

Research Article

Perceived Risk of Human Papillomavirus Infection and Cervical Cancer among Adolescent Women in Taiwan

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SUMMARY

Purpose: High-risk types of human papillomavirus (HPV) are a critical etiologic factor behind cervical cancer. Adolescents are a vulnerable group for HPV infection. However, the literature on adolescent women for HPV infection and cervical cancer is limited. This study was to investigate HPV-related knowledge and perceived risk of HPV infection and cervical cancer among Taiwanese adolescent women in order to assess intervention strategies for prevention of cervical cancer and maintenance of reproductive health.

Methods: A descriptive cross-sectional study design was implemented. There were 610 adolescent women from three colleges in Southern Taiwan who participated in this study. Data were collected using an anonymous self-administered questionnaire survey.

Results: The results showed that the percentage of appropriate answers to HPV-related knowledge questions was only 36.8%, and smoking as the leading cause of cervical cancer received the lowest mean score for appropriate answers among the HPV-related knowledge items. The perceived risk of HPV infection and cervical cancer were moderate, with relatively lower susceptibility to infection with HPV than to cervical cancer ($p < .001$). Only 11.5% of the participants reported that they had received information about HPV vaccination from healthcare professionals.

Conclusions: Participants lacked a comprehensive understanding of cervical cancer prevention and were not aware of their susceptibility to HPV infection. Adolescent women rarely obtained HPV-related information from healthcare professionals. Appropriate education strategies should be developed and conducted by healthcare professionals to reduce the risk of cervical cancer threat from adolescence.

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Introduction

Cervical cancer is almost always caused by infection with the human papillomavirus (HPV). HPV is the most prevalent sexually transmitted disease with transmission occurring via skin-to-skin contact and spread among both sexes [1]. HPV infection usually occurs around the time when sexual activity is initiated [2], with 80.0% of women under the age of 50 and with sexual experience with a partner who had been infected with HPV [3]. Although HPV is a very common virus, most infections are suppressed by the immune system within 1–2 years, and do not cause cancer.

However, these transient infections may cause temporary changes in the cervical cells of women. Persistent infections with high-risk HPV types can lead to more serious cytological abnormalities or lesions that if left untreated, may progress to cancer [4]. It can take 10–20 years or longer for persistent infection with a high-risk HPV type to develop into cervical cancer [5].

HPV infection is considered a sexually transmitted infection. The Taiwanese Health Promotion Administration has proposed the ABC principles to prevent the transmission of sexually transmitted infections. These three principles are “Abstinence”, “Be-faithful to your sexual partner (monogamy)”, and “Condom use for the entirety of intercourse” [6]. Abstinence or mutual monogamy can also prevent HPV infection; however, these are not realistic options for many women [7]. Leavell and Clark [8] have proposed classifying disease prevention strategies at primary, secondary, and tertiary prevention levels. About the HPV-related cervical cancer, both

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isolated pathogens (condom usage) and protective inoculation (HPV vaccination) are considered special protection at the primary prevention level, and screening tests [Papanicolaou (Pap) tests] to detect health problems early and initiate treatment quickly are at the secondary prevention level. According to Leavell and Clark's theory [8], condom usage, HPV vaccination, and Pap tests are important prevention strategies for HPV threat.

Prophylactic vaccination of both male and female pre-adolescents and adolescents is recognized as a cost-effective means of preventing infection in those who have not been previously exposed to specific HPV [9]. Two vaccines have been shown to be highly effective in preventing infections with HPV types 16 and 18, which are the high-risk HPV types and are known to cause approximately 70.0% of all cervical cancer cases. One of the vaccines also prevents infection with HPV types 6 and 11, which are the low-risk HPV types and cause approximately 90.0% of genital wart cases [10]. While condoms cannot completely protect against HPV infection, research has shown that correct and consistent use of condoms can reduce the transmission of HPV between sexual partners by 70.0% [11]. Condoms have also been shown to lower the rates of HPV transmission from males to their female sexual partners [12], and can accelerate the regression of cervical intra-epithelial neoplasia and clearance of HPV infections [13]. Cervical cancer is usually a slow-growing cancer that does not exhibit symptoms but can be detected by regular Pap tests. Pap tests are used to detect abnormal cervical cells, including precancerous cervical lesions, as well as early cervical cancers. Both precancerous cervical lesions and early cervical cancers can be treated with great success [5,14].

The Health Belief Model states that people intend to prevent diseases when they perceive them as a threat to their health [15]. A perceived threat includes their perceived susceptibility to contracting a disease and severity of the disease. Previous studies have shown that perceived susceptibility is a significant moderator of disease screening [16]. With respect to HPV prevention, research has shown that both the perceived severity [17] and perceived susceptibility of HPV infection [18] had a positive effect on intention to obtain an HPV vaccination. Another study showed that lower uptake of HPV preventive behavior was attributed to an awareness of perceived disease severity in combination with not being aware of perceived susceptibility to HPV infection [19]. Perceived risk may be an important influence on health-related behaviors. However, little is known about the perceived risk of HPV infection and cervical cancer among adolescent women.

Purpose of study

The aim of the current study was to investigate HPV-related knowledge and perceived risk of HPV infection and cervical cancer among Taiwanese adolescent women in order to assess intervention strategies for prevention from cervical cancer and maintenance of reproductive health.

Methods

Design and samples

This study employed a descriptive, cross-sectional design. Participants were recruited from the first year student populations enrolled at three 5-year junior nursing colleges in Southern Taiwan. Convenience sampling was used to select the students who had not yet taken any courses in nursing or medicine that could have affected HPV-related knowledge scores. Eligibility criteria included the following: students who (a) were adolescent women aged 15–16 years in the first year of a 5-year junior nursing college, (b)

had not participated in any medicine or nursing courses, (c) were unmarried, and (d) willing to participate in the study. Prior to data collection, meetings with administrators at the participating schools were arranged to present the study. Agreement from homeroom teachers was also obtained in order for the principal investigator to explain the study to students in first-year classes. Questionnaires were administered to participants in their classrooms and were completed at the time of distribution. The total numbers of students who attended classes on the designated days and times of recruitment was 872. Among these 872 students, 69 were men who were excluded, and 138 of the remaining 803 were adolescent women who did not return the consent form. Thus, 665 who met inclusion criteria participated in this study. Only those students who met eligibility criteria were permitted to remain in classrooms to complete the questionnaires. Among the 665 eligible participants, a total of 610 (92.0%) completed the questionnaires. Using G*power analysis [20], the calculated necessary sample size was 327 for *t* tests, means, difference from constant (one sample case) to detect a small effect size of .15, with two-sided α at .05, and a power of 95.0%. Therefore, the sample size of this study was enough to attain adequate statistical power. Data collection, review, coding and analysis were completed between October 2012 and January 2014.

Measurements

Data of this study was collected using the self-administered questionnaires, including the general characteristics questionnaire, the HPV-related knowledge questionnaire, and the HPV-related perceived risk scale. Content validity was verified by three experts in nursing, public health, and gynecology. The content validity index for the HPV-related knowledge questionnaire and the HPV-related perceived risk scale were .95 and .97 respectively. The questionnaire was pretested on five adolescent women for clarity and ease of reading to evaluate face validity. Forty participants were invited to examine the test-retest reliability of the questionnaire after a 2-week interval. Kuder-Richardson Formula (KR-20) of the HPV-related knowledge questionnaire was .82. The intraclass correlation coefficient for the HPV-related perceived risk scale was .87, and Cronbach α of internal consistency was .79.

General characteristics questionnaire

The general characteristics questionnaire was based on a review of the literature and included questions about ever having heard of HPV, ever being vaccinated for HPV, the participant's sexual experience, whether they discussed sexual issues with adult family members, history of obstetrics and gynecology visits, relatives who suffered from cervical cancer, and HPV information sources.

HPV-related knowledge questionnaire

The HPV-related knowledge questionnaire was developed by a review of the literature [21–24]. The questionnaire included 15 items to assess awareness of HPV-related knowledge. Participants mark the term "T" (True) or "F" (False) to indicate that an answer was the appropriate response for this question. The responses were coded so that each appropriate answer received a score of 1. The knowledge score was the accumulation of total appropriate answers. Possible scores ranged from 0 to 15, with higher scores indicating higher levels of HPV-related knowledge. KR-20 of the HPV-related knowledge questionnaire was .85.

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