**Original Article**

# The Epidemiologic Investigation of Genital Warts within the Females Referred to Shahid Sadoughi Hospital in Yazd – A Case Series Study

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## Abstract

**Introduction:** human papillomavirus (HPV) is the most common sexually transmitted disease (STD) throughout the world. The incidence of HPV has been increasing over recent years. Since scant information has been reported on the prevalence of HPV and its related risk factors in Yazd province, the present study aimed to evaluate effects of demographic characteristics as well as the risk factors associated with HPV in Yazd province, Iran.

**Materials & Methods:** A total of 119 patients with genital warts entered this case series, who referred to Shahid Sadoughi hospital. Demographic information and productivity factors were collected using some questionnaires.

**Results:** The mean age of the patients was (32.9) that most of the infected were between the ages of 31 to 35. Approximately, 58.8% of the patients started sex under the age of 20, and only 5% of the patients had more than one sex partner. Besides, almost 8 .4% of the participants were infected with other STDs. In 87.4% of cases, the diagnosis of genital warts is first appear in woman then their sex partner, and % 61.3 of the patients chose vaccination.

**Conclusion:** The findings of the current study revealed that HPV is more prevalent within young adults, in particular those who are sexually active. As a result, further research seems to be demanded in regard with sexual health, relationship training, as well as HPV vaccines such as Gardasil for high-risk people.

**Keywords:** Genital warts; Human papillomavirus; Sexual risk factors; Yazd

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## Introduction

Genital warts (or condylomata acuminate) are regarded as the most common sexually transmitted disease throughout the world, caused by some sorts of human papillomavirus (HPV). The incidence of this infection has been increasing over recent years [7-1]. So far, more than 100 different HPV genotypes have been identified, of which more than 40 have been detected in the anogenital area [8, 5, 1]. Several studies demonstrated that HPV genotypes are divided into two groups including high-risk and low-risk genotypes. High-risk genotypes, the major cause of most cancers, include types 16, 18, 31, 33, whereas low-risk genotypes rarely associated with the development of cancers entail types 6, 11 and, etc. [12, 8, 4, 3, 1].

Viruses have been found to cause 15% of human cancers worldwide, which about 50% of these virus induced cancers are caused by HPV (10). Cervical cancer is the fourth most prevalent cancer within females, worldwide [13, 14]. Epidemiologic and molecular studies illustrated that specific HPV genotypes have been detected in 75-100 % of the sexually active cervical cancer patients who underwent biopsy [4, 8, 9]. Approximately,70% of cervical cancers are caused by HPV types 16 and 18 and 90% of genital warts are caused by HPV types 6 and 11(15). The prevalence of genital warts was reported 7.8% and 5.7% by khoda karami et al. and Zavarei et al respectively. [4, 16]. Moreover, the prevalence of genital warts was reported 10.3%, 19.4%, 35.9% and 64.1% in India, Portugal, Italy and France, respectively. SK Kjær reported that the prevalence of genital warts within women is 12%, 9.5%, 10% and 11.3% in Iceland, Norway, Denmark and Sudan, respectively [7].

The prevalence of HPV was reported 44.2% in several studies [17, 1]. It is estimated that, approximately 6 million new genital HPV infections occur in the United States, with a prevalence rate of 24 millions in adults [2]. The cumulative incidence of HPV was reported 44%and 23.6% in British (in 3 years) and Brazilian females (in 1.5 years), respectively [17]. HPV is the most prevalent within people aged 15 - 33. As a matter of fact, females, aged 20-24, are demonstrated to have the highest incidence of genital HPV [12, 18]. However, approximately 49% of the new HPV cases occur at the age of 15-24 in the United States [18]. These differences can be resulted from geographical, cultural, and social differences, the frequency of risk factors as well as the sensitivity of molecular detection methods [9, 1].

HPV is most commonly transmitted via the sexual activities. The most prevalent risk factors for HPV infection consist of multiple sex partners, unprotected sexual relations, early onset of sexual activity, infection with other STDs such as genital herpes and HIV, alcohol and tobacco use, prolonged use of birth control pills, family



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background, and low socioeconomic status [9, 10, 19, 20].

Protected safe sexual intercourse is one of the best strategies to protect against STDs, among which condom can cut the risk of HPV infection by 70% among sex partners. However, it is likely to acquire HPV infection by skin contact while using condom, showing again the importance and effectiveness of protected sexual intercourse [11]. Thus, today vaccination is an obligation to protect against HPV infection. Gardasil is inoculated before the onset of sexual activity to protect against HPV 16, 18, 6, and 11, used as a routine vaccine in national immunization program of United States, Australia, Canada and some European countries[15, 2]. The total prize of HPV vaccination was estimated $ 436 in 2010 [11]. Regarding the scant information on the prevalence of HPV and its related risk factors within women in Yazd, this study aimed to determine the demographic characteristics of women infected with genital warts who referred to Shahid Sadoughi hospital in Yazd province, Iran.

## Materials and Methods

A total of 119 patients with genital warts entered this case series study, who referred to Shahid Sadoughi hospital. The study population was selected out of 300 women who were likely to have genital warts. referring to gynecologists in Baghaee pour clinic, in Shahid Sadoughi hospital from September 2013 to May 2014.The inclusion criteria involved the women, who were diagnosed with external genital warts by physical examination by expert physicians, and diagnosed with internal genital warts by colposcopy. A total of 152 HPV cases were identified by expert physicians, from which 122 patients were diagnosed with external genital warts by physical examination and 30 patients were diagnosed with internal genital warts by colposcopy. Out of 152 eligible cases, only 119 agreed to participate in this study. The study data were collected using the researcher-made questionnaires, which were completed by participants and obstetrics. These questionnaires probed to glean the data in regard with demographic information, diagnosis date, marital status, the number of sex partners, reproductive history, contraceptive methods used before the diagnose, condom use after marriage, tobacco smoking and drug abuse, previous infection with other STDs, previous infection with genital warts in sex partner. In order to analyze the study data, SPSS software , (version 16) and frequency was applied.

## Results

A total of 119 women infected with genital warts participated in the current study. Such demographic information as age, marital status, educational level, and job are summarized in Table 1. The average age of participants at diagnosis was 32.9±8.2 years. The youngest patient aged 19 years and the oldest one aged 88 years. The participants' most common age at diagnosis of HPV was ranged 31-35. The mean age at



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onset of sexual activity was 19.8±4.9, and 58.8% of the patients started sexual activities under the age of 20 followed by patients aged 20-25 (32.8%). Nearly, 95.8% of the patients (n=114) never used tobacco, 3.4% of the patients used tobacco once in a while and about 0.8% were constant tobacco users. Drug and psychotropic substance use was not observed in these patients. Information concerning sexual characteristics and some risk factors associated with HPV infection are illustrated in Table 2 such as age at onset of sexual activity, number of sexual partners and confection with other STDs.

It should be noted that, after genital warts diagnosis assessment among women and their sex partners, % 87.4 (n=104) of cases diagnose is genital warts is first appear in woman then their sex partner , and the patient's sex partner were found to have acquired genital warts in 12.6% of cases (n=15). In general, 20.5% of the patients reported that they both were infected with genital warts, whereas 78.3% the patients reported that their sex partner never acquired genital warts. Out of all patients, 61.3% decided to receive Gardasil vaccine. In fact, condom uses among individuals with diploma or higher associate degree were more frequent.

**Table 1:** Demographic Information of Women with Genital Warts

| **Variable** | **No (%)** | **Variable** | **No (%)** |
|---|---|---|---|
| **Age(years)** | | **Education** | |
| >20 | 6(5%) | Illiterate | 2(1.7%) |
| 20-25 | 16(13.4%) | Primary &Guidance School | 17(14.3%) |
| 26-30 | 22(18.5%) | High School | 44(37%) |
| 31-35 | 30(25.2%) | Associate Degree | 15(12.6%) |
| 36-40 | 23(19.3%) | BS & Graduate | 41(34.4%) |
| <40 | 22(18.5%) | | |
| **Job** | | **Marital Condition** | |
| Housewife | 76(63.9%) | Single | 4(3.4%) |
| Student | 11(9.2%) | Married | 113(95%) |
| Employee | 26(21.9%) | Divorced | 2(1.7%) |
| Self Employed | 6(5%) | | |

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**Tabel 2:** Sexual and Reproductive Characteristics of Women with Genital Warts

| Variable | No(%) | Variable | No(%) |
|---|---|---|---|
| **Life time number of sex partners** | | **Age at the first sexual intercourse(Years)** | |
| 0 | 2(1.7%) | <20 | 70(58.8%) |
| 1 | 111(93.3%) | 20-25 | 39(32.8%) |
| 2 | 4(3.4%) | 26-30 | 8(6.7%) |
| >2 | 2(1.6%) | 31-35 | 2(1.7%) |
| | | >36 | 0(0%) |
| **Accompanied sexually transmitted diseases** | | **History of contraceptive method** | |
| Herpes | 10(8.4%) | Condom | 33(27.7%) |
| Hiv/Aids | 0 | Withdrawal | 51(42.9%) |
| Hepatites | 0 | IUD, Oral contraceptives, Injection method | 24(20.2%) |
| Syphilis | 0 | No contraceptives | 9(7.6%) |
| Gonorrhea | 0 | | |
| **Pregnancy History** | | | |
| Never Pregnant | 16(13.4%) | | |
| Pregnant but no birth | 5(4.2%) | | |
| 1 Birth | 42(35.3%) | | |
| >1 Birth | 56(47.1%) | | |

## Discussion

A total of 119 women infected with genital warts were selected, that most of the infected were between the ages of 31 -35, followed by patients aged 26-30 and 36-40, which are in compliance with the findings of other studies in Iran. In a study carried out in Zanjan, the most prevalent age of HPV infection was reported 25-35, while in another study conducted in Tehran, it was stated that the majority of patients were at the age of 35-44 [1, 2, 4]. Moreover, the prevalent ages of HPV infection were similar to those of studies carried out in northern Europe [7]. Khodakarami et al. reported that the most common age of HPV infection was 35 [16]. A great number of studies have been carried out to examine the prevalence and risk factors associated with HPV infection. Most of these studies indicated that HPV infection is mostly transmitted by sexual intercourse and proposed that multiple sex partners are the most important risk factors for HPV infection [1, 7, 19].In the present study, only 5% of the patients had more than one sex partner which is in line with findings of the studies conducted in Turkey (5%) as well as Jaberipour's findings conducted in Iran (19%) [9, 3]. However, Soori et al. reported that 28.3% of the patients had more than five



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sex partners [1]. Zanzan's study revealed that 56.7% of all patients had multiple sex partners [2]. The study carried out in the Northern Europe revealed that the most important risk factors associated with HPV infection was the number of sex partners with an odds ratio of 9.45.Furthemore, the median number of sex partners was estimated 5, while in the present study the maximum number of sex partners was 4 [7].

Besides, educational level can be mentioned as another predictor of genital HPV infection. A study carried out in the U.S.A showed that 11.4% of the patients were high-school and college graduates, while in the current study, 84% of the patients were high-school and college graduates [21]. High education level among HPV patients is in accordance with Soori et al's findings, though Jaberipour stated, that the majority of female participants had a lower educational level. The study in North Europe reported that 9.2% of the patients never entered college, 22.6% of the patients were college graduates, and the computed odds ratio was 1.16. Thus, it can be concluded that the educational level is a potential risk factor for HPV infection [7]. However, Khodakarami et al. found no statistically significant relationship between educational level and HPV infection [16].

The productivity and labor status of the women under the study are shown in Table 2. Most of the patients had more than one child. However, Khodakarami et al. stated that HPV infection was most prevalent among women without a child, though no significant relationship was observed [16]. The study carried out in northern Europe also revealed that HPV infection was most observed in women who had experienced pregnancy, though they had never born a live child. It is worth mentioning that, abortion was a risk factor for the acquisition of genital warts [7].

In the present study, 58.8% of female patients were reported to begin the sexual activities under the age of 20. However, the study carried out in the U.S demonstrated, that only 7.3% of the female patients started sexual relations under the age of 15 [1]. .This may be due to the fact the target population in the former study involved patients suspicious for HPV who referred to health centers, while the target population of the latter study was public population. Furthermore, cultural and ethical differences may influence the onset of sexual activity.

Although the effect of condoms in preventing HPV infection is not yet recognized, many studies have focused on the preventive effect of condom use on HPV. In this study, only 19.7% of women used condom, 51.3% of women applied condom once in a while and 29.1% never utilized condom as a preventive tool. However, Soori et al. proposed that only 8% of women used condom [1]. In Hong Kong, 66.24% of men infected with genital warts reported using condoms during their sexual intercourse [22]. The average condom



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use among Turkish women was reported 24.4%, which is in compliance with the results of the present study [9]. Jahdi et al. reported that 45.7% of women applied condom, while Khoda karami reported 49.6%of condom use within women, which is in accordance with the results of the present study (considering both constant and occasional condom use) [16,19]. Northern European studies reported an odds ratio of 1.44 for condom use within women who constantly applied condoms (4.3%), and women who had never used condoms (11.6%) [7]. It is important to note that 50.5% of the patients never used condoms and/or Natural Family Planning Methods before the diagnosis of HPV infection, which can increasing the chance of HPV infection in sex partners. Infection with other STDs can be taken into account as another risk factor associated with HPV infection [19]. In the present study, 8.4% of the patients were coinfected with genital herpes, as well. However, studies carried out in northern Europe showed that more than one fifth of the female participants were infected with other STDs [7].

The current study suffers from several limitations. First, the study data were collected in one center, and thus a small number of private clinic patients referred to such a center. Moreover, given the cultural and religious conditions in Yazd, some questions were responded with some biased information.

## Conclusion

Ultimately, it can be concluded that, genital warts should be taken as a growing health problem into consideration for every society. Hence, appropriate preventive and diagnostic treatment measures must be taken into account in order to prevent the occurrence of cancers caused by high-risk genotypes. Further research is recommended to study the prevalence of genital warts, its associated risk factors as well as HPV common genotypes in men and women. Moreover, developing a software can be suggested consisting of demographic information and HPV infection risk factors to record all HPV cases at national and local levels. It also seems important to provide the context for a healthy sexual relationship to high-risk people and those who had already acquired other STDs. Since the preparation and injection of HPV vaccines are regarded costly, effective vaccination program must be developed by Vice-Chancellor for health and treatment in order to provide easy access to HPV vaccines as well as to reduce costs related to injection, specifically in high-risk individuals.

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