

# Condyloma acuminata in spouses of patients with genital warts in northern Iran: A cross-sectional study

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**Background:** Genital warts are one of the most common viral sexually transmitted diseases in the world. They are caused by different human papilloma viruses and lesions may have benign to malignant transformation. The main purpose of this study was to determine the prevalence of condyloma acuminata in the spouses of patients with genital warts.

**Methods:** This cross-sectional study was done on 153 patients with genital warts and their spouses who were referred to dermatology and gynecology clinics of Babol University of Medical Science (North of Iran) between 2009 and 2012. All cases were clinically examined by dermatologists and gynecologists. After obtaining consent, the data including patients' sex and age, genital wart in the spouse, history of warts in other sites of the body, positive family history of all forms of warts, smoking, addiction, alcohol consumption, and OCP use were collected via a questionnaire and analyzed with *t* and chi-square tests. *P* values less than 0.05 were considered significant.

**Results:** In this study, 100 (65.4%) patients were women and 53 (34.6%) were men. Genital warts were detected in 25.5% of the spouses. The mean age of the patients and their spouses was  $30.2 \pm 8.7$  and  $31.5 \pm 7.4$  years, respectively. There was no significant correlation between age and genital wart in the spouse.

**Conclusion:** The results showed that genital warts are a relatively highly infectious disease. Our recommendation for prevention of genital warts is education and clinical examination of the patients' spouses.

**Keywords:** genital warts, prevalence, spouse, human papiloma virus

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## INTRODUCTION

Anogenital warts are one of the clinical manifestations of human papillomavirus (HPV) infection. More than 40 types of Papilloma viruses can infect the anogenital area <sup>1,2</sup>. HPV infections are highly prevalent, and current evidence suggests that at least 50% of sexually active women have been infected with one or more types <sup>3</sup>.

Although transmission is known to occur primarily through sexual contact, the rate of

acquisition and risk factors of the infection are largely unknown <sup>4</sup>. Several factors predispose the patients to HPV genital infections, including multiple sex partners <sup>5</sup>, smoking <sup>6</sup>, use of oral contraceptive pills (OCP), particularly after prolonged exposure <sup>7</sup>. The highest prevalence of HPV is reported among 15 to 25 years old women and is progressively lower in older age groups <sup>8</sup>. Some conditions such as bathing with infected people and wearing the infected underwear and swimming pool can transmit this disease in adults <sup>9</sup>.

The aim of this study was to assess the prevalence of genital warts in the spouses of the patients who were referred to the dermatology and gynecology clinics of Babol University of Medical Sciences (North of Iran).

## METHODS

This cross-sectional study was carried out on 153 patients with genital warts (group A) and their spouses (group B) in dermatology and gynecology clinics of Babol University of Medical Sciences (North of Iran) between 2009 and 2012. The study was approved by Babol University of Medical Sciences Research Ethics Committee. All cases with genital warts and their spouses were enrolled in this study after signing an informed consent form.

A questionnaire including questions on age, sex, site of involvement, use of oral contraceptive pills, history of warts in first degree family members and in other sites of the body in the patient or spouse, smoking, addiction, alcohol consumption, and use of the swimming pool was completed. Data were analyzed with the version 16 of SPSS (SPSS Inc., Chicago, IL, USA) using chi-square and *t* tests. *P* values less than 0.05 were considered significant.

## RESULTS

Group A comprised 100 (65.4%) women and 53 (33.6%) men. The mean age of the participants was  $30.2 \pm 8.7$  years in group A and  $31.4 \pm 7.4$  years in group B (their spouse). The majority of female patients in group A and B were 20-29 years old. The majority of men were 30 to 40 years old in group A and 20-29 years old in group B. Two (5.1%) cases were under 25 years of age, 27 (79.5%) patients were 25-35 years old, and 8 (25.8%) cases were older than 35 years old; there was no correlation between age and the genital wart in the spouse.

Totally, genital warts were seen in 39 spouses

(25.5%) in group B (31 (31%) men and 8 (15.1%) women). Among patients in group A, 51 (33.3%) had extra genital warts (31 on the hand, 7 on the foot, 7 on the neck, and 6 on the trunk). Moreover, 31 out of 39 patients with genital warts in group B had extra genital warts, as well (8 on the hand, 4 on the foot, 11 on the trunk, and 8 on the neck).

There was no correlation between extra genital involvement ( $P=0.400$ ), smoking ( $P=0.171$ ), addiction ( $P=0.607$ ), alcohol consumption ( $P=0.270$ ), and use of the swimming pool ( $P=0.384$ ) with the acquisition of genital warts in the spouse.

Warts were seen in 28 (18.3%) first-degree family members of the patients (8 in the mother, 2 in the father, 7 in the sister, 3 in the brother, and 8 in children).

## DISCUSSION

Previous studies have established that more than 65% of sexual contacts lead to viral contamination and infection in HPV positive sexual partners<sup>10</sup>. Rombaldi *et al.* demonstrated that 62.6% of sexual partners of women with cervical intraepithelial neoplasia had condylomatous, macular, or popular genital lesions identified by peniscopy while in our study, genital warts were seen in 39 (25.5%) spouses of the patients (31% of the patients' husbands and 15.1% of the patients' wives)<sup>11</sup>. Tabrizi *et al.* studied the sexual partners of women with cervical intraepithelial neoplasia and found that 38% of them had clinical warts or identifiable lesions by peniscopy, which is comparable with our results<sup>12</sup>. It is noteworthy that the majority of sexual partners of women with condyloma are rarely aware of their penile lesions and most infected men may be in the subclinical or latent period without any visible lesions on clinical examination.

Most of our cases, i.e. 100 (65.5%) patients, were women. Similarly, Fleischer *et al.* reported that 67% of the patients with genital warts were women<sup>13</sup>. A Canadian study showed more men get genital

**Table 1.** Relationship between risk factors and wart infection among couples

Risk factors	Group A		Group B	
	Female	Male	Female	Male
Swimming pool	40 (40%)	28 (52.8%)	5 (9.4%)	31 (31%)
Smoking	29 (29%)	32 (60.4%)	3 (5.7%)	40 (40%)
Alcohol	21 (21%)	25 (47.2%)	0 (0.0)	24 (24%)
Drug addiction	7 (7%)	8 (15.1%)	1 (1.9%)	10 (10%)

warts after the 20<sup>th</sup> century ended<sup>14</sup>. Other studies have shown that the majority of the patients are women, may be due to more frequent visits to health centers for regular genital examination and disease treatment<sup>15</sup>. Some studies have reported an equal prevalence in women and men<sup>15,16</sup>. Castellsague *et al.*<sup>17</sup> reported a higher incidence rate of genital warts in men than women. Marra *et al.* reported a higher overall incidence rate in men than women<sup>18</sup>. The higher prevalence in men in some dermatology reports is considered to be because most infected women are visited by gynecologists instead of dermatologists.

In our study, the most common age group in group A was 20-29 and 30-39 years in women and men, respectively. Genital warts were independently associated with younger age in both sexes, which is similar to the results of previous studies about the age of peak prevalence of genital warts<sup>19</sup>. The peak incidence was in the early and late years of the 2<sup>nd</sup> decade in women and men, respectively. Simms and Fairley in a large study in the UK found that the peak occurrence of the first episode of genital warts was in the age group 16-24 in women and 20-24 years old in men<sup>20</sup>. Genital warts decrease markedly with age, independent of sexual behavior and number of sexual partner<sup>21</sup>. It has been suggested that older persons may be more resistant to infection.

Our study showed no relationship between smoking and the use of swimming pool while there was a positive correlation between them in a study by Wen *et al.*<sup>22</sup>. Male smokers with more than 10 cigarettes per day were found to be twice as likely to have genital warts as non-smoker men. Syrjanen *et al.* showed that a non smoker partner was a protective factor against HPV infection<sup>23</sup>.

Sellors *et al.*<sup>8,24</sup> in two studies found that OCP consumption was a risk factor for genital warts but we found no association between them in our study.

In the present study, nearly half of the patients used the swimming pool but there is no confirmed relationship between the use of the swimming pool and genital warts. One report by Lu *et al.*<sup>25</sup> showed that sauna was a risk factor for anal warts and another report by Puranen *et al.*<sup>26</sup> showed that wet benches had no effect on HPV transmission. In a study by Javadi, swimming pool was a risk factor for genital warts<sup>15</sup>.

In our study, 9.2% of men and 46% of women in group A had more extra genital warts. A study by Oriel showed that 17.5% of men and 18.2% of women with genital warts had extra genital warts<sup>27</sup>.

In our study, we analyzed married couples. Two women remarried after divorce or husband's death but they said they did not have any sexual contacts with other men. The men in our study included married men. Sexual contact with other partners was not analyzed due to cultural beliefs. Five men had married for the second time. A limiting factor in our study was the patients' culture about the history of sexual contact with partners other than their spouses. Thus, we evaluated only married patients and their spouses.

In conclusion, genital warts are relatively common. Based on the findings of the present and previous studies, education and examination of patients' spouses are highly recommended.

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