

# Evaluation of the Individual and Medical Factors Associated With Genital Human Papillomavirus in Iranian Women

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**Background:** Human papillomavirus (HPV) has been known as one of the most common sexually transmitted diseases. HPV infection can cause serious health complications.

**Objectives:** The aim of this study was to determine the individual and medical factors associated with HPV infection among the Iranian women.

**Patients and Methods:** In this case-control study, 210 women were divided into two groups with and without the diagnosis of HPV infection. A standard questionnaire was used to obtain the individual and medical history of each patient.

**Results:** Our findings showed that the age ( $P = 0.01$ ), no history of urinary tract infection ( $P = 0.00$ ) and history of skin wart ( $P = 0.01$ ) were as three risk factors for HPV infection.

**Conclusions:** Recognition of the individual and medical factors associated with genital HPV can help the health providers to find the high-risk women and develop the effective strategies for prevention.

**Keywords:** Condylomata Acuminata; Cervical Cancer; Genital Wart; Medical History Taking

## 1. Background

In recent years, genital human papillomaviruses (HPV) are the widespread type of sexually transmitted diseases in majority of countries (1). More than 40 types of these viruses can be transmitted through vaginal, anal, and oral sex, but HPV types 6, 11, 16 and 18 are responsible for clinical side effects (2). Cervical abnormalities and following complications are the horrible results of this infection (3). Nearly 232.9 million women of reproductive age worldwide, 32.03 million women in Asia and 3.71 million women in Iran were infected with HPV (4). Lesions of this infection cause physical and psychological pain and worry the patients (5, 6). Moreover, some healthcare organizations experience the severe financial distress due to the cost of prevention, diagnosis and treatment of genital HPV lesions (7). The relationship between a greater number of the sexual partners and more prone to this infection has been supported in many studies (8). History of genital herpes, chlamydia and age less than 25 years old are the predisposing factors to this infection (9-11). Results of other studies about the factors associated to HPV infection were not same (12). To utilize the effective prevention literal knowledge and detailed information of the incidence and the affiliated agents of this infection are

serious (13). Since achieving to this awareness assists us to utilize the effective prevention (14).

## 2. Objectives

This study aimed to determine the individual and medical factors associated with HPV among the Iranian women.

## 3. Patients and Methods

After obtaining the approval from the Research Ethics Committee of Tehran University of Medical Sciences (TUMS) in 2012, 210 women from outpatient colposcopy clinic affiliated to a training gynecology hospital of TUMS were recruited into the study. Sampling was performed from January to April. Women with an abnormal Pap Smear Test, abnormal vaginal bleeding, and resistant cervicitis had been referred to this clinic for the further investigation. Colposcopy and biopsy of cervical lesion were performed for differential diagnosis.

The inclusion criteria of the study were being mentally healthy and being referred to the clinic due to abnormal Pap Smear Test. The case group included 70 women with the diagnosis of Condyloma Acuminata in biopsy specimen of cervix or positive HPV Typing test for types 6, 11, 16, 18, 31, 35, 50, and 60. On the other hand, the control group

composed of 140 women without the diagnosis of Condyloma Acuminata in biopsy specimen of cervix or negative HPV Typing for types 6, 11, 16, 18, 31, 35, 50, and 60. The two groups were matched regarding being Iranian, being in the reproductive ages (15-49 years old), and having got LSIL/HPV results in their Pap Smear Test. The biopsy specimen of cervix was taken by three professors of gynecology who were in charge of the colposcopy clinic and was interpreted by the gynecological hospital pathology laboratory.

All the women received detailed information about the objectives of the study and signed a written informed consent. Then, they were asked to complete a self-administered questionnaire, which included the questions about the socio-demographic and reproductive

characteristics as well as medical history. The validity of the questionnaire was determined by 12 members of the Faculty of Nursing and Midwifery at TUMS. Besides, the test-retest method was used to determine the reliability of the questionnaire and  $r = 0.85-1$  was obtained.

T-test, Chi-square, and Fisher exact test were used to determine the relationship between the variables and compare them between the groups. In addition, logistic regression models were used to identify the individual and medical factors independently associated with HPV infection. P value < 0.05 was considered as statistically significant. It should be noted that all the statistical analyses were performed through the SPSS statistical software (ver. 20).

**Table 1.** Associations Between HPV Infection and Individual Factors in Women With the HPV/LSIL Result on Pap Test <sup>a</sup>

Marital Factors	Cases (n = 70)	Controls (n = 140)	P Value
<b>Age, y</b>			0.01
< 30	21 (30.0)	40 (28.6)	
30-40	33 (47.1)	46 (32.9)	
≥ 40	16 (22.9)	54 (38.6)	
<b>Education level</b>			0.11
Illiterate-elementary	4 (7.4)	52 (37.1)	
Middle-high school	29 (53.7)	62 (44.3)	
University	21 (38.9)	26 (18.6)	
<b>Occupation</b>			0.69
Housekeeper	49 (79.0)	115 (83.9)	
Employed	13 (21.0)	22 (16.1)	

<sup>a</sup> Data are presented as No. (%).

**Table 2.** Associations Between HPV Infection and Medical Factors in Women With HPV/LSIL Result on Pap Test <sup>a</sup>

	Cases (n = 70)	Controls (n = 140)	P Value
<b>History of diabetes</b>			0.95
Yes	4 (6.1)	9 (6.4)	
No	62 (93.9)	131 (93.6)	
<b>History of urinary tract infection</b>			0.00
Yes	12 (20.7)	47 (35.1)	
No	46 (79.3)	87 (64.9)	
<b>History of non-genital wart</b>			0.01
Yes	10 (16.1)	8 (5.8)	
No	52 (83.9)	129 (94.2)	
<b>History of herpes lip</b>			0.21
Yes	21 (36.2)	50 (35.7)	
No	37 (63.8)	90 (64.3)	
<b>History of hormone therapy</b>			0.05
Yes	9 (13.6)	23 (16.8)	
No	57 (86.4)	114 (83.2)	
<b>History of corticosteroid consumption</b>			0.35
Yes	10 (16.1)	13 (9.3)	
No	52 (83.9)	127 (90.7)	
<b>History of surgery</b>			0.05
Yes	28 (42.4)	80 (57.1)	
No	38 (57.6)	60 (42.9)	
<b>History of blood exchange</b>			0.95
Yes	0 (0.0)	8 (5.7)	
No	70 (100.0)	132 (94.3)	

<sup>a</sup> Data are presented as No. (%).

## 4. Results

The present case-control study was conducted on results from cervical biopsy or HPV typing. The mean age of patients was  $35 \pm 8$  years old. Also, majority of the cases had been categorized in the age group of 30-40 years, while most controls had been chosen from the age group of  $\geq 40$  years. Moreover, most of the women in both groups had middle school and high school degrees. Regarding occupation, most women in the both groups were housekeeper. The individual factors relevant to genital HPV infection are presented in Table 1.

Also, most of the women from both groups didn't have history of diabetes, non-genital wart, Herpes lip, hormone therapy, corticosteroids consumption and blood exchange. Besides, most of the cases didn't have surgery, while they had mostly history of it in the control group. The medical factors attached to this infection are presented in Table 2. According to the results, middle age  $P = 0.01$ , no history of urinary tract infection ( $P = 0.00$ ) and history of non-genital wart ( $P = 0.01$ ) were significantly associated with the genital HPV infection.

## 5. Discussion

The individual and medical characteristics associated with genital HPV infection have been investigated. Whereas this infection has been considered as the rampant type of sexually transmitted infection in the world, either many of the agents related to genital papilloma are pathless or controversial to obtain (12). Our findings showed a relationship between middle age and HPV infection. However Centers for Disease Control and Prevention (CDC), Eren et al. and Bardin et al. ( $P = 0.00$ ) revealed an association between the young age ( $< 30$  years) and HPV infection (15-17). This difference might be due to the Iranian's religious beliefs that sexual intercourse is legitimate only in the form of marriage. Thus, the increasing marriage age in Iran causes a delay in sexual intercourse and the subsequent sexually transmitted infection, such as HPV infection. In addition, the women without history of urinary tract infections revealed a higher risk of HPV infection (OR 3), while Qiao et al. have written "HPV positivity has been higher among women in China which is a factor potentially related to relatively poorer socioeconomic status (18). However, due to the limited studies conducted on this issue, this finding is difficult to justify. Unlike the Winer et al. study, we found the relationship between non genital wart and HPV infection (19). It is impossible that the history of non-genital wart indicates low immunity of body to counteract with HPV family in afflicted persons. The results of the present study did not show any significant relationship between the other individual and medical factors and HPV infection. Nevertheless, similar or contradictory results have been obtained in other studies conducted in the Canada and United States (20, 21). The variations might result from the difference in the sampling methods as well as the limitations

of the studies. Because of the HPV typing test is expensive; we didn't perform this study among general population. To conclude, the genital HPV and its related cervical cancer have health hazards. So, knowledge about the individual and medical factors that increasing the incidence of this infection helps to recognize who prone to infection and follow them consciously.

Broader research is necessary for assessment of individual and medical factors associated with genital HPV infection. Results from them will be applied to better understanding of this infection that can improve strategies for better public health.

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## Authors' Contributions

Freshteh Jahdi: supervisor, Khadijeh Khademi: corresponding author, Effat Merghati Khoei: advisor, Hamid Haghani: advisor, Yazdanpanahi Zahra: advisor.

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