

## RESEARCH ARTICLE

# HPV Vaccine Knowledge and Perceived Risk of Cervical Cancer among Female College Students in Taiwan

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## Abstract

**Aims:** The study targeted the HPV vaccine knowledge and perceived risk of cervical cancer among female college students in Taiwan as well as the relationship between knowledge of the HPV vaccine and perceived risk of cervical cancer. **Materials and Method:** The results of this study on female college students are described using descriptive and correlation designs. A convenience sampling approach was employed with a self-filling structured questionnaire. **Results:** A total of 150 students completed the questionnaire. Values were 7.49 for the mean HPV vaccine knowledge scale and 18.0 for their mean perceived risk of cervical cancer scale. HPV vaccine knowledge was positively correlated with perceived risk of cervical cancer. **Conclusions:** The findings of this study can serve as a reference for future HPV prevention in Taiwan.

**Keywords:** HPV vaccine knowledge - perceived risk of cervical cancer

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## Introduction

Cervical cancer is the second most common cancer in women and causes approximately 275,000 deaths per year worldwide (WHO, 2013). An estimated 529,000 new cases of cervical cancer were reported (WHO, 2011). Therefore, cervical cancer substantially affects women worldwide. In Taiwan, according to the report of Taiwan Cancer Registry for 2010, cervical cancer is the seventh most common cancer, accounting for 4.22% of all cancers in Taiwanese women (Taiwan Cancer Registry, 2010). Approximately 79 million Americans are currently infected with the human papillomavirus (HPV) (CDC, 2013). Nearly 14 million people are infected annually (CDC, 2013). HPV is a sexually transmitted infection that causes genital warts and is connected to cases of cervical cancer (CDC, 2013). Studies have reported low awareness regarding the newly released vaccine for HPV and a link between HPV and cervical cancer (Wong, 2009; Wolwa, 2013). Ilter et al. (2010) surveyed 525 women to examine their knowledge about HPV vaccines. The result indicated that most respondents (56%) were unaware of HPV. Dursun et al. (2009) found that 45% of survey respondents were aware of HPV and 55% had no knowledge about HPV; 43% of the women surveyed knew HPV could cause genital lesions. Coleman et al. (2011) determined that 40% of respondents were aware of HPV vaccines and 94% were willing to vaccinate themselves or their daughters. In other words, more than half of those surveyed lacked awareness of HPV and the HPV vaccine. Having numerous sexual partners is a major risk factor for cervical cancer, because

it increases the chances of HPV infection. In women, the prevalence of HPV was found to be lowest among 14–19-year-old females (32.9%) and highest among 20–24-year-old females (53.8 %) (Hariri et al., 2011).

Vaccines that protect young women from certain HPV infections are available. These vaccines prevent 70% of cervical cancers, as well as HPV-16 and HPV-18, the 2 HPV strains that account for most cervical cancer cases. HPV vaccines should be administered before a young person has had any type of sexual contact with another person (Arbyn & Dillner, 2007). Current vaccination guidelines recommend that the HPV vaccine be administered to all girls and boys aged 11–12 years. The vaccine is given as a 3-dose series. Zhang et al. (2013) found that only 36.2% of parents in China approved vaccines for their children. A study determined a low acceptability of HPV vaccinations among parents of adolescents in China. Cover et al. (2012) demonstrated that parents who did not allow their children to be vaccinated were concerned about the involved vaccine's side effects, the possibility that the vaccine was experimental, and the impact of the vaccine on future fertility. To educate parents and improve vaccination rates. Wong (2009) recommended issuing public health messages focusing on HPV infection and its connection to cervical cancer. Coleman et al. (2011) found that most women (75%) believed that people should be vaccinated regardless of how many sex partners they had. Barriers to HPV vaccine acceptance included lack of knowledge among women, low perceived risk of cervical cancer, low social support for vaccination, and low self-efficacy to find a doctor or clinic to get HPV vaccinated

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**Table 1. Demographic Characteristics of Female College Students (n=150)**

Variable	Mean±SD	N(%)
Age	21.2±1.3	
Sex Age	18.8±1.8	
Residence status		
Lived with the family		52(34.7%)
School dormitory		33(22.0%)
Renting		65(43.4%)
Sexual experience		
Have		46(30.7%)
Have not		104(69.3%)
Smoking habits		
Have		5(3.3%)
Have not		145(96.7%)
Taking birth control pills		
Have		5(3.3%)
Have not		145(96.7%)
Relatives were diagnosed with cervical cancer		
Yes		8(5.3%)
No		142(94.7%)
Heard HPV vaccine		
Have		132(88%)
Have not		18(12%)

( $p < 0.05$ ). Watson-Jones et al. (2012) revealed that reasons for actively refusing vaccination included worries about side effects and infertility, but that most respondents subsequently reported that they would accept the HPV vaccine if it were offered again. Perkins & Clark (2012) found that reasons for refusing to be vaccinated included safety concerns, a low perceived severity of HPV, and a lack of school order.

The Taiwanese government should promote public knowledge of the HPV vaccine, and policies that encourage vaccination should be promoted. Planning grants were funded for a vaccination policy to encourage people to receive vaccinations and to increase people's willingness to vaccinate. Therefore, the purposes of this study were as follows: (1) identified the HPV vaccine knowledge and perceived risk of cervical cancer among female college students in Taiwan; and (2) the relationship between knowledge of the HPV vaccine and perceived risk of cervical cancer. The findings of this study can serve as a reference for future HPV prevention.

## Materials and Methods

### Design

The results of this study on female college students are described using descriptive and correlation designs. A convenience sampling approach was employed to recruit participants for this study from a university in Taiwan. A structured questionnaire was used to conduct self-filling.

### Samplings

The study participants were recruited from a university in Taiwan. The inclusion criteria was age less than 25 years. The research proposal was approved by the ethics committee of the Institutional Review Board (IRB). A total of 150 participants were recruited based on the Gorsuch recommendation (Gorsuch, 1983).

### Instruments

Most items of the questionnaire were obtained from relevant literature and accessible questionnaires. We conducted a content validity evaluation with professional experts. We invited five nursing professionals to conduct professional-expert content validity review and add, decrease, or improve the items using a content validity index (CVI) (Lynn, 1986).

Demographic (e.g. age, residence status, socioeconomic status, sexual experience, smoking habits, taking birth control pills, relatives were diagnosed with cervical cancer, and heard HPV vaccine) was collected.

HPV Vaccine knowledge Scale: The HPV Vaccine knowledge instrument aimed to measure a broad range of HPV Vaccine knowledge items. It is a 17 item questionnaire, with each item having true, false and don't know options. The analysis was achieved by scoring 1 for a correct response and 0 for an incorrect or don't know answer. The total score could range from 0 to 17. The Cronbach's alpha of the HPV Vaccine scale is 0.76.

Perceived risk of cervical cancer Scale: There are 6 items that are rated on a scale of 1 to 5 (1= very impossible, 2=impossible, 3= common, 4= possible, 5= very possible) to evaluate the perceived risk of cervical cancer. Total scores range from 5 to 30. The Cronbach's alpha of the Perceived risk of cervical cancer scale is 0.85.

### Analysis

SPSS 21.0 (SPSS, Inc., Chicago, IL, USA) for Windows software analyzed data to decide demographic characteristic percentages, means, standard deviations (SD), and related factors. The Pearson correlation coefficient test analyzed the relationship between HPV vaccine knowledge and perceived risk of cervical cancer.

## Results

### Demographic Characteristics

As shown in Table 1, a total of 150 students participated in this study. The mean age was 21.2 years. The mean sex age was 18.8 years. Most of the students renting a house ( $n=65$ , 43.4%). Moreover, most students have not sexual experience ( $n=104$ , 69.3%), and most had heard HPV vaccine ( $n=132$ , 88%).

### HPV Vaccine knowledge

This HPV Vaccine knowledge scale includes 17 items. Their mean HPV Vaccine knowledge scale was 7.49 (SD=3.71). The top five items (such as: Complete HPV vaccination to prevent HPV, Complete cervical cancer vaccine, sex without a condom, HPV is the main cause of cervical cancer, Cervical cancer is transmitted through sexual intercourse, HPV vaccine not only can reduce the incidence of cervical cancer, can reduce the occurrence of Genital warts) (Table 2).

### Perceived risk of cervical cancer

This Perceived risk of cervical cancer scale includes 6 items. Their mean Perceived risk of cervical cancer scale was 17.96 (SD=5.64). The top five items (such as: I think I may be multiple partners, and easy to get cervical cancer,

**Table 2. HPV Vaccine Knowledge (n=150)**

Variables	Mean	SD
HPV Vaccine knowledge total	7.49	3.71
The HPV vaccination can prevent HPV	0.73	0.44
Complete cervical cancer vaccine, sex without a condom	0.69	0.47
HPV is the main cause of cervical cancer	0.6	0.49
Cervical cancer is transmitted through sexual intercourse	0.55	0.5
The HPV vaccine reduces not only the incidence of cervical cancer but also the occurrence of genital warts	0.51	0.5
The age of first sexual intercourse and the incidence of cervical cancer are unrelated to	0.51	0.5
HPV vaccine effect asexual experience is better than sexual experience	0.47	0.5
HPV is the main cause of Genital warts	0.47	0.5
The incidence of cervical cancer is unrelated to smoking	0.43	0.5
HPV is transmitted only sexually	0.4	0.49
The more sexual experience a woman has, the greater the likelihood of contracting cervical cancer	0.39	0.49

**Table 3. Perceived Risk of Cervical Cancer (n=150)**

Variables	Mean	SD
Perceived risk of cervical cancer total	17.96	5.64
I am at risk of cervical cancer because I have many sex partners	3.39	1.2
I am at risk of cervical cancer because I am too young to be sexually active	3.28	1
I am at risk of cervical cancer because I smoke	3.18	1.03
I am at risk of cervical cancer because I have too much sexual experience	3.18	1
Women develop cervical cancer because they are members of high-risk groups	3.15	0.97
I am at risk of cervical cancer because I take birth control pills	1.78	2

**Table 4. Correlation Between HPV Vaccine Knowledge and Perceived Risk of Cervical Cancer (n=150)**

Variables	HPV vaccine knowledge	Perceived risk of cervical cancer
HPV vaccine knowledge	0.26**	-
Perceived risk of cervical cancer	-	0.26**

\*\* $p < .01$

I think I may be too early age of sexual, I think I may be too early age of sexual, easily get cervical cancer, I think I may be too much sexual experience, easy to get cervical cancer, I think someone get cervical cancer while he may become a high-risk group) (Table 3).

From Table 4, the data indicated that the students generally exhibited positive HPV vaccine knowledge and perceived risk of cervical cancer. Pearson's correlation coefficient was used to analyze the data. The results indicated that HPV vaccine knowledge were positively correlated with perceived risk of cervical cancer ( $r=0.26$ ,  $p < 0.01$ ).

## Discussion

This study showed most college students in Taiwan do not have sexual experience (69.3%), in contrast to college students in other countries. This result is supported by this study (Hsuen et al., 2012). This is a phenomenon in Taiwan, and may be different sexual experiences of college students with other countries. In addition, most students were aware of HPV vaccines (88%). This result is not consistent with those of previous studies (Dursun et al., 2009; Ilter et al., 2010; Coleman et al., 2011). Furthermore, the students' mean HPV vaccine knowledge score was 7.49. In this study, the students exhibited a moderate level of HPV vaccine knowledge, which is supported by

several previous studies (Dursun et al., 2009; Ilter et al., 2010; Coleman et al., 2011; Ports, Reddy, & Rameshbabu, 2013). The mean perceived risk on a cervical cancer scale was 17.96, indicating that the students exhibited a moderate perceived risk of cervical cancer. The results of this study indicated that students lack knowledge regarding cervical cancer, but are generally receptive to information regarding HPV vaccines and the perceived risk of cervical cancer.

Therefore, the results indicated that knowledge of the HPV vaccine was positively correlated with the perceived risk of cervical cancer. These results were consistent with the study (Coleman et al., 2011). Increasing HPV vaccine knowledge is crucial for raising awareness of cervical cancer.

Increasing HPV vaccine knowledge is crucial for raising awareness of cervical cancer. The government should strengthen media advocacy to enable more parents to understand the risk of HPV. Additionally, schools should also strengthen cervical cancer prevention, vaccination, and other concept advocacy. HPV vaccines are approved in more than 100 countries, and numerous countries have implemented the vaccination of adolescent girls. There are numerous cities in Taiwan where the HPV vaccination of adolescent girls can be implemented, which would cause a substantial change in the epidemiology of cervical cancer (Tay, 2012).

This study had limitations. The use of convenience sampling affected the findings of this study. Future research methods can be designed to incorporate additional sampling procedures to broaden study findings.

In conclusion, most students had heard HPV vaccine. The mean HPV Vaccine knowledge scale was 7.49. The mean perceived risk of cervical cancer scale was 17.96. This study showed that students were generally receptive to information regarding HPV vaccine knowledge and

perceived risk of cervical cancer. These results provide insight for HPV researchers, HPV educators, and nurses working in HPV prevention.

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