

RESEARCH

Open Access



Physicians' perspectives on human papillomavirus vaccination in Türkiye through YouTube content analysis

Gadime Yanmaz¹ and Ersan Gursoy^{2*}

*Correspondence:

Ersan Gursoy

ersan.gursoy@erzincan.edu.tr

¹Erzincan Public Health Laboratory,
Erzincan Provincial Health
Directorate, Erzincan, Türkiye

²Department of Family Medicine,
Faculty of Medicine, Erzincan Binali
Yildirim University, Erzincan, Türkiye

Abstract

Background Human papillomavirus (HPV) is a significant public health problem that is closely associated with various types of cancer, especially cervical cancer. Despite the proven effectiveness of HPV vaccines, misinformation and anti-vaccine rhetoric are widespread in the public, especially on social media platforms such as YouTube. In Türkiye, the HPV vaccine has not yet been included in the national immunization program, limiting its accessibility.

Objective The aim of this study is to analyze the opinions of physicians about the HPV vaccine in the most watched videos on YouTube in Türkiye and to reveal how expert opinions contribute to public awareness, correction of misinformation and guidance.

Method The 26 most watched HPV vaccine videos on YouTube produced by physicians in Türkiye were analyzed using thematic analysis. Videos were selected through searches using specific keywords (and their Turkish equivalents) such as "HPV vaccine", "Should HPV vaccine be given?", "Side effects of HPV vaccine", "Is HPV vaccine harmful?" and "Cervical cancer vaccine" between February 2025 and April 2025. Only videos shorter than 20 min with physicians as the primary speakers and at least 1000 views were included. The verbal content of the physicians' opinions in the videos were transcribed, and the analyzed videos were categorized under five main themes and six subthemes.

Results Physicians generally emphasized that the HPV vaccine is safe, effective, and necessary for both women and men. The types of vaccines, age of administration, side effects, and misconceptions among the public were discussed in detail. While there was a general consensus that the vaccine provides long-term protection, different views were expressed on whether it is effective for a lifetime. Physicians tried to correct misinformation in the videos and emphasize the importance of the vaccine in cancer prevention. Another important finding was that the fact that the vaccine was not included in the national vaccination program constituted a serious obstacle to access.

Conclusion Physicians play a critical role in delivering scientifically based health information to the public via social media. Expert content on digital platforms such as YouTube increases access to accurate information about the HPV vaccine and corrects misconceptions in the public. Findings indicate a pressing need for policy action to



incorporate the HPV vaccine into the national immunization program and enhance expert visibility in combating misinformation on digital platforms.

Keywords Human papillomavirus, HPV vaccine, YouTube, Physician perspectives, Thematic analysis, Public health

1 Introduction

Cervical cancer continues to pose a major global health challenge, standing as the fourth most frequently diagnosed cancer among women worldwide [1]. At the center of this public health issue lies the HPV, a virus responsible not only for nearly all cases of cervical cancer but also for a significant proportion of vaginal, vulvar, penile, anal, and oropharyngeal cancers [2, 3]. Efforts to reduce the burden of HPV-related diseases have led to the development of highly effective vaccines, which offer substantial protection against the most common high-risk HPV types [4, 5].

Despite strong evidence supporting the safety and efficacy of HPV vaccination, uptake remains lower than expected in many countries [6]. Misinformation, vaccine hesitancy, and limited public health communication are among the key factors that contribute to this gap [7, 8]. In Türkiye, HPV vaccination has yet to be incorporated into the national immunization schedule, resulting in challenges related to accessibility, affordability, and public awareness [9].

The growing influence of digital media on health communication adds another layer of complexity. Platforms such as YouTube have become major sources of health information for the general public, offering both opportunities and risks [10, 11]. While expert-generated content has the potential to disseminate accurate knowledge, the proliferation of antivaccine rhetoric and misinformation can undermine public trust [12, 13]. Although several studies have examined HPV vaccine-related content on social media, research specifically focusing on how physicians present information in this space remains limited.

Understanding how physicians use digital platforms to share evidence-based information is crucial, especially in contexts where structural barriers already hinder vaccine uptake. In this study, we aimed to analyze the content of the most viewed YouTube videos in Türkiye that feature physicians discussing the HPV vaccine. By focusing exclusively on expert commentary, our objective was to explore how physicians contribute to public education, address common misconceptions, and potentially influence attitudes toward HPV vaccination in the digital age.

2 Materials and methods

2.1 Analytical framework and study design

This study employed a cross-sectional, video-based content analysis approach, utilizing thematic analysis to explore physicians' perspectives on the HPV vaccine as presented in YouTube videos. Although the methodology draws upon qualitative analytical techniques, the study did not involve direct interaction with participants or primary data collection from individuals. The conceptual framing of the study was informed by public health communication and risk perception theories, recognizing the role of expert discourse in shaping public understanding of health risks on digital platforms. These frameworks guided the interpretation of physicians' narratives, with particular attention to how issues such as vaccine efficacy, safety, and public misinformation were conveyed.

2.2 Research context and sampling strategy

Data collection focused on physician-led, high-reach YouTube content discussing the HPV vaccine in Türkiye. Searches were conducted on YouTube between February 2025 and April 2025 using a standardized procedure to improve reproducibility and reduce personalization effects. Specifically, searches were performed in a fresh browser session (cookies/cache cleared) and without logging into a YouTube/Google account, with the interface language set to Turkish, in order to minimise algorithmic tailoring based on user history.

A set of predefined keywords and their Turkish equivalents were used to identify relevant content, including “HPV vaccine,” “Should HPV vaccine be administered?,” “HPV vaccine side effects,” “Is HPV vaccine harmful?,” and “cervical cancer vaccine.” The selection of keywords was informed by a preliminary literature review on HPV vaccine communication and commonly used query phrasing observed in Turkish video titles/descriptions. For each keyword, search results were screened sequentially and metadata were recorded for potentially eligible videos (video URL, channel name, upload year, duration, view count, and like count). When duplicate links appeared across searches, they were removed so that each video was assessed only once.

Purposive sampling was applied with an explicit emphasis on visibility/high reach. Videos were included if they (i) featured a physician as the main speaker, (ii) were presented in Turkish, (iii) were under 20 min in length, and (iv) had accrued at least 1,000 views at the time of screening. Videos were excluded if they consisted primarily of personal anecdotes, promotional/advertising content, or did not contain substantive educational discussion related to the HPV vaccine. Screening and selection proceeded iteratively alongside early familiarisation with the dataset; videos were added until thematic saturation was achieved—operationalised as the point at which reviewing additional eligible videos did not yield new codes or meaningfully extend existing themes. In total, 26 videos meeting these criteria were selected for analysis. Descriptive characteristics of the included videos (e.g., view counts, like counts, durations, and publication years) are reported in Table 1.

2.3 Data collection and thematic analysis

The verbal content of the selected videos was transcribed verbatim using the dictation feature of Microsoft Word. Each transcript was subsequently reviewed for accuracy and typographical corrections were made prior to analysis. Thematic analysis was conducted following the six-phase framework proposed by Braun and Clarke, involving the stages of data familiarization, generation of initial codes, identification of themes, reviewing and refining themes, defining and naming themes, and final report production [14].

Initially, two researchers independently reviewed a subset of videos to develop preliminary codes and thematic categories. A consensus process followed, during which the research team collaboratively refined the emerging thematic structure through iterative discussions. A preliminary codebook was developed during this phase, including clearly defined codes and example excerpts. The codebook was piloted on a subset of transcripts and iteratively refined based on researcher discussions to ensure consistency in full dataset coding. Subsequently, all videos were independently coded by the researchers based on both predefined categories informed by existing literature and inductive categories that emerged during analysis. The coding process captured the frequency with which

Table 1 Analysis of YouTube videos containing expert opinions on HPV vaccine

No	Link	Name	Date	Views	Like	Duration
1	https://youtu.be/R02PR6dKxDA?si=JHCIf3egBHY2Em-	What is HPV vaccine?	Dec 2013	5.5 K	14	0:38
2	https://youtu.be/rvlew9UaBDY?si=KJ_gSONNkf5Nj8Xf	Does the HPV vaccine help after I have contracted the virus?	Oct 2020	10 K	39	0:45
3	https://youtu.be/ndV6dfqeAsk?si=yPKaVYuHmiNtL6Q7	HPV vaccine facts and misconceptions	May 2021	8.9 K	35	2:27
4	https://youtu.be/6zD0Ofbvzbo?si=te3H1RfecVRuJRUY	When should the HPV vaccine be given? Who cannot be vaccinated?	Feb 2021	11 K	122	8:06
5	https://youtu.be/fbnt7Z2fxeg?si=AU-vodGJ85Bmvvi0	When should HPV vaccine be given?	Apr 2023	3.1 K	5	1:14
6	https://youtu.be/P7Qm9we4Of4?si=JYWGdrR4krGWQoDU	Just one dose of HPV vaccine is enough for protection!	Feb 2024	3.1 K	65	2:41
7	https://youtu.be/Xvd5_HV4a8M?si=zKKz_PXWkP4gEMcw	What to know about the HPV vaccine?	Jul 2023	1.2 K	3	2:50
8	https://youtu.be/y7n9ZBgHr1w?si=atJCduKPtAHSTxhu	I had HPV. Would it work if I got the HPV vaccine now?	Jun 2022	7.3 K	110	2:42
9	https://youtu.be/I5s2GOHNIPQ?si=K4h4eCuKtTlr3hHp	Who can get the HPV vaccine?	Feb 2021	1MN	2.4 K	1:44
10	https://youtu.be/9PpMx3DvGgk?si=2SQWpPdKbWxRg_zM	How many types of HPV vaccines are there? Who is vaccinated and how is it applied?	Aug 2022	7.2 K	97	4:34
11	https://youtu.be/nEdsXICZ3p4?si=gmq9t9HQqnaRwl4W	Are there any side effects of the HPV vaccine?	Jan 2015	4.9 K	11	0:37
12	https://youtu.be/ZjYLXH-xdk8?si=z0JZ-YpK7hXJawAk	Both women and men should get HPV vaccine (Most frequently asked questions about HPV vaccine)	Mar 2020	13.4 K	270	10:45
13	https://youtu.be/bh8HuKGJoNA?si=m0621w-o41L0EEYe	How long does the HPV vaccine provide protection? Does it have any side effects?	Sep 2021	2.6 K	14	0:50
14	https://youtu.be/hqq2dwMs69Q?si=xt4Dksu6xE-d8S8	Should people with HPV infection be vaccinated?	Jan 2020	15.8 K	202	2:10
15	https://youtu.be/sAWOhjOZhm0?si=qeZ6X3kvg8pdMOGO	Do HPV vaccines cause paralysis?	Jan 2024	3.5 K	60	5:57
16	https://youtu.be/7FCer1Po9oo?si=xU5RRnTiJEbl9uUA	Can men get the HPV vaccine?	Apr 2022	1.5 K	25	1:45
17	https://youtu.be/A6kDVcr_Rdl?s=i=sap5t1w-LaNbdhbV	Should men also get the HPV vaccine? Is it beneficial or not?	Apr 2022	2.6 K	12	0:47
18	https://youtu.be/mMCBGwQl6D8?si=2WE9aZ009FX6rDQh	What is HPV in men?	Oct 2022	16.7 K	49	2:00
19	https://youtu.be/JrZGG89dWC0?si=t4GZXVMEldjdbdfQ	Can HPV vaccine be given after HPV infection?	Oct 2022	4 K	24	1:51
20	https://youtu.be/i6BAKuVvJsk?si=F5DRwtU0JanFcusp	What are the side effects of HPV vaccine? Can you take a shower after HPV vaccine? Will your period be delayed?	Nov 2023	3.1 K	13	2:42
21	https://youtu.be/3HdH8LioNKI?si=aZ88pd5TxGn4pt8z	Who should get the HPV vaccine?	Feb 2025	5.5 K	11	3:07
22	https://youtu.be/OQS1bV1kGhA?si=2G1ZwTCjjTbVXex	Can HPV be transmitted through hand contact? Does getting the HPV vaccine work after being infected with the HPV virus?	Apr 2024	2.8 K	11	5:26
23	https://youtu.be/xnTBhMFN2HY?si=uHsMRVjV2yroA4ET	HPV vaccine (Cervical Cancer Vaccine)	Jun 2023	4.2 K	33	7:36
24	https://youtu.be/5-ORyAeRgWE?si=wQ9EnE6Ha7kNht5A	What is the HPV vaccine? How is it applied? Can I get vaccinated if I have HPV virus or genital warts?	Jun 2023	6 K	22	4:43
25	https://youtu.be/dve89xeatuY?si=R1_ApTGtg917JuTj	HPV vaccine	Sep 2022	2.5 K	37	6:56

Table 1 (continued)

No	Link	Name	Date	Views	Like	Duration
26	https://youtu.be/Ajl6ZHIqGXQ?si=_KK4tJyEXkzMmVR_	What is HPV Virus? How is it transmitted and what are the treatment methods?	Jan 2022	171 K	1.1 K	6:43

specific themes and subthemes appeared across the videos, reflecting the relative prominence of particular issues within the physicians' discourse.

Throughout the analysis, NVivo software was utilized to organize codes, facilitate thematic clustering, and systematically manage the data. Related codes were grouped into broader themes and subthemes based on conceptual affinity, ensuring that the final thematic map was firmly grounded in the physicians' transcribed narratives. Coding discrepancies were resolved through collaborative review meetings, with final coding agreed upon through consensus to enhance the consistency and reliability of the thematic interpretation. To strengthen inter-coder reliability, each transcript was independently coded by two researchers. Any disagreements in coding were discussed in consensus meetings and resolved collaboratively.

2.4 Researcher reflexivity and positionality

Given the public health significance of HPV vaccination and the contentious nature of vaccine-related discourse on social media, researcher reflexivity was actively considered throughout the study. The research team comprised individuals with clinical and academic backgrounds in family medicine and public health, who brought prior experience in health communication research but no direct involvement in HPV vaccine policy or industry-related activities. To mitigate potential biases, each researcher independently coded the data, and any interpretive divergences were addressed during team discussions. This collaborative analytic approach aimed to promote transparency, reduce individual subjectivity, and maintain analytical rigor.

2.5 Ethical considerations

Ethical approval for this study was obtained from the Clinical Research Ethics Committee of Erzincan University (06.02.2025; No: 2025-03/03). As the study involved the analysis of publicly available YouTube videos, individual consent from the speakers was not required. Nevertheless, all procedures were conducted in accordance with YouTube's terms of service and relevant data privacy regulations.

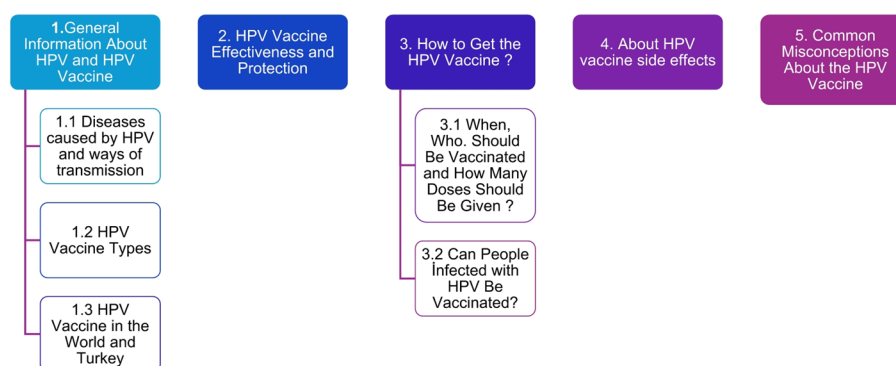
3 Results

The selected videos were analyzed and divided into themes and subthemes according to their information content (Fig. 1). A summary of the information provided is given in Table 2.

3.1 General information about HPV and HPV vaccine

3.1.1 Diseases caused by HPV and ways of transmission

It has been evaluated which diseases HPV causes in humans and how it is transmitted. Doctors have generally focused on the fact that it is transmitted from person to person through skin-to-skin contact and the cancer-causing effect of HPV.

**Fig. 1** Main themes and sub-themes**Table 2** Summary of key findings from analyzed YouTube videos

Main theme	Sub-theme	Core findings from physician opinions
1. General information about HPV and HPV vaccine	1.1 Diseases caused by HPV and ways of transmission	HPV causes various cancers beyond cervical cancer (anal, oral, penile). Transmission occurs via skin-to-skin contact, most commonly sexual contact; condoms do not provide complete protection.
	1.2 HPV vaccine types	Three main vaccine types exist (two-valent, quadrivalent, and nine-valent). Protection against more types is achieved through cross-reactivity.
	1.3 HPV vaccine in the world and Türkiye	The vaccine is routinely administered to boys and girls aged 9–12 in over 140 countries (e.g., Australia, Canada). In Türkiye, the vaccine is not included in the national immunization program and is not covered by state payment.
2. Vaccine effectiveness and duration of protection		The vaccine provides almost 100% protection against cancer for up to 10 years. There are differing views on whether the effect is life-long. Routine screening tests must be continued even after vaccination.
3. How to get the HPV vaccine?	3.1 When, who should be vaccinated, and how many doses should be given?	The vaccine is most effective at ages 11–12 and is administered before sexual activity. Doses vary by age: two doses for those under 15, three doses for those 15 and older. The upper age limit has been removed; both women and men should be vaccinated.
	3.2 Can people infected with HPV be vaccinated?	The vaccine is recommended even if infected because it protects against unacquired strains. Some doctors believe the vaccine boosts immunity and may help lesions regress.
4. About HPV vaccine side effects		The vaccine has no serious side effects and is extremely safe. Side effects are mild and temporary (pain, swelling, mild headache, nausea).
5. Common misconceptions about the HPV vaccine		The vaccine does not protect against other STDs (like Hepatitis B). The belief that screening is unnecessary after vaccination is false. Claims that the vaccine causes paralysis are refuted by scientific data. HPV is not transmitted via shaking hands, swimming pools, or toilets.

“The HPV virus is transmitted through skin-to-skin contact, most commonly through sexual contact. There is no need for sexual penetration; skin contact with the HPV-infected area is sufficient.” (V4).

“HPV does not only cause cervical cancer. Unfortunately, HPV has been found to be positive in 35% of penile cancers, 70% of oral cancers, and a very high rate of HPV positivity has been found in anal cancers, which most men are unaware of.” (V16).

“HPV is a sexually transmitted disease, and full sexual intercourse is not necessary. Skin-to-skin contact is sufficient for transmission. Condoms do not protect against HPV transmission.” (V23).

A doctor touched on a different subject and gave an opinion on how HPV can be seen in babies.

"HPV can be transmitted to the baby during vaginal delivery of a mother who is a carrier. Warts form in the baby's respiratory tract, this is called respiratory papillomatosis. Although this transmission is rare, we recommend cesarean delivery in such cases." (V22).

3.1.2 HPV vaccine types

"There are 3 types of vaccines in the world that protect against the HPV virus. The first of these is the 16 and 18 types that are common in cervical cancer. The next ones are against both types 16 and 18 and the most common types that cause warts, 6 and 11. There is also a nine-valent vaccine that protects against the most common HPV types." (V4).

Doctors agree that the HPV vaccine contains some types of HPV, but that immunity can also be provided against many other types through cross-reactivity.

"We said that there are more than 200 types of HPV, the 9-part formula of the vaccine produces immunity against 9 of them. This number may seem low to you, but it actually protects against more types through a system we call cross-reactivity." (V4).

"When we vaccinate, we do not only vaccinate against these four, but we also actually vaccinate against 75% of the types found in Türkiye because HPV vaccines have the ability to increase cell response to other HPV types through cross-reactivity." (V8).

3.1.3 HPV vaccine in the world and Türkiye

Doctors emphasize that the HPV vaccine is routinely administered to children in some countries, but it is not on the routine vaccination schedule in our country.

"HPV vaccination has become routine in many countries. Countries with small populations such as Australia and Canada vaccinate girls and boys aged 9–12." (V9).

"HPV vaccine is currently on the routine vaccination schedule in 140 countries. Both girls and boys are vaccinated starting at age 9." (V10).

"This vaccine is in the mandatory routine vaccination program in many European countries and the USA. It was not included in the state vaccination program in our country. It is not covered by the state payment." (V23).

3.2 HPV vaccine effectiveness and protection

While some doctors think the vaccine is effective for life, others think its effect lasts up to 5 to 10 years.

"HPV vaccine provides almost 100% protection against cancer for up to 10 years. It is estimated that it will continue to provide protection after 10 years, but it is not known to what extent. Cervical cancer screening tests should continue after vaccination." (V12).

"There is no need for a booster dose in HPV vaccines, they are sufficient for life. After vaccination, smear tests should be continued every 3 years during routine gynecological examinations." (V10).

"The effect of the HPV vaccine is thought to be at least 5 years. It is not known clearly whether it has a lifelong effect. The rate of HPV cancer decreases in vaccinated people, but it does not completely disappear. Because there are different types of HPV." (V25).

3.3 How to get the HPV Vaccine?

3.3.1 When, who should be vaccinated, and how many doses should be given?

Most doctors have similar opinions about the most effective time to start the vaccine and how many doses to give.

"We recommend that the vaccine be administered at the age of 11–12, just as puberty begins. For example, if the child turns 20, is it too late? No, it can be administered at that age as well, but it should be administered before sexual activity begins." (V3).

"The age group for which the vaccine is most effective has been determined as 11–12 years old, but it can be administered between the ages of 9–26. The doses of the vaccine vary according to age. It is recommended that it be administered in two doses for those under 15 years old and in three doses for those 15 years old and older." (V4).

Some doctors think that there is no upper age limit for vaccination.

"The lower limit for vaccination is 9 years old but there is no upper limit, in other words, the upper limit for women was previously said to be 45, then 60 but there is no longer any. Women of all ages should get this vaccine whether they have had sexual intercourse or not." (V10).

"Today, the WHO recommends HPV vaccination for both men and women starting at age 9. Previously, it was recommended until age 45, but now the age limit has been lifted. HPV vaccination can be administered to all patients throughout their lives." (V20).

As for who should not be vaccinated;

"The vaccine has not yet been approved for pregnant women. If she starts getting vaccinated and then gets pregnant, we need to get the remaining dose of vaccine after pregnancy." (V25).

"If you have a latex allergy, a fungal allergy, or a moderate or severe systemic disease, vaccination is not recommended. If you develop an allergy after the first dose of vaccine, further doses are not recommended." (V4).

Many doctors have emphasized that not only women but also men should be vaccinated.

"Not only women but also men should be vaccinated, both to prevent the development of cancer-prone cells and to reduce the risk of transmitting the virus to your partner." (V16).

A doctor made a suggestion on how the vaccine could be more effective.

"If a single dose of HPV vaccine were sufficient instead of two or three doses, a larger portion of the population could be vaccinated, and the incidence of cervical cancer could be significantly reduced." (V6).

3.3.2 Can people infected with HPV be vaccinated?

"The vaccine does not have a curative effect on lesions in people infected with HPV, but if the person is infected with HPV 16, it protects against 18 but does not treat the existing lesions." (V2).

"We recommend the vaccine even if you have cervical cancer or precancerous lesions because the chances of you having encountered all types are very small." (V7).

Some doctors think that the vaccine increases immunity and regresses existing lesions.

"In a previous meta-analysis, the rate of HPV becoming negative after HPV enters the body was found to be much higher in vaccinated patients compared to other patients." (V8).

"If you have HPV, you can and should be vaccinated because the most important thing that helps rid the body of the virus is our immune system, and the vaccine strengthens it." (V24).

3.4 About HPV vaccine side effects

Doctors agree that the vaccine has no serious side effects.

"The vaccine does not have any serious side effects. It can only cause some pain, slight swelling and redness. The vaccine is extremely safe." (V10).

"The most common side effect is a burning sensation at the injection site. Since its introduction, more than 150 million doses have been administered worldwide, and no serious side effects have been reported." (V11).

"Side effects are mild to moderate. Pain, redness at the injection site, mild headache, joint or muscle pain, nausea, vomiting, or low blood pressure may occur." (V13).

3.5 Common misconceptions about the HPV vaccine

"We got the HPV vaccine, are we also protected against other sexually transmitted diseases? Of course not. For example, we will definitely get vaccinated against an infection such as Hepatitis B, which is sexually transmitted, or we will continue to use condoms for others." (V4).

"There are those who think that after receiving the vaccine, there is no need for cervical cancer screening. We will continue to be screened because the vaccine does not protect against all types of HPV." (V12).

"Recently, there have been reports in our local press that the HPV vaccine causes paralysis. Studies examining millions of doses have found no relationship between serious side effects such as paralysis and the vaccine." (V15).

"One of the common misconceptions is about the way the virus is transmitted. HPV is not transmitted by shaking hands, hugging, swimming pools or toilets. It is transmitted from person to person through skin-to-skin contact, especially through sexual contact." (V18).

4 Discussion

In this study, thematic analysis of the opinions of physicians on HPV vaccination in the most watched videos published on YouTube in Türkiye was conducted and evaluated. The findings show that expert opinions play an important role in conveying accurate and scientific information about the HPV vaccine to the public via social media. The findings suggest that physicians generally agree on the safety, effectiveness, and coverage of the HPV vaccine, but some differing opinions also exist.

The majority of physicians in the reviewed videos emphasized that HPV is associated with many different types of cancer, not just cervical cancer, but also anal, oropharyngeal, vulvar, and penile cancers. This information closely coincides with the existing literature [15]. In a study conducted by Akova and colleagues with primary health care workers, it was stated that participants thought that HPV was only a sexually transmitted infection and that its relationship with different types of cancer was not sufficiently known [9]. Physicians have tried to correct the belief that HPV is only transmitted through sexual contact, emphasizing that skin-to-skin contact is sufficient for transmission, and to correct misunderstandings among the public about transmission routes.

This information was supported by a study that stated that HPV cannot be transmitted through inanimate environments such as clothing or environmental surfaces [16]. In this context, physicians are seen to take on the role of “health educators” who not only provide information but also correct misinformation.

Physicians stated that HPV vaccine is included in the routine vaccination schedule in more than 140 countries around the world, but it has not yet been included in the state-supported immunization program in Türkiye. This situation negatively affects access to HPV vaccine and vaccination rates in our country. However, as recommended by World Health Organization (WHO), the target population that should be vaccinated to prevent cervical cancer is girls aged 9–14 [17]. In a study conducted in England, it was observed that the rate of cervical cancer was reduced by approximately 87% in individuals vaccinated at the age of 12–13 thanks to the HPV vaccination program [18]. In Türkiye, the fact that the vaccine is only available through individual payment deepens socioeconomic inequalities and reduces vaccine accessibility.

In the videos examined, it is observed that doctors are trying to create increasing awareness that not only women but also men should be protected with the HPV vaccine. These views are consistent with epidemiological data showing that HPV-associated head, neck and anal cancers have become a serious public health problem in men as well [19]. It is known that awareness on this issue is low in Türkiye, but with the increase in head and neck cancers in men, this need is becoming increasingly important. In fact, the Cancer Control Plan published by the Ministry of Health emphasizes that more information should be provided about HPV-related cancers in men [20].

Although there are some disagreements among physicians regarding the duration of protection from the HPV vaccine, the general opinion is that the vaccine provides long-term and high-level protection. It is anticipated that current HPV vaccines maintain their high efficacy for at least 10 years and that this period may be even longer due to the memory B cell response [17]. Although clinical studies evaluating the effectiveness of the vaccine in Türkiye are limited, strong data in the international literature and the World Health Organization’s guidelines (WHO, 2017) increase physicians’ confidence in this regard. However, some physicians stated that whether the vaccine provides lifelong protection still needs to be investigated. Vaccines do not provide protection against all types of HPV, and therefore, routine gynecological examinations and pap-smear screening tests should be continued after vaccination, and this information is supported by the literature [21].

The negative public perception of the HPV vaccine seems to come largely from misinformation spread on social media. In videos of this disease, all doctors stated that the vaccine does not have serious side effects and that possible side effects are temporary and mild, such as temporary flushing, mild fever and headache. A study conducted in Australia after nine million HPV vaccinations and a three-year randomized trial in Kenya confirm the issue of why the HPV vaccine has no serious side effects and that the vaccine is safe [22, 23]. On the other hand, it has been stated that some media organizations in Türkiye have made false news about the vaccine causing paralysis, and doctors have refuted these claims with scientific data. This situation shows how important it is for expert opinions to reach the public directly.

One of the most important aspects of the study is the demonstration of the role that digital platforms such as YouTube play in public health communication. It is stated in

the literature that anti-vaccine content published on social media can negatively affect users' decisions regarding vaccination [24]. In the videos analyzed in this study, it was observed that doctors provided reliable information, corrected misinformation, and clarified viewers' questions. Therefore, the greater visibility of expert content producers on social media increases the likelihood of society reaching accurate information.

5 Limitations

Some limitations of the study should be taken into consideration. The content analyzed in this study is based on individual physician opinions, and it should not be assumed that each opinion fully coincides with current scientific guidelines. Although physicians' statements provide valuable information for public health, it is not correct to consider them as absolute and universal scientific facts. Therefore, these views should be evaluated as contextual and interpretive discourses, not as objective and universal "scientific realities." In addition, factors such as the date the videos were produced, the timeliness of the content, and the areas of expertise of the physicians can affect the diversity and reliability of the views expressed. Additionally, these findings reflect physician opinions that are popularized and therefore viewed more by YouTube's algorithm. Algorithms can prioritize content that is highly engaging or evokes an emotional response, regardless of scientific validity. The videos analyzed were only those with a high number of views (at least 1000). This may have excluded content with fewer views but potentially offering different perspectives. Therefore, the findings of the study should be evaluated as a qualitative analysis that contributes to understanding the general trends of physician discourse in digital media. Further studies that include different data sources and methods are needed for more comprehensive and generalizable results.

6 Conclusion

This study presents the content analysis of the most viewed videos published on the social media platform YouTube in Türkiye, which include physicians' views on the HPV vaccine, and demonstrates the impact of expert knowledge on public health in digital media. The findings show that the vast majority of physicians emphasize the safety, effectiveness, and necessity of the HPV vaccine. However, the fact that the vaccine has not yet been included in the national vaccination program in Türkiye limits public access to vaccines and therefore the level of immunization.

One of the most important elements that emerged in the study is that social media is not only a source of information, but also an area where misinformation can spread. In this context, it is extremely important for experts to take an active role in digital media and guide the public with accurate and scientifically based information. In the videos analyzed in the study, it was seen that physicians successfully assumed this role and tried to correct the public's misperceptions about the HPV vaccine.

Increasing awareness of the HPV vaccine, including the vaccine in state-supported immunization programs, encouraging the vaccination of both girls and boys, and developing strategies that will ensure accurate information flow on social media are considered fundamental steps in protecting public health. Supporting future studies with quantitative research that evaluates the public's level of knowledge, attitudes, and behaviors will ensure that health policies are built on more solid foundations.

In conclusion, this study highlights the impact of health professionals in digital communication and demonstrates how critical it is to convey expert opinions to a wide audience on important public health issues such as HPV.

Author contributions

G.Y. contributed to the conceptualization, methodology, data gathering, data analysis, transcribing, draft preparation, reviewing, editing of the manuscript, and journal submission. E.G. contributed to conceptualization, supervision, data analysis, reviewing, and finalizing the manuscript.

Funding

None.

Data availability

Transcripts from the videos in the study are available at <https://doi.org/10.5281/zenodo.17328958>.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was given by Erzincan Binali Yıldırım University Clinical Research Ethics Committee (06.02.2025, number: 2025-03/03). Since public YouTube videos were analyzed in the study, it was not deemed necessary to obtain explicit consent from the individuals. YouTube's terms of service and data privacy regulations were strictly adhered to throughout the research process.

Consent to publish

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 25 September 2025 / Accepted: 14 January 2026

Published online: 27 January 2026

References

1. Castle PE. Looking back, moving forward: challenges and opportunities for global cervical cancer prevention and control. *Viruses*. 2024;16(9):1357.
2. Oyouni AAA. Human papillomavirus in cancer: infection, disease transmission, and progress in vaccines. *J Infect Public Health*. 2023;16(4):626–31.
3. Pešut E, Đukić A, Lulić L, Skelin J, Šimić I, Milutin Gašperov N, et al. Human papillomaviruses-associated cancers: an update of current knowledge. *Viruses*. 2021;13(11):2234.
4. Basu P, Malvi SG, Joshi S, Bhatla N, Muwonge R, Lucas E, et al. Vaccine efficacy against persistent human papillomavirus (HPV) 16/18 infection at 10 years after one, two, and three doses of quadrivalent HPV vaccine in girls in India: a multicentre, prospective, cohort study. *Lancet Oncol*. 2021;22(11):1518–29.
5. Kamolratanakul S, Pitisuttithum P. Human papillomavirus vaccine efficacy and effectiveness against cancer. *Vaccines*. 2021;9(12):1413.
6. Oh NL, Biddell CB, Rhodes BE, Brewer NT. Provider communication and HPV vaccine uptake: a meta-analysis and systematic review. *Prev Med*. 2021;148:106554.
7. Vraga EK, Brady SS, Gansen C, Khan EM, Bennis SL, Nones M, et al. A review of HPV and HBV vaccine hesitancy, intention, and uptake in the era of social media and COVID-19. *Elife*. 2023;12:e85743.
8. Kyei GK, Kyei EF, Ansong R. HPV vaccine hesitancy and uptake: a conceptual analysis using Rodgers' evolutionary approach. *J Adv Nurs*. 2024. <https://doi.org/10.1111/jan.16653>.
9. Akova İ, Koşaroğlu NE, Kılıç E. Knowledge, attitudes, and behaviours of primary health care workers regarding HPV infection and prevention: an example from Türkiye. *Turkish J Family Med and Prim Care*. 2023;17(3):407–15.
10. Kite J, Chan L, MacKay K, Corbett L, Reyes-Marcelino G, Nguyen B, et al. A model of social media effects in public health communication campaigns: systematic review. *J Med Internet Res*. 2023;25:e46345.
11. Farsi D. Social media and health care, part I: literature review of social media use by health care providers. *J Med Internet Res*. 2021;23(4):e23205.
12. Broniatowski DA, Simons JR, Gu J, Jamison AM, Abrams LC. The efficacy of Facebook's vaccine misinformation policies and architecture during the COVID-19 pandemic. *Sci Adv*. 2023;9(37):eadh2132.
13. Clark SE, Bledsoe MC, Harrison CJ. The role of social media in promoting vaccine hesitancy. *Curr Opin Pediatr*. 2022;34(2):156–62.
14. Braun V, Clarke V. Thematic analysis: a practical guide. California: Sage publications; 2021.
15. Szymonowicz KA, Chen J. Biological and clinical aspects of HPV-related cancers. *Cancer Biol Med*. 2020;17(4):864–78.
16. Wolf J, Kist LF, Pereira SB, Quessada MA, Petek H, Pille A, et al. Human papillomavirus infection: epidemiology, biology, host interactions, cancer development, prevention, and therapeutics. *Rev Med Virol*. 2024;34(3):e2537.
17. Organization WH. Human papillomavirus vaccines: WHO position paper, May 2017–recommendations. *Vaccine*. 2017;35(43):5753–5.
18. Falcão M, Castañón A, Ndlela B, Checchi M, Soldan K, Lopez-Bernal J, et al. The effects of the national HPV vaccination programme in England, UK, on cervical cancer and grade 3 cervical intraepithelial neoplasia incidence: a register-based observational study. *Lancet*. 2021;398(10316):2084–92.

19. Varga S, Wang X, Luttrupp K, Morais E, Walia A, Pimpin L, et al. Global burden of HPV-related cancers in men: a systematic literature review. *J Clin Oncol*. 2019. https://doi.org/10.1200/JCO.2019.37.15_suppl.e13108.
20. T.C. Sağlık Bakanlığı. Kanser Kontrol Tarama Programı. 2021.
21. Arroyo Mühr LS, Gini A, Yilmaz E, Hassan SS, Lagheden C, Hultin E, et al. Concomitant human papillomavirus (HPV) vaccination and screening for elimination of HPV and cervical cancer. *Nat Commun*. 2024;15(1):3679.
22. Phillips A, Hickie M, Totterdell J, Brotherton J, Dey A, Hill R, et al. Adverse events following HPV vaccination: 11 years of surveillance in Australia. *Vaccine*. 2020;38(38):6038–46.
23. Barnabas RV, Brown ER, Onono MA, Bukusi EA, Njoroge B, Winer RL, et al. Durability of single-dose HPV vaccination in young Kenyan women: randomized controlled trial 3-year results. *Nat Med*. 2023;29(12):3224–32.
24. Ekram S, Debiec KE, Pumper MA, Moreno MA. Content and commentary: HPV vaccine and YouTube. *J Pediatr Adolesc Gynecol*. 2019;32(2):153–7.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.