

Exploring the nexus of trust, information sources, and vaccination intent: a study of HPV awareness and general practitioner influence

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Abstract

This study delves into the intricate interplay between trust in personal doctors (GPs), sources of information about recommended vaccines, and the willingness to vaccinate against human papillomavirus (HPV) and other recommended vaccines. The analysis revealed a positive and statistically significant correlation between HPV awareness and the willingness to vaccinate. Notably, awareness concerning HPV is high, with 35.6% of all respondents expressing readiness to receive the HPV vaccine. The study identified the personal doctor as the predominant source of vaccine-related information. The identified correlations underscore the influence of medical professionals in guiding vaccine uptake choices and the necessity for targeted communication strategies aimed at enhancing vaccine acceptance.

Keywords

papillomavirus infection, information sources, personal doctors, vaccine prevention

Introduction

Cervical cancer is a major health issue worldwide, and Bulgaria is no exception, as statistics show over 500 women die annually from the disease (WHO 2020; Bruni et al. 2021). Contraction and infection with the human papilloma virus (HPV) are identified as the main risk factors and reasons for cancer development (Faridi et al. 2011). In contrast to other neoplastic conditions, primary prevention methods have been developed, with three vaccines authorized in Europe, two of which are available in Bul-

garia (Pinto et al. 2018; Ministry of Health 2024). However, vaccine coverage varies between different regions of the world as well as in European countries. (Colzani et al. 2021) In general, Europe is an area of growing vaccine hesitancy, and many factors contribute to the unsatisfactory level of HPV vaccine administration. HPV vaccines are not newly developed, but concerns about their safety are widespread, as are perceptions that vaccines are not effective (Karafillakis et al. 2019; Lopez 2020). Despite studies that have proven the cost-effectiveness and clinical efficacy of vaccine prevention, the burden of the disease it-

self remains poorly understood (Joura et al. 2000; Bonanni et al. 2015; Garland et al. 2016; Lebanova et al. 2023). The underestimation of complications and risks related to vaccine-preventable diseases are also reasons for poor vaccine coverage (Karafillakis et al. 2019). Since HPV vaccines must be administered prior to adulthood, parents of young children play a pivotal role in decision-making. The level of awareness of both parents and patients is shown to be a key factor in their willingness to administer the vaccine (Marlow et al. 2007; de Visser and McDonnell 2008; Lopez 2020). Moreover, in Bulgaria, the HPV vaccine is included as a recommendation in the immunization calendar; therefore, searching for tools to raise awareness is an inevitable step towards wider vaccine coverage (Ministry of Health 2024). Nowadays, the source of information is extremely important for reliability and authenticity of data. Patients are prone to searching for information on topics of interest, and studies have found a correlation between the source of information and patients' health-related decisions and behaviors (Waser et al. 2022). Common concerns regarding HPV aside from the safety of vaccines are the duration of immunity, a lack of understanding of the transmission of HPV infection, and considering children too young to be vaccinated (Karafillakis et al. 2019; Waser et al. 2022). Regarding health and medicines, trust in healthcare professionals has proven to be of utmost importance and influence over patients' attitudes. It is also crucial to improving the overall societal perception of the disease (Lopez 2020). Doctors' willingness to respond to patients' concerns is especially important in countries and societies where vaccine skepticism is widespread and vaccine coverage is far below average. The information must be consistent and evidence-based for all stakeholders and practitioners (Tsui et al. 2021). Raising awareness about HPV is a strategic goal that could significantly improve vaccine acceptance and, therefore, broaden vaccine coverage. In order to achieve the long-term goal of reducing the health and economic burden of HPV-related conditions, authorities and healthcare providers must work together to distribute evidence-based information, respond to societal stigmas, and guarantee transparency in communication (Palfrey 2016).

Materials and methods

The study involved a nationally representative sample of two distinct groups: all surveyed individuals ($n = 1000$) and parents of children aged 12–17 years ($n = 154$). Participants were randomly selected citizens over the age of 18 who were registered in the national database for telephone numbers in Bulgaria.

Data were collected through telephone interviews conducted by trained interviewers. Rigorous quality control measures were implemented to ensure accurate data collection. The research took place between June 15 and 30, 2021.

The structured survey encompassed questions capturing trust in personal doctors (GPs), sources of infor-

mation about recommended vaccines, awareness of human papillomavirus (HPV), and willingness to vaccinate against HPV and other recommended vaccines.

Statistical analysis comprised Spearman correlation analysis, accounting for ordinal data, to explore relationships between trust in GPs and vaccination intent, as well as between HPV awareness and willingness to vaccinate. Chi-square analysis examined the association between trust in GPs and sources of vaccine information.

Results

Trust in GP and sources of vaccine information

Upon analysis, it was determined that 48.6% of all surveyed individuals manifested unwavering trust in their personal doctor, while 42.1% of parents of adolescents conveyed a comparable level of confidence in their GP. Notably, predominant sources of vaccine-related information included the personal doctor (70.5%), the Internet (47.5%), and television (31.5%) for the general populace. Among parents, the principal sources were the GP (85.1%), the Internet (54.5%), and friends and family (31.8%).

Chi-square analysis and correlations

A Chi-square analysis was conducted to discern the relationship between trust in GPs and sources of vaccine information. The association between trust in GPs and reliance on them as a source of vaccine information was found to be statistically significant ($\chi^2 = 42.85$, $p = 0.001$). Furthermore, a positive correlation between trust in GPs and willingness to vaccinate against HPV and other recommended vaccines was inferred ($\rho = 0.305$, $p = 0.001$), highlighting the pivotal role of medical professionals in shaping vaccination decisions. Additionally, a significant correlation was found between HPV awareness and willingness to vaccinate against HPV ($\rho = 0.220$, $p = 0.001$), suggesting that greater awareness positively influences vaccination intent.

HPV awareness and willingness to vaccinate

Awareness concerning human papillomavirus (HPV) was notably high, with 89.9% of all surveyed individuals and 91.6% of parents of adolescents affirming familiarity with HPV. In terms of willingness to vaccinate, 35.6% of all respondents and 33.1% of parents of adolescents expressed readiness to administer the HPV vaccine. Moreover, 87.3% of all respondents and 89.6% of parents of adolescents indicated readiness to vaccinate against diphtheria, tetanus, and pertussis. The analysis revealed a positive and statistically significant correlation ($\rho = 0.458$, $p < 0.001$) between HPV awareness and willingness to vaccinate, highlighting the potential influence of awareness on individuals' readiness to administer the HPV vaccine.

Discussion

The unsatisfactory level of vaccination coverage is unfortunately a well-known topic in the EU (Lopalco and Santivere 2014; Fournet et al. 2018; Fan et al. 2022). In the context of HPV-related disease, however, it is especially alarming. Despite the well-established efficacy and safety of vaccines, cervical cancer continues to be linked with high mortality rates and has a negative economic impact on healthcare systems worldwide (Nour 2009; Chesson et al. 2012; Priyadarshini et al. 2021; Caskey 2022). In our opinion, a key approach to changing the negative tendencies is the establishment of an infrastructure to raise awareness and increase confidence in vaccines (Shet and Bar-Zeev 2023). As the results of our study show, strategic stakeholder engagement and advocacy are pivotal to securing necessary investments and training. Strategic engagement with a broad group of stakeholders, including cancer patient organizations, youth groups, and coalitions, must be established as part of the communication plan in order to proactively build confidence in vaccine prevention. National bodies should use innovative communication channels and education to reach both patients (parents and adolescents) and healthcare professionals, as many studies underscore the role of healthcare providers in decision-making and vaccine administration (Perkins et al. 2015; Rahman et al. 2015; Gilkey and McRee 2016; Dempsey and O’Leary 2018; Constable et al. 2022). Many factors have the potential to influence public confidence, but several key points are crucial to the public’s focus: Vaccine administration is important and has proven to be effective not only in disease prevention but also in reducing the risk of complications, reducing mortality rates, and battling the negative economic imprint of the disease (Beavis et al. 2018; Kempe et al. 2019). Societal and political factors are also of crucial importance; therefore, building confidence within the health sector itself is important (Eilers 2014; ILO 2022). Healthcare providers need to feel confident in the safety of the vaccines they are recommending and prepared to answer a growing number of questions from patients and parents (Rosenthal et al. 2011; Callaghan et al. 2022; Albaker et al. 2023). The challenge in front of public health leaders is to listen to their public, hear their concerns, and take them seriously into account (Hong 2023). Communication strategies about the benefits of vaccinations remain important but need to be combined with opportunities for participatory approaches to enable dialogue with vaccine-hesitant and hard-to-reach groups (Glenton and Lewin 2020; Avelino-Silva et al. 2023). The listening and engagement process needs to start in the planning stages and continue throughout the implementation of vaccination programs (Ames et al. 2017). As trust is built over time, starting with individual acts, for sustainable results, listening and engagement need to be ongoing to gradually change the bigger picture. This requires genuine care for and accountability to society and the public (Kennedy et al. 2017). The importance of listening and public engage-

ment should not be underestimated, as they are markers for the overall quality and accountability of the healthcare system itself. This will take different forms in different settings, but it is universally vital (Strull 1984; Elwyn et al. 2000). In order to improve confidence in vaccines, we should target the understanding of the vaccine itself and the consequences of its administration. Several strategies could be put in place, but we have identified some that are of major importance. The development of HPV vaccination plans for adolescents that include delivery strategies at schools and healthcare facilities is a pivotal step in building community-based outreach (Foss et al. 2019; Vielot et al. 2020). Where needed, a combination of delivery strategies should be implemented. The vaccination program does not hold the ultimate solution to the multi-level problem leading to an unsatisfactory level of vaccine coverage (Farmer 2021). Understanding the reluctance and providing needed support and information for patients in order to make the most informed decision is the correct way to battle vaccine skepticism. It is of utmost importance to help patients and parents distinguish the real evidence-based information, which is also linked to the overall relationship with healthcare providers and institutions (Vahdat et al. 2014; Krist 2017). Active engagement of the public to build and promote vaccine confidence within national HPV vaccination strategies, as well as advocating for the EU Beating Cancer Plan, is also a principle in reaching the estimated vaccination rate (European Commission 2021). Communicating the magnitude of vaccine-preventable diseases via digital media is also a possible strategy, especially when targeting young adults (Ngui et al. 2015; Odone et al. 2015; Krupenkin et al. 2021; Athey et al. 2023). Expansion of access to HPV vaccination, adequate management of vaccination programs, and government-provided financial resources are prerequisites for effective vaccine administration and an improved immunization rate (Plans- Rubió 2022). Policymakers should include free and gender-neutral HPV vaccination in routine state vaccination schedules and provide free, mature population-based screening programs, which are the only way to reach the entire population and achieve results in saving lives. Another important point to consider is the sensitivity of conventional testing. Studies have shown that newer technologies, such as liquid-based cytology, have the potential to detect HPV with greater sensitivity (Strander 2007; Pankaj et al. 2018; Hashmi 2020; Khakwani 2022). States are responsible for providing their citizens with contemporary methods and reliable evidence-based information in order to build trust in healthcare systems and enhance screening and prevention tools. Therefore, the establishment and maintenance of strong data systems to improve HPV prevention programs and track vaccination coverage must be put in place (Desai et al. 2022; Vorsters et al. 2022). This would be beneficial to healthcare providers as well as practitioners, who would feel confident in recommending vaccines to their patients (Riccio 2023). Shifting perspectives for society to consider cervical cancer a vaccine-preventable disease

plays a pivotal role in reducing its burden on societies and economies worldwide (Armstrong 2010; Frenkel 2021; Talbird et al. 2022).

Conclusion

This study highlights the pivotal role of trust in personal doctors as a catalyst for vaccination decisions, particularly among parents of adolescents. The discerned correlations underscore the influence of medical professionals in guiding vaccine uptake choices. Consequently, this study

accentuates the necessity for targeted communication strategies aimed at enhancing vaccine acceptance, leveraging the significant impact of medical professionals in vaccine-related determinations.

Disclosure statement

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