

Information-seeking Behavior of Iranian Young Adults (18–28 Years Old) Regarding HPV on Social Media: A Preventive Approach to HPV

Abstract

Background: Health information-seeking behavior refers to individuals' targeted actions to satisfy their health information needs and search for relevant disease-related information. Nowadays, social media platforms provide a great opportunity for meeting health information needs and delivering preventive education regarding human papillomavirus (HPV). The purpose of this study is the information-seeking behavior of Iranian young adults (18–28 years old) regarding HPV on social media, a preventive approach to HPV. **Methods:** The present descriptive-analytical study was conducted in 2023 among Iranian boys and girls aged 18–28 years. A multistage cluster sampling method was used to select 3840 participants. The data collection tool was Longo's Health Information-Seeking Behavior Questionnaire. The collected data were analyzed using the SPSS software. **Results:** The results showed that Iranian youth aged 18–28 were more inclined to seek information on social media about the transmission routes and preventive measures for HPV. The primary informational need regarding transmission was "I want to know the main route of HPV transmission is through vaginal and anal intercourse?", and regarding prevention, it was "Can condoms prevent HPV infection?" Additionally, the findings indicated that young individuals sought information about HPV after their first sexual encounter. Most of the information needs of the youth were fulfilled through YouTube, Instagram, and WhatsApp, mainly in video format. Approximately 85.10% of the youth were satisfied with the information obtained from social media. The results revealed a significant and positive relationship between the health information needs of young adults (18–28 years old) in the area of HPV and personal factors. Gender, age, marital status, education level, history of HPV infection, and engaging in unprotected extramarital sex were identified as significant influential factors on the level of information needs of young individuals, especially regarding HPV preventive measures ($P < 0.05$). **Conclusion:** Health authorities and disease control and prevention centers need to harness the potential of social media in meeting the informational needs of youth and providing education and awareness, especially concerning the transmission and prevention of HPV.

Keywords: Health information needs, HPV, social media, young adults

Introduction

Human papillomavirus (HPV) is considered a large family of viruses and the most common sexually transmitted infection.^[1] Various types of HPV can infect the genital area of women, including the vulva (outer vaginal area), the vaginal canal, and the cervix (lower narrow part of the uterus), as well as the genital area of men, including the male genitalia.^[2] The prevalence of this infection has increased in recent years, with the highest incidence reported in men aged 22–29 years and women aged 18–24 years.^[3] According to various studies worldwide, HPV infection has been reported in over 80% of adolescent girls, with the

highest rate occurring between the ages of 15 and 25.^[4–6] While precise information about the prevalence of HPV in Iran is not available, women's health experts believe that the prevalence of HPV has significantly increased compared to previous years and is rapidly escalating.^[7] In developed countries, education and awareness about HPV are included in textbooks and school curriculums to meet their information needs, and vaccination against this virus is mandatory. Unfortunately, such awareness and educational programs are lacking in Iran, leaving young individuals with a very low level of awareness about this virus, especially those at risk, and their information needs have not been adequately addressed.^[8]

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How to cite this article: Latifi M, Alishan Karami N, Allahbakhshian L, Aghaesmaeili N, Ghasemi Tehrani H. Information-seeking behavior of Iranian young adults (18–28 years old) regarding HPV on social media: A preventive approach to HPV. *Int J Prev Med* 2024;15:41.

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Access this article online

Website:
www.ijpvmjournal.net/www.ijpvm.ir

DOI:
10.4103/ijpvm.ijpvm_337_23

Quick Response Code:



Recent policies by the World Health Organization emphasize, in the first step, increasing individuals' access to health information (particularly through national, social, and virtual media) and providing quality and tailored health services and care that meet their informational needs concerning HPV, especially in low- and middle-income countries, considering the cost and complexity of screening and treatment approaches to control HPV. The second step involves encouraging vaccination for high-risk groups of adolescents and young adults aged 15–25.^[9]

In line with people's access to health information, virtual social networks have become one of the broadest communication channels used in recent years for educating and addressing health information needs for various diseases.^[10] Individuals on social networks engage in activities related to finding health information about diseases, symptoms, transmission methods, prevention, and treatment, sharing their experiences, narrating disease-related events, or receiving online counseling.^[11] Many healthcare professionals use social networks professionally to share health information and interact with patients.^[12] Virtual social networks have provided a great opportunity for remote education and enhancing public health due to their unique advantages.^[13] However, these networks can act paradoxically, where obtaining health information aids in disease prevention, control, and treatment, yet recommendations without research-based support about diseases can be harmful. Nonetheless, across the globe, many healthcare service providers operate on platforms like Facebook, Twitter, WhatsApp, Telegram, and Instagram, acting as interfaces between users and health service providers.^[14] The continuous use of social networks like Facebook, Telegram, and Instagram (especially in the 18–29 age range) acts as a catalyst for users to change unhealthy behaviors and elevate preventive disease-related behaviors.^[15] Lee *et al.*^[16] (2012) revealed that three of the most common questions raised by users on the HPV website were related to wanting information about treatment options for HPV infection and cervical dysplasia, methods of HPV transmission, and the duration it takes for HPV infection to self-resolve. Tung *et al.* mentioned that social networks like WeChat, Instagram, and Facebook were among the most popular platforms for Chinese students aged 18–28 in the United States seeking information about HPV vaccines, mostly aiming to learn about the optimal injection age, vaccine effectiveness, and dosage.^[17] Some studies indicated that Twitter users share their experiences with HPV, which was evaluated as influential in preventive behaviors against HPV. Most of the shared messages were about preventive methods and recommendations for vaccine injection.^[18-20] In other research, it was reported that the most common information needed among young girls and boys on Instagram and Telegram was information about the initial symptoms of HPV and its most common mode of transmission.^[21-23] Further studies were limited in examining

the effectiveness of social media in adolescents' acceptance of the HPV vaccine, with three of the most common vaccine-related questions including whether vaccination is possible after HPV infection, the best age for vaccination, and which company's vaccine is more effective in preventing HPV.^[24-27] Lyson *et al.* showed that participating in online social platforms like Twitter and receiving short messages related to preventive behaviors regarding HPV and motivating healthy behavioral changes was effective.^[18]

Given the recent policy by the World Health Organization regarding education and awareness targeting at-risk groups of young people aged 15–28 regarding HPV and considering that Iran has yet to present a formal program for HPV education and vaccination in schools and universities, conducting independent research in Iran seems crucial to understand the information needs of young individuals^[18-28] about HPV on virtual social networks. Therefore, this research has been carried out with the following objectives:

1. Identifying the health information needs of 18–28-year-old youth about HPV
2. Identifying the most important social networks used by young people aged 18–28 to obtain health information about HPV
3. Understanding the relationship between the health information needs of 18–28-year-olds about HPV and each of the demographic components.

Methods

Study design

The present descriptive-analytical study adopts an applied approach with a quantitative methodology. The data collection tool is a questionnaire based on the Longo Health Information Seeking Behavior model reported in 2010 (adapted and adjusted according to the research objectives).^[28] The questionnaire comprises three sections:

Part 1: Demographic information (age, gender, education level, marital status, income level, student status, history of nontraditional sexual relations, frequency of such relations, protection during sexual relations, history of HPV infection in oneself, family, or relatives).

Part 2: Information Sources (Types of Social Networks)

When did you feel the need to search for information about HPV? (Immediately upon observing the first symptoms of HPV, after the first sexual intercourse, purely out of curiosity, before experiencing symptoms of HPV).

Which social network do you prefer to search for the necessary information about HPV? (YouTube, Instagram, WhatsApp, Telegram, Twitter, Facebook, Bale, Eitaa)

In what format do you prefer to receive information? (Video, Text, Audio, Image, All of the above)

Were you satisfied with the information received about HPV on social networks? Yes, No

Part 3: Health information needs regarding HPV with 39 questions across five dimensions: (Acquiring specialized knowledge about HPV and its symptoms, 7 questions; Modes of transmission, 10 questions; Prevention methods, 6 questions; Treatment, 9 questions; HPV vaccination, 7 questions). Responses were measured on a Likert scale ranging from 5 (very much) to 1 (not at all). To determine content validity, the questionnaires were completed by ten specialists, six infectious disease specialists, and four women's health specialists, resulting in a CVR of 0.82, and according to the Lawshe Table for ten specialists, an acceptable CVR estimate was 0.62. To assess question clarity, the questionnaire under study was provided to 30 members of the research community who did not participate in the study's stages, and necessary revisions were made based on clarity and comprehensibility of each question. Tool reliability was determined using Cronbach's alpha method for questions regarding specialized knowledge about HPV and its symptoms ($\alpha = 0.92$), transmission methods ($\alpha = 0.86$), prevention methods ($\alpha = 0.83$), treatment ($\alpha = 0.89$), and HPV vaccination ($\alpha = 0.81$).

Sampling strategy and sample size

In the present study, the statistical population consisted of all Iranian females and males aged 18 to 28 years old. The sampling was conducted through multistage cluster sampling. In the first stage, all provinces were divided into six regions: North, South, East, West, and Central. In the second stage, one provincial center and one town from each region were randomly selected (North: Tehran, Robat Karim; South: Bushehr, Ganaveh; East: Mashhad, Sabzevar; West: Ilam, Dehloran; Central: Isfahan, Kashaan).

The researcher-developed questionnaire was made available online through social media platforms (WhatsApp, Telegram, Instagram) and domestic networks (Eitaa and Bale). Participants were encouraged to complete the questionnaire and then share it with other friends and acquaintances within the 18–28 age group. It is worth noting that to ensure all participants were from the selected provinces and towns within the 18–28 age group, the first question verified their residency and age group. If they did not reside in the selected areas or were not within the specified age group, they were filtered out, and the questionnaire was not displayed to them. Using this strategy, a total of 3840 individuals completed the questionnaire from August 6 to October 7, 2023.

Statistical analysis

Data analysis was performed using SPSS version 23. The normality of the data was assessed using the Kolmogorov–Smirnov test. Statistical analyses included *t*-tests, Chi-square tests, analysis of variance (ANOVA), Pearson correlation coefficient, and logistic regression. The significance level was set at P value ≤ 0.05 .

As all participants voluntarily took part in this study, they were exempt from written consent. However, the study received approval from the Ethics Committee of the University of Medical Sciences of Hormozgan, and before answering the questionnaire, the title and objectives of the study were clearly explained at the beginning of the questionnaire.

Results

The results indicated that the majority of young individuals (51.61%) were females, aged between 21 and 24 years old (43.99%), unmarried (82.27%), and lacked income (40.80%). Among them, 43.57% had a history of HPV infection either personally or among their immediate family members. Most of the youth (75.10%) had engaged in at least one unprotected sexual intercourse, and 46.78% of them were involved in unprotected sexual activities. Additionally, 46.06% possessed postgraduate degrees, and the majority (77.48%) were students [Table 1].

Furthermore, the findings revealed that the majority of young individuals (32.37%) sought information about HPV after their first sexual encounter. Most of their informational needs were fulfilled through YouTube (47.47%) in video format (68.60%), with 85.10% of the youth being satisfied with the obtained information [Table 2].

The results highlighted that the highest information needs of the youth were related to two aspects: transmission of HPV with an average score of 4.38 and prevention of HPV with a score of 4.25. Conversely, the informational need about HPV vaccination had the lowest average score of 2.19 [Figure 1].

The results indicated that three of the most common questions among the participants were “I want to know if the primary routes of HPV transmission are through vaginal and anal intercourse?”, “I want to know if genital warts can easily be transmitted to a sexual partner when skin-to-skin contact occurs in the genital areas?”, and “Can the use of condoms prevent HPV infection?” [Table 3].

The independent *t*-test results demonstrated a significant difference between genders in the treatment

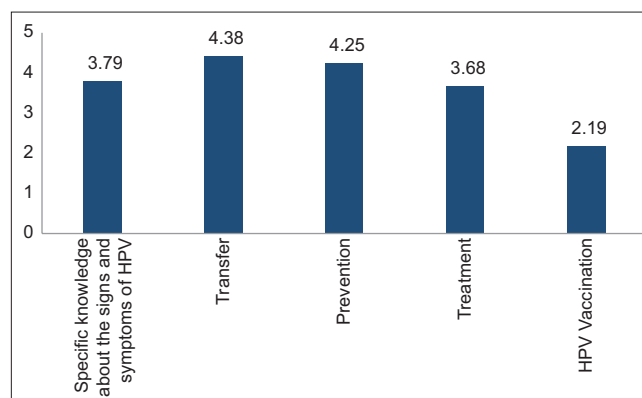


Figure 1: Aspects of health information needs of participants

dimension, indicating that females scored higher than males ($P < 0.001$). Additionally, significant differences were observed between marital status and informational needs in the dimensions of transmission

Table 1: Demographic characteristics of study participants (n=3840)

Variable	Groups	n (%)
Gender	Male	1858 (48.39)
	Female	1982 (51.61)
Age	17-20	997 (25.96)
	21-24	1689 (43.99)
	25-28	1154 (30.05)
Level Of Education	Lower Diploma	253 (6.58)
	Diploma	389 (10.13)
	Associate	648 (16.16)
	Bachelor	861 (16.87)
	MA and higher	1770 (46.09)
Marital Status	Single	3159 (82.27)
	Married	681 (17.73)
Income	No income	1567 (40.80)
	≤5000000	973 (25.34)
	5000000-10000000	596 (15.52)
	≥10000000	704 (18.34)
Are you a student in university?	Yes	2975 (77.48)
	No	865 (22.52)
Do you have a history of HPV in yourself, first-degree family or relatives?	Yes	1673 (43.57)
	No	2167 (56.43)
Have you ever had an unusual relationship?	Yes	2884 (75.10)
	No	956 (24.90)
Do you have protected sex?	always	2120 (55.20)
	never	769 (20.02)
	sometimes	951 (24.76)

Table 2: Time of information seeking, type of social network, and used format information

Variable	Groups	n (%)
When did you look for information?	As my symptoms stated	539 (14.03)
	Along time after my symptoms stated	319 (8.30)
	Before I had symptoms	682 (17.77)
	After the first sex	1243 (32.37)
	Just curiosity	1057 (27.53)
Which social network do you use to learn about HPV?	YouTube	1823 (47.47)
	WhatsApp	420 (10.93)
	Telegram	365 (9.50)
	Instagram	721 (18.77)
	Twitter	168 (4.37)
	Face book	263 (6.84)
	Bale	55 (1.43)
	Eta	25 (0.66)
In what format do you prefer to get the information?	Video	2634 (68.60)
	Text	364 (9.48)
	voice	573 (14.92)
	image	269 (7.00)

and prevention among married and unmarried participants ($P < 0.001$) [Table 4].

The findings also illustrated significant differences between the history of HPV infection among oneself, family, or relatives and the informational needs in the prevention, treatment, and vaccination dimensions ($P < 0.001$). Participants with a history of HPV had higher scores in these dimensions compared to those without such a history. Furthermore, having engaged in unlawful relationships showed significant differences in the informational needs about awareness of symptoms, transmission, and prevention ($P < 0.001$) [Table 5].

Regarding education and age, using the Pearson correlation coefficient, we found a significant direct relationship for most dimensions of health information needs except for “vaccination” ($r = 0.08, P < 0.348$ and $r = 0.05, P < 0.451$). This is despite the fact that there was no significant direct relationship between the dimensions of health information needs and monthly income [Table 6].

The results of the multivariate analysis of variance in Table 7 showed that the significance level of one of the tests (Roy’s largest root) was less than 0.05 ($P = 0.005$). Therefore, there is a significant difference among participants in terms of their sexual relationships in at least one of the dependent variable dimensions (health information needs).

For a more detailed examination of this effect, a one-way analysis of variance was conducted on the dependent variable in the manuscript. The results of this analysis in Table 8 showed that young people differ significantly in the dimension of transmission methods of HPV ($F = 2.873$ and $P = 0.035$), while they do not differ significantly in other dimensions. To understand this difference, comparing the mean of the mentioned variable in different participant groups based on their sexual relationships revealed that the health information needs regarding transmission are higher among young people with unprotected sexual intercourse.

Discussion

This research aimed to understand the health information-seeking behavior of Iranian youths aged 18–28 regarding HPV on social media networks. The results indicated that youths mostly needed information about the transmission methods and preventive measures against HPV. Interestingly, the least interest in information was related to vaccination, which contradicted findings from other studies.^[24-27] One of the reasons for this discrepancy could be attributed to the lack of awareness and education among Iranian youths regarding HPV and the importance and necessity of HPV vaccination.^[29] Additionally, accurate and transparent information dissemination is considered crucial by media outlets.^[30] In Iran, due to the high price of imported HPV vaccines and their lack of coverage by insurance, the necessary information about vaccination has

Table 3: Health information needs of participants

Dimensions of information needs	Questions	mean (standard deviation)
Specific knowledge about the signs and symptoms of HPV (3.79±0.56)	Q1 I want to know if vaginal discharge is related to the symptoms of HPV infection?	±3/60 (0/80)
	Q2 If I feel a lump in my mouth, is this laryngeal cancer related to HPV?	±3/04 (0/88)
	Q3 If I find a small mass in the genital area, is it a genital wart?	3/±29 (0/98)
	Q4 Is the risk of cervical cancer high after HPV infection?	4/±45 (0/98)
	Q5 Is there a test for early detection of HPV?	4/±28 (0/92)
	Q6 What are the symptoms of HPV infection?	3/±49 (0/91)
	Q7 What is the most important action after the first symptoms of HPV?	4/±39 (0/87)
Transfer (4.38±0.56)	Q8 Can HPV be transmitted by using a towel or shared equipment such as Gillette or toilet bowl?	4/±41 (0/83)
	Q9 I want to know that the main ways of transmitting HPV disease are vaginal and anal intercourse?	4/±87 (0/82)
	Q10 How long does HPV infection last?	4/±54 (0/99)
	Q11 How long does the virus stay in the body?	±3.85 (0/83)
	Q12 Can we get HPV if we do not have sex?	3/±99 (0/92)
	Q13 Is HPV transmitted through sexual contact other than intercourse, such as kissing or oral sex?	4/±74 (0/81)
	Q14 Is HPV transmitted from mother to fetus during pregnancy?	4/±59 (0/92)
	Q15 Can my skin wart be transferred to the genital area?	3/±86 (0/95)
	Q16 I would like to know, can genital warts be easily transmitted to a sexual partner when skin-to-skin contact occurs in the genital area?	4/±81 (0/95)
	Q17 I would like to know if through epilation or Laser hair removal the devices of HPV-infected people used and not disinfected, is it possible to transmit the disease?	± 4/15 (0/83)
Prevention (4.25±0.56)	Q18 How to prevent HPV infection?	4/±55 (0/96)
	Q19 Using prevention methods, will you never be infected with this virus?	4/±69 (0/83)
	Q20 The best way to prevent HPV infection is vaccination?	3/±99(0/83)
	Q21 Which foods are good for preventing HPV?	3/±94 (0/89)
	Q22 Can the use of condoms prevent HPV infection?	4/±79 (0/83)
	Q23 At what age is the vaccine recommended to prevent HPV?	3/±53 (0/91)
Treatment (3.68±0.56)	Q24 Is HPV curable?	3/±61 (0/89)
	Q25 Can HPV go away on its own without treatment?	3/±72 (0/92)
	Q26 How long does HPV treatment last?	3/±50 (0/96)
	Q27 Do high-risk HPV infections go away without treatment?	3/±70 (0/93)
	Q28 Do HPV infections remove completely or remain and reactivate?	3/±47 (0/98)
	Q29 Which treatments are recommended for HPV infection?	±3/60 (0/80)
	Q30 How new is the treatment information about HPV?	±3/14 (0/88)
	Q31	4/±09 (0/86)
	Q32 Does a negative HPV DNA test really indicate that HPV has been cleared from the body?	4/±45 (0/83)
	Q33 When should vaccination be done?	1/±83 (0/81)
HPV Vaccination (2.19±0.56)	Q34 How many doses of vaccine should be injected?	3/±10 (0/80)
	Q35 How effective is vaccination?	2/±89 (0/74)
	Q36 Which company's vaccine is more effective for preventing HPV?	± 1/04 (0/62)
	Q37 Where or in which clinics are therapeutic vaccinations available?	1/±08 (0/79)
	Q38 Is it possible to be infected with HPV after vaccination?	2/±56 (0/89)
	Q39 Is it possible to inject the vaccine after HPV infection?	2/±86 (0/79)

not been adequately disseminated. Therefore, youths feel less need for information in this aspect. Another part of the results showed that youths needed more information about “I want to know if the primary transmission routes for HPV are vaginal and anal intercourse?” and in the preventive aspect “Can a condom always prevent HPV infection?” Considering that more than half of the participants admitted to having had at least one instance of unprotected

casual sex, it is not surprising that the primary concern for young people revolves around being aware of transmission methods and prevention techniques. Lee et al.^[16] (2012) demonstrated that one of the most common questions posed by users on the Human Papillomavirus website was about HPV transmission methods. In other studies, it was reported that young girls and boys on Instagram and Telegram were looking for the most common means of

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Table 4: The relationship of gender and marital status participants with HPV

Components of Health information needs	Female		Male		P	Single		Married		P
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Specific knowledge about the signs and symptoms of HPV	33.91	12.75	31.62	9.15	0.716	32.09	13.98	31.35	13.81	0.823
Transfer	49.29	17.51	47.18	16.95	0.759	47.22	17.62	39.18	15.93	<0.001
Prevention	23.13	11.87	22.82	10.87	0.893	24.89	12.37	20.06	10.02	<0.001
Treatment	41.52	12.90	3.10	10.52	<0.001	43.52	12.01	39.10	11.53	0.089
HPV Vaccination	20.10	12.81	18.13	9.65	0.079	22.95	12.29	19.06	10.77	0.262

*Correlation at the level of <0.05 is significant

Table 5: The relationship between history and type of sex participants with HPV

Components of Health information needs	History of HPV in first-degree family or relatives		No history of HPV in first-degree family or relatives		P	Had an unusual relationship		Did not have an unusual relationship		P
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Specific knowledge about the signs and symptoms of HPV	32.93	13.55	31.12	9.15	0.716	32.16	12.78	26.18	12.89	<0.001
Transfer	44.32	18.50	42.24	12.9	0.619	48.12	16.36	36.29	16.08	<0.001
Prevention	24.24	12.83	19.12	8.87	<0.001	26.11	10.36	20.22	9.51	<0.001
Treatment	42.72	15.83	32.10	10.52	<0.001	42.12	13.11	41.40	11.53	0.071
HPV Vaccination	28.21	13.75	23.24	11.69	<0.001	22.16	13.11	20.86	10.79	0.257

*Correlation at the level of <0.05 is significant

Table 6: The relationship between level of education, income, and age participants with HPV

Components of Health information needs	Education Level		Income		Age	
	R	P	r	P	r	P
Specific knowledge about the signs and symptoms of HPV	0.22	<0.001	0.21	0.359	0.25	<0.001
Transfer	0.37	<0.001	0.33	0.219	0.29	0.005
Prevention	0.10	0.014	0.08	0.112	0.13	0.009
Treatment	0.34	<0.001	0.23	0.711	0.20	<0.001
HPV Vaccination	0.08	0.348	0.05	0.441	0.05	0.451

*Correlation at the level of <0.05 is significant

Table 7: Summary of multivariate analysis of variance

Effect	value	F	P	
Intercept	Pillai's Trace	0.272	1.449	0.078
Groups	Wilks' Lambda	0.683	1.457	0.062
	Hotelling's Trace	0.290	1.463	0.071
	Roy's Largest Root	0.188	2.345	0.005

transmission.^[21-23] Some studies also indicated that most of the shared messages on Twitter were about preventive measures.^[18-20] The results revealed that familiarity with the disease symptoms and signs was the most crucial informational need, for instance, "What is the risk of cervical cancer after HPV infection?" and in terms of treatment, "Does a negative HPV DNA test really indicate HPV clearance from the body?" These findings underscore the fact that understanding the disease can significantly impact its treatment process.

The results showed that most individuals sought information after their first sexual encounter and received responses through YouTube, Instagram, and WhatsApp, mostly in

video formats. They were satisfied with the information provided on social networks. This demonstrates a strong inclination among the subjects to obtain information from foreign social networks. Therefore, the influential power of media richness (up-to-date health information, sharing capabilities, cost-effectiveness, accessibility, ease of use, and online interactions) should not be disregarded when considering the type of network used. Despite legal prohibitions in Iran and the need for VPNs to access foreign social networks like Instagram and YouTube, they have been more successful in educating and informing about HPV compared to domestic platforms like Eitaa and Bale. The study by Latifi *et al.*^[31] also indicated that users highly value the timeliness of health information, sharing capabilities, and accessibility on social networks, which significantly aids in user engagement. Some studies also emphasized the importance of audiovisual content and sharing experiences as the primary reasons for users' inclination toward platforms like Instagram and YouTube.^[32-36]

Another part of the results indicated that the health information needs of young individuals aged 18–28 on

Table 8: One-way analysis of variance

Source	Components of Health information needs	Type III Sum of Squares	df	Mean Square	F	Sig.
Protected relationship type	Specific knowledge about the signs and symptoms of HPV	65.643	2	21.881	2.241	0.115
	HPV Transfer	113.34	2	37.780	2.873	0.035
	HPV Prevention	96.339	2	32.113	2.007	0.072
	HPV Treatment	68.355	2	22.785	2.713	0.075
	HPV Vaccination	38.553	2	12.851	2.527	0.098

*Correlation at the level of less than 0.05 is significant

social networks regarding HPV are influenced by individual factors. In the treatment aspect, girls expressed a higher need for information compared to boys. Considering the unprecedented rise in cervical cancer, caused primarily by infection with some types of HPV transmitted through sexual contact,^[37,38] it is unsurprising that girls seek more information, particularly about early treatment. Furthermore, the results highlighted that unmarried participants were more inclined to seek information on transmission methods and preventive measures compared to married ones. Given the common occurrence of HPV transmission among sexual partners and nearly all sexually active individuals being exposed to at least one type of HPV, a virus that causes genital warts,^[39] the necessity for self-care and informational needs regarding transmission methods and preventive measures against HPV was higher among unmarried individuals. Although in Iran, married individuals, due to religious considerations and commitment to family ethical health, might have fewer sexual partners, it does not imply that only individuals engaged in extramarital relations are prone to this disease. The results illustrated a direct and significant correlation between education level, age, and the need for health information about HPV, except for vaccination. These findings have been reiterated in the research assumptions under investigation.^[19,20] Therefore, education level and age can be considered influential factors affecting the extent of informational needs.

The results indicated that participants with a history of HPV infection, whether in themselves, their family, or close relatives, demonstrated a greater need for information in the preventive, treatment, and vaccination aspects. This need could stem from individuals' knowledge and experiences with the disease, raising concerns that double their necessity for information on preventive methods, treatment modalities, and even vaccination. Another part of the results showed that young individuals engaged in extramarital sexual relationships had a greater need for information in the aspects of symptom awareness, transmission, and prevention, and those engaging in unprotected sexual activities had a greater need for treatment-related information. Given that the most predictive factor for transmission is an individual's level of sexual activity, particularly the number of sexual partners, where increased extramarital relationships heighten the risk of transmission, young people seek information on

protected and safe relationships, requiring knowledge about symptoms, transmission methods, and preventive measures. In the case of unprotected sexual activity, due to the high likelihood of contracting HPV, they also seek information regarding treatment.

One of the limitations of the present study was the possibility of frequent responses of the user. The researchers tried to overcome this limitation by using software potential so that each user has the right to participate in the survey only once.

Also, the strengths of this research are the following:

1. The results provide a clear understanding of the health information needs of high-risk groups of 18–28 youth in social media.
2. It can be beneficial to design the appropriate interventions to establish the educational programs and interventional techniques aiming to increase high-risk groups of 18–28 youth awareness about HPV and vaccination in schools and universities.

Conclusion

The lack of education and awareness about HPV among Iranian youths aged 18–28 in schools and universities has led to unmet informational needs in this group. These young individuals, especially on social networks, seek informational needs about transmission methods, preventive measures, and treatment. It is essential that the National Center for Disease Control and Prevention and HPV Prevention Center, while utilizing the potential of social networks to enhance youths' access to health information and services tailored to their needs, initiate education and awareness campaigns about HPV, particularly vaccination, within textbooks, schools, and universities.

Research limitations

One of the limitations of the current research was the possibility of repeated user responses. The researchers tried to solve the aforementioned limitation by using software potential so that each user has the right to participate in the survey only once.

Ethics approval

The article is the result of a research project entitled: Examining the health information-seeking behavior of high-risk groups about HPV in social networks: an online

survey of Iranian youth aged 18-28 in 2023 with code of ethics number IR.HUMS.REC.2023.048 obtained from the ethics committee of Hormozgan University of Medical Sciences.

Acknowledgments

We hereby express our gratitude to the research participants who helped the authors in providing valuable information and opinions during this research, and to the Research and Technology Vice-Chancellor of Hormozgan University of Medical Sciences for their financial support.

Financial support and sponsorship

The research was carried out with the financial support of Hormozgan University of Medical Sciences, Bandar Abbas, Iran.

Conflicts of interest

There are no conflicts of interest.

Received: 10 Dec 23 **Accepted:** 04 Jun 24

Published: 30 Aug 24

References

- Shapiro GK. HPV vaccination: An underused strategy for the prevention of cancer. *Curr Oncol* 2022;29:3780-92.
- Castellsagué X, Mena M, Alemany L. Epidemiology of HPV-Positive Tumors in Europe and in the World. *Recent Results Cancer Res* 2017;206:27-35.
- Scott-Wittenborn N, Fakhry C. Epidemiology of HPV related malignancies. *Semin Radiat Oncol* 2021;31:286-96.
- Sekine M, Yamaguchi M, Kudo R, Hanley SJ, Ueda Y, Adachi S, *et al.* Suspension of proactive recommendations for HPV vaccination has led to a significant increase in HPV infection rates in young Japanese women: Real-world data. *Lancet Reg Health West Pac* 2021;16. doi: 10.1016/j.lanwpc.2021.100300.
- Chan CK, Aimagambetova G, Ukybassova T, Kongrtay K, Azizan A. Human papillomavirus infection and cervical cancer: Epidemiology, screening, and vaccination—review of current perspectives. *J Oncol* 2019;2019:3257939. doi: 10.1155/2019/3257939
- Kjaer SK, Dehlendorf C, Belmonte F, Baandrup L. Real-world effectiveness of human papillomavirus vaccination against cervical cancer. *J Natl Cancer Inst* 2021;113:1329-35.
- Rezaee Azhar I, Yaghoobi M, Mossalaeie MM, Kollaee Darabi A, Nejadeh AH, Jamshidi M, *et al.* Prevalence of human papilloma virus (HPV) genotypes between outpatients males and females referred to seven laboratories in Tehran, Iran. *Infect Agents Cancer* 2022;17:7. doi: 10.1186/s13027-022-00421-7.
- Mobini Kesheh M, Barazandeh M, Kaffashi A, Shahkarami MK, Nadji SA. Genetic diversity of HPV 16 and HPV 18 based on partial long control region in Iranian women. *Can J Infect Dis Med Microbiol* 2022;2022:4759871. doi: 10.1155/2022/4759871.
- Prudden HJ, Achilles SL, Schocken C, Broutet N, Canfell K, Akaba H, *et al.* Understanding the public health value and defining preferred product characteristics for therapeutic human papillomavirus (HPV) vaccines: World Health Organization consultations, October 2021—March 2022. *Vaccine* 2022;40:5843-55.
- Stellefson M, Paige SR, Chaney BH, Chaney JD. Evolving role of social media in health promotion: Updated responsibilities for health education specialists. *Int J Environ Res Public Health* 2020;17:1153. doi: 10.3390/ijerph17041153.
- Chen J, Wang Y. Social media use for health purposes: Systematic review. *J Med Internet Res* 2021;23:e17917.
- Himmelboim I, Xiao X, Lee DK, Wang MY, Borah P. A social networks approach to understanding vaccine conversations on Twitter: Network clusters, sentiment, and certainty in HPV social networks. *Health Commun* 2020;35:607-15.
- Forouzandeh S, Aghdam AR. Health recommender system in social networks: A case of Facebook. *Webology* 2019;16.
- Lin H-C, Chang C-M. What motivates health information exchange in social media? The roles of the social cognitive theory and perceived interactivity. *Inf Manag* 2018;55:771-80.
- Lau AY, Gabarron E, Fernandez-Luque L, Armayones M. Social media in health—What are the safety concerns for health consumers? *Health Inf Manag J* 2012;41:30-5.
- Lee SJ, Yun HJ, Lee KH, Kim CJ, Park JS. What questions do people ask on a Human Papillomavirus website? A comparative analysis of public and private questions. *Int J Med Sci* 2012;9:142.
- Tung WC, Lin Y, Chao HW, Chen Y. HPV vaccination, information sources, and acculturation among Chinese college students aged 18–26 in the United States. *Res Nurs Health* 2022;45:194-204.
- Lyson HC, Le GM, Zhang J, Rivadeneira N, Lyles C, Radcliffe K, *et al.* Social media as a tool to promote health awareness: Results from an online cervical cancer prevention study. *J Cancer Educ* 2019;34:819-22.
- Uzun SB, Sakin Ö, Çetin H, Şimşek EE. The effects of HPV test on anxiety, emotion and depression in women. *J Acad Res Med* 2020;10.
- Sikorska M, Pawłowska A, Antosik-Wójcińska A, Zygula A, Suchońska B, Dominiak M. The Impact of HPV diagnosis and the electrosurgical excision procedure (LEEP) on mental health and sexual functioning: A systematic review. *Cancers* 2023;15:2226. doi: 10.3390/cancers15082226.
- Li D, Fu L, Yang Y, An R. Social media-assisted interventions on Human Papillomavirus and vaccination-related knowledge, intention and behavior: A scoping review. *Health Educ Res* 2022;37:104-32.
- Sun L, Hu J, Gao H, Wang S, Wang B, Wang J, *et al.* Long-term effect of mobile phone-based education and influencing factors of willingness to receive HPV vaccination among female freshmen in Shanxi Province, China. *Hum Vaccin Immunother* 2022;18:2051990. doi: 10.1080/21645515.2022.2051990.
- Teitelman AM, Kim SK, Waas R, DeSenna A, Duncan R. Development of the NowI Know mobile application to promote completion of HPV vaccine series among young adult women. *J Obstet Gynecol Neonatal Nurs* 2018;47:844-52.
- Xu X, Li H, Shan S. Understanding the health behavior decision-making process with situational theory of problem solving in online health communities: The effects of health beliefs, message credibility, and communication behaviors on health behavioral intention. *Int J Environ Res Public Health* 2021;18:4488. doi: 10.3390/ijerph18094488.
- Stephens DP, Thomas TL. Social networks influence Hispanic college women's HPV vaccine uptake decision-making processes. *Womens Reprod Health* 2014;1:120-37.
- Galbraith-Gyan KV, Lechuga J, Jenerette CM, Palmer MH, Moore AD, Hamilton JB. HPV vaccine acceptance among African-American mothers and their daughters: An inquiry grounded in culture. *Ethn Health* 2019;24:323-40.
- Yoo SW, Kim J, Lee Y. The effect of health beliefs, media

- perceptions, and communicative behaviors on health behavioral intention: An integrated health campaign model on social media. *Health Communication* 2018;33:32-40.
28. Longo DR, Schubert SL, Wright BA, LeMaster J, Williams CD, Clore JN. Health information seeking, receipt, and use in diabetes self-management. *Ann Fam Med* 2010;8:334-40.
 29. Abak F, Rabiee M, Jouhari Z. Knowledge and awareness of genital warts among female college students in Iran and its role in vaccination. *Womens Health Bull* 2024;11:1-10. doi: 10.30476/whb.2024.100187.1249.
 30. Honarvar M, Goudarzi R, Amiresmaili M, Amiri A, Paul AS. The feasibility of including human papillomavirus vaccine in Iran's national immunization program. *Vacunas* 2023;24:298-307.
 31. Latifi M, Tehrani HG, Karami NA, Barahmand N, Farsani LA. Using information sources by breast cancer women treated with mastectomy. *J Educ Health Promot* 2019;8:68. doi: 10.4103/jehp.jehp_224_18.
 32. Latifi M, Tafti MA, Dolatabadi ND, Rafiei Z, Farsani LA. E-Health: The impact of social network on self care behavior in heart failure patients toward COVID-19 epidemic. *Adv Biomed Res* 2021;10:15.
 33. Latifi M, Davari Dolatabadi N, Shahi M, Alishan Karami N. E-Health: self-care of social networks users concerning COVID-19. *Health Educ Health Promot* 2022;10:255-63.
 34. Jo S, Pituch KA, Howe N. The relationships between social media and human Papillomavirus awareness and knowledge: Cross-sectional study. *JMIR Public Health Surveill* 2022;8:e37274. doi: 10.2196/37274.
 35. Ortiz RR, Shafer A, Cates J, Coyne-Beasley T. Development and evaluation of a social media health intervention to improve adolescents' knowledge about and vaccination against the human papillomavirus. *Global Pediatr Health* 2018;5:2333794X18777918. doi: 10.1177/2333794X18777918.
 36. Fujimoto K, Nyitray AG, Kuo J, Zhao J, Hwang LY, Chiao E, *et al.* Social networks, high-risk anal HPV and coinfection with HIV in young sexual minority men. *Sex Transm Infect* 2022;98:557-63.
 37. Tiiti TA, Bogers J, Lebelo RL. Knowledge of human papillomavirus and cervical cancer among women attending gynecology clinics in Pretoria, South Africa. *Int J Environ Res Public Health* 2022;19:4210. doi: 10.3390/ijerph19074210.
 38. Bencherit D, Kidar R, Otmani S, Sallam M, Samara K, Barqawi HJ, *et al.* Knowledge and awareness of Algerian students about cervical cancer, HPV and HPV vaccines: A cross-sectional study. *Vaccines* 2022;10:1420. doi: 10.3390/vaccines10091420.
 39. Afonso NM, Kavanagh MJ, Swanberg SM, Schulte JM, Wunderlich T, Lucia VC. Will they lead by example? Assessment of vaccination rates and attitudes to human papilloma virus in millennial medical students. *BMC Public Health* 2017;17:1-8.