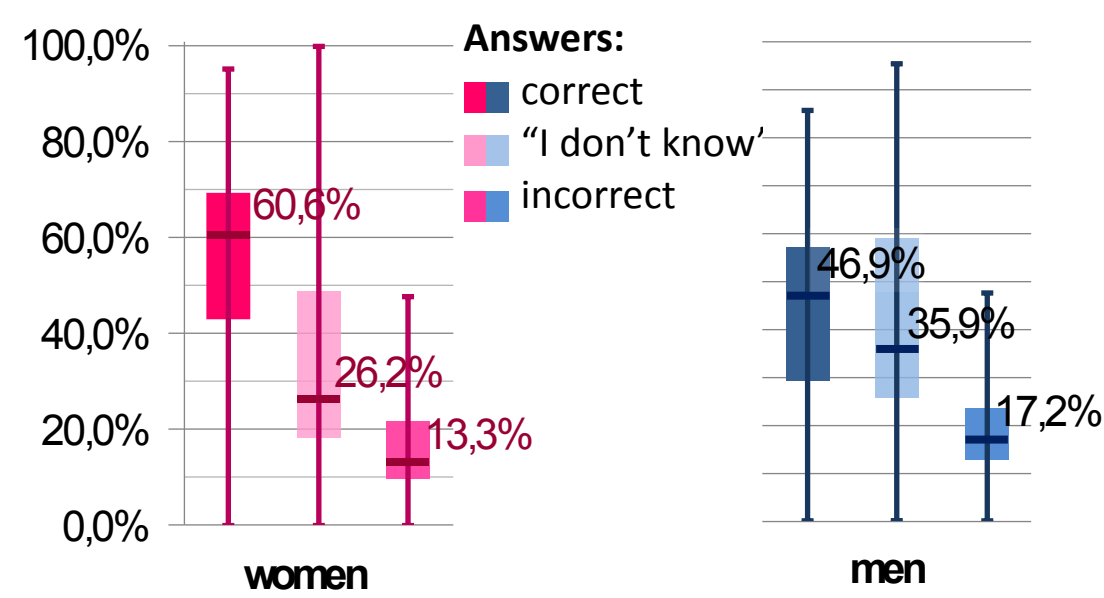


Figure 1. Mean percentage share of answers aggregated by sex of the respondent.

(Figure 1.) No statistically significant difference between the proportion of the correct answers to questions concerning prevention and those regarding the causes and consequences of infection has been proven.

(Figure 2.) The main source of information about anti-HPV vaccines most frequently repeated amongst women was "doctor/midwife", followed by "information portals", whereas amongst men, the most common answers were "information portals" and "social media". The most common answer from the "Other" category amongst women was "mother", whereas amongst men the dominant answer was "girlfriend".

## What is your main source of information regarding vaccination against HPV?

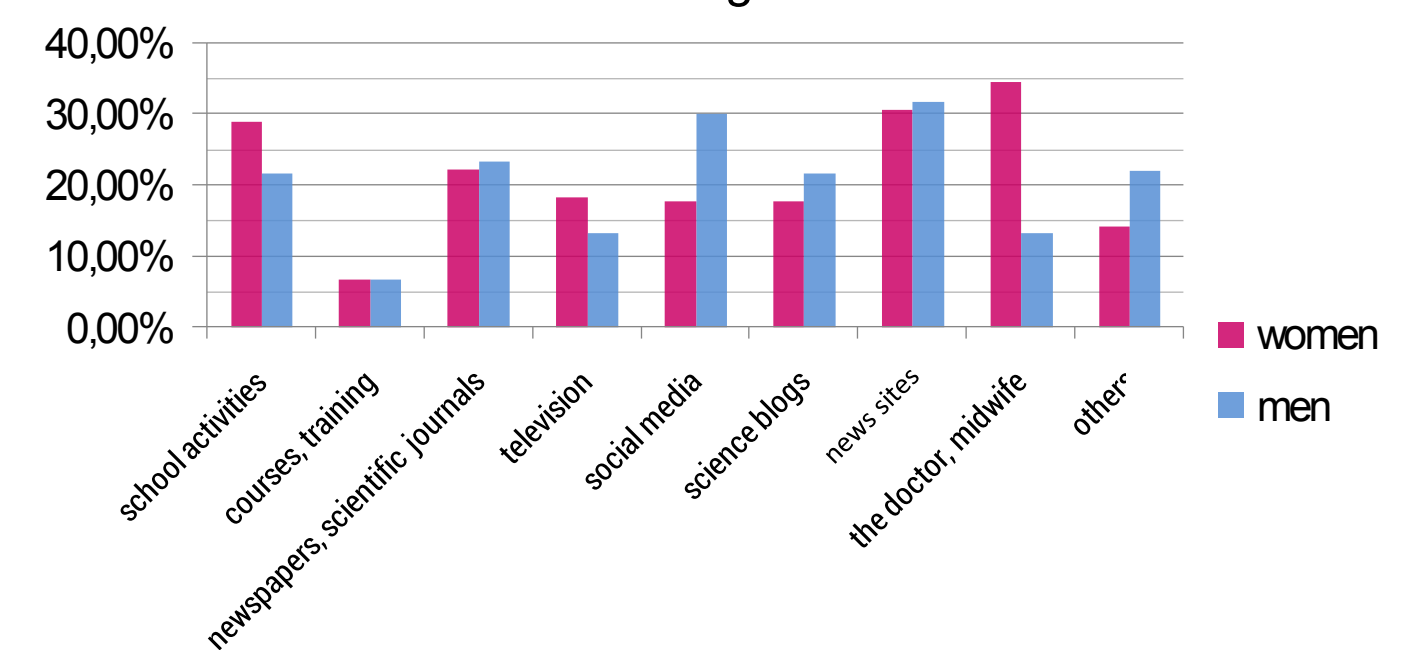


Figure 2. Percentage share of answers to the multiple-choice questionnaire regarding the sources of information about HPV vaccines.

The questions deemed the most problematic were similar amongst men and the women, even though the incidence of the correct answers varied between the groups.

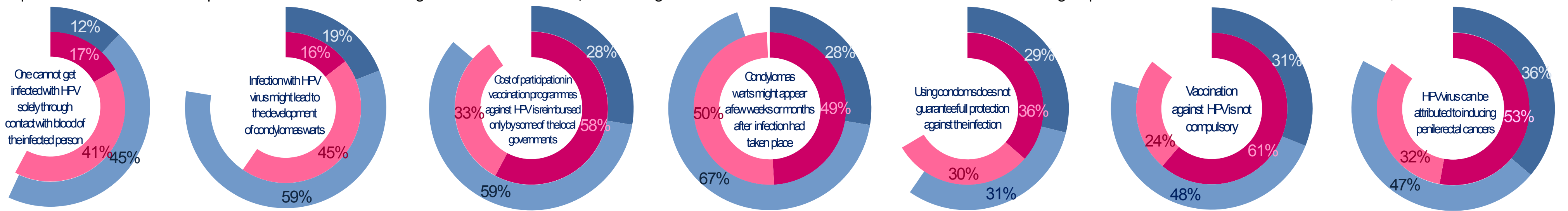


Figure 3. Average percentage of the answers correctly assessing the statement shown in the center, and the percentage of "I don't know" statements.

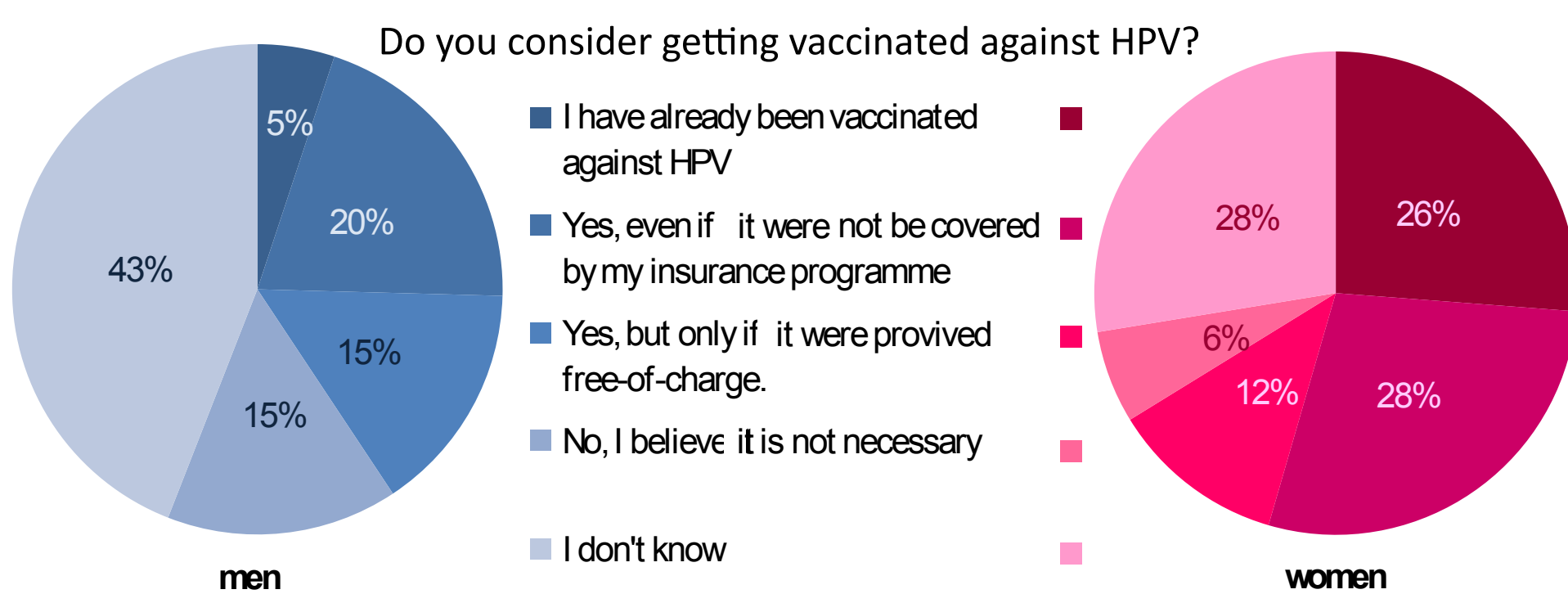


Figure 4. Percentage share of answers to the question regarding plans for getting vaccinated against HPV.

## CONCLUSIONS

In conclusion, the evidence from this study points towards confirmation of both the first and the second hypothesis. The finding especially worth noting is that a substantial majority of respondents agreed with that the amount of information regarding vaccines and HPV virus available is inappropriately low. A detailed analysis of the questionnaire results suggested that in the case of men, negligent and tentative attitudes towards their individual need for vaccination are twice as much prevalent in the population as in the case of women. Men's widespread lack of awareness may be responsible for the increased risk for public health, on account of their disregarding preventive measures to counter the risk of infection. This should not be alleviated by the fact that in the case of men, conditions caused by HPV infection are relatively more benign, as regardless of this fact, males are known to be a vector for the virus. However, the popular opinion about the most serious consequences of contact with the virus not concerning men does not stand true in the face of closer consideration, as the risk of developing a malignancy at some point in life increases significantly in people of both sexes who have undergone HPV infection. Our research suggests that in order for the awareness of the threats among young people to increase, policymakers should encourage schools to increase the amount of educational resources accessible to them. This might take the form of a series of lectures given by medical professionals, or a nationwide media campaign, utilising popular news sites and social networks for the purpose of sharing knowledge and improve the ability to distinguish factual information from inaccuracies. It is established that young people keep themselves informed primarily with online sources, therefore for the educational effort to bring the greatest possible change in attitudes, it would be pivotal to make use of this particular medium. Further studies, which would take our findings into account, concentrating on adjusting the population surveyed to be more representative for Poland, will need to be undertaken to establish whether our findings might serve as a basis for designing comprehensive problem-tackling policy approaches.

## Do you believe that information concerning HPV vaccination is available widely enough? To what degree do you agree with the following statements?

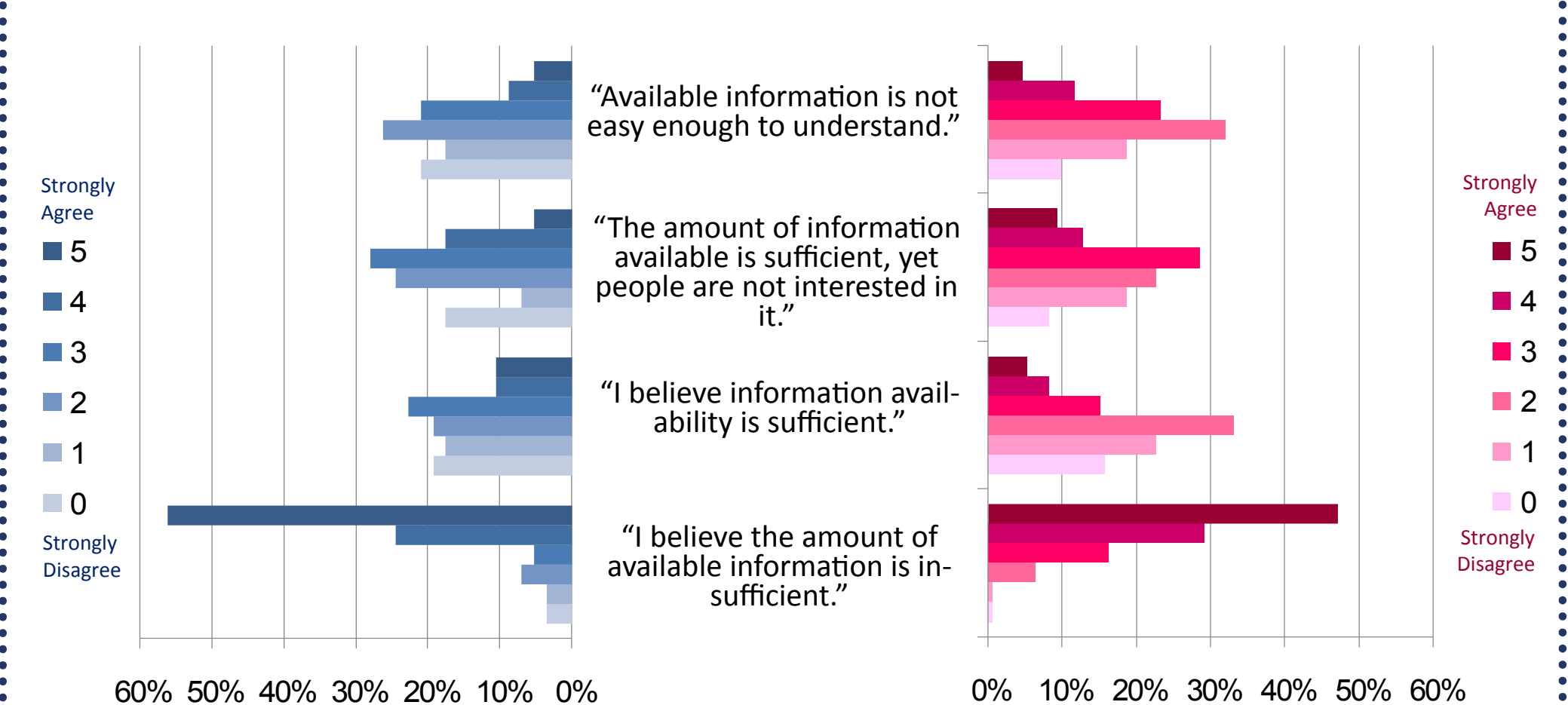


Figure 5. Overview of the respondents' positions regarding the statements concerning the effectiveness of educational campaigns related to HPV infection prevention.

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