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Health beliefs of Taiwanese women seeking HPV vaccination

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ABSTRACT

In Taiwan, human papillomavirus (HPV) vaccine is recommended for women aged 9–26 years. The purpose of this study was to examine health beliefs and reasons for HPV vaccination among young adult women (aged 18–26 years), and adult women (aged over 26 years). Women who initiated HPV vaccination were recruited from three hospitals in southern Taiwan. One hundred and eighty-nine subjects completed a questionnaire on health beliefs and reasons for HPV vaccinations. 38% ($n = 72$) of the women who initiated vaccination were over the age of 26. Health beliefs regarding HPV vaccination differ between young adult women and adult women. Recommendations from others (family, health care providers, etc.) are among the main reasons for young adult women to initiate HPV vaccination; while self-awareness of the risk for HPV infection and personal gynecologic diseases are main reasons for adult women to initiate HPV vaccination. Furthermore, women aged 18–26 are more likely than women aged over 26 to consider the cost and availability of vaccination. Media also plays an important role in a woman's decision to seek HPV vaccination.

1. Introduction

Infection with the human papillomavirus (HPV) results in an array of pathologic changes in the genital tract, including genital warts, cervical dysplasia and invasive cancer [1,2]. Cervical cancer is the second cause of female cancer mortality in Asia as well as worldwide [3]. While comprehensive screening by Papanicolaou testing has decreased the mortality of cervical cancer among Taiwanese women over the last 20 years, cervical cancer is still the sixth leading cancer in women. In 2006, there were 1828 new cases of cervical cancer in Taiwan, and the national incidence of cervical cancer was 13.18 per 100,000 women [4].

The HPV vaccine has proven efficacious for prevention of HPV infection and cervical cancer [5,6]. Two HPV vaccines, licensed since 2006, are available in many countries, including Taiwan. Gardasil®, a quadrivalent vaccine, prevents against four types of HPV infection related to cervical cancer and genital warts. Cervarix™, a bivalent vaccine, prevents two types of HPV infection related to cervical cancer. In Taiwan, the recommended age for vaccination is 9–26 years old for Gardasil® and 10–25 years old for Cervarix™.

Numerous studies have been performed investigating health beliefs and public acceptability of HPV vaccination. The acceptability of the HPV vaccine has ranged from 50% to 90%, with variations noted for age, race, sexual activity and geography [7–10]. A recent study conducted in Taiwan found that the acceptability of HPV vaccination is 63% among undergraduate women [11]. However, little is known about women's reasons to initiate HPV vaccination.

The health belief model (HBM) proposes that individuals take health-related actions, such as HPV vaccination, to prevent diseases when they perceive a threat to their health [12,13]. Health-related actions depend on disease susceptibility and disease severity; perceived benefits or the efficacy of action, barriers such as costs, adverse effects, and convenience, and cues to actions such as recommendations from significant others or media. These four factors, according to the HBM, play an important role in urging individuals to take preventive strategies against disease. Previous studies investigating health beliefs about HPV vaccination have demonstrated that perceived susceptibility [8,9,11], perceived disease severity [11,14], perceived efficacy [9,15], perceived adverse effects [9,15], cost and recommendations from others [9,11,16,17] are significant influences to vaccination intention.

Although women aged 9–26 years are the recommended population to obtain HPV vaccination, women aged over 26 years can somewhat benefit from HPV vaccination [18]. Vaccinating to pre-adolescents and adolescents is recognized as cost-effective, however, adult women report a desire to obtain a catch-up HPV vaccination [19]. In a U.S. national survey study, 10% of women aged 18–26 years and 1% of women aged 27–49 years had initiated HPV vaccination [10]. Women over the age of 26 year represent off-label vaccination. Of the 18–26-year-old respondents with HPV vaccina-

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tion, unmarried, living at a lower poverty index, having medical insurance, and having received hepatitis B vaccination were associated with the initiation of HPV vaccination. However, the study did not examine demographic characteristics of the women aged over 26 years and health beliefs of the women who initiated HPV vaccination.

To date, few studies have explicitly assessed the health beliefs regarding HPV and HPV vaccination in women who initiated HPV vaccination, particularly whether there is a difference in health beliefs between the women aged below 26 years and the women aged over 26 years. The purpose of this study was to examine the health beliefs and reasons why these two age groups of Taiwanese women sought and received the HPV vaccine. Young adult women for whom the vaccine is recommended (18–26 years old) were compared to adult women (over 26 years old), who were administered the vaccine off-label.

2. Methods

A descriptive, cross-sectional research design was conducted after approval by the Institutional Review Boards of the three participating Taiwanese medical centers.

2.1. Subjects

A convenience sample of women who had initiated HPV vaccination was recruited from gynecology outpatient departments at three southern Taiwan medical centers. Subjects were at least 18 years of age and received the HPV vaccine during their clinic visit. Of the 203 eligible potential subjects approached, 14 refused to participate with 189 providing data for analysis.

2.2. Measurements

The HPV Belief questionnaire (HPVB), a 47-item self-administrated questionnaire, was developed by researchers in Mandarin based on the health belief model [12,13]. The questionnaire includes the subscales of health beliefs towards HPV vaccination, reasons for vaccination, demographic information, and gynecologic history. Three experts in HPV and health behaviors, two gynecologic physicians, and one nursing faculty reviewed the questionnaire for content accuracy and appropriateness. A pilot testing was conducted in nine women (six undergraduate students and three female employees) to ensure the clarity and readability of questionnaire.

Health beliefs towards HPV vaccination. The subscale of health beliefs towards HPV vaccination measures six dimensions of health beliefs about HPV vaccination: perceived susceptibility of cervical cancer and HPV infection (2 items), perceived disease severity (3 items), perceived efficacy of vaccine (3 items), perceived sexually transmitted attributes of HPV (1 item), perceived recommendations from others (3 items), and perceived barriers including cost, availability, and adverse effects of vaccine (4 items). Each item is rated on a 5-point Likert scale from 1 (*strongly disagree*), to 5 (*strongly agree*). The HPV belief questionnaire had been tested on 974 Taiwanese undergraduate women by Hsu et al. [11], who reported acceptable validity and reliability. Cronbach's alpha coefficients in the current study for the 6 dimensions ranged from $\alpha = 0.78$ for perceived susceptibility to $\alpha = 0.51$ for perceived barriers.

Reasons for vaccination. This was assessed by a single item. The item was a forced multiple-choice question: "what is (are) your reason(s) for receiving HPV vaccination?". Women were asked to select their reasons for seeking HPV vaccination. There were eight choices in the item including: family history of gynecologic cancer, individual history of gynecologic disease, self-awareness of high risk of HPV infection, recommendations from health care providers, recommendations from friends, recommendations from family, advertisement, and others.

Subjects were also asked for demographic and heath information including: age, education, marital status, occupation, religion, sexual history, family history of gynecologic cancer, and history of gynecologic diseases.

2.3. Procedure

Women between the age of 18 and 26 who sought the HPV vaccine were notified of the study by the nurses providing the vaccine. Women over the age of 26 who sought the HPV vaccine were counseled by a physician about the efficacy for off-label receipt and then informed of the study. A research assistant recruited subjects and explained the research purpose to them. After informed consent was obtained from the subjects, a paper–pencil questionnaire and a return envelope were given to the subjects. The subjects then filled in the questionnaire in a private area within the outpatient clinics. Questionnaires were returned to the research assistant using the sealed envelope. The questionnaire took approximately 15–20 min to complete. Data was collected from October 2007 to May 2009.

2.4. Statistical analysis

The data were analyzed using SPSS Version 15. χ^2-Tests were used to examine the association between age groups and reasons for seeking the HPV vaccine. Independent *t*-tests were performed to examine age group differences in health beliefs towards the HPV vaccine.

3. Results

The mean age of the 189 women receiving HPV vaccine was 27.3 years (SD = 5.9; range 18.4–47.3). The sample consisted of 117 (62%) women between 18 and 26 years (young adult women) and 72 women (38%) between 27 and 47 years (adult women). All of the subjects received the quadrivalent vaccine. Sample demographic and health characteristics are provided in Table 1.

Subjects 18–26 years old were single, with most having college education. Nearly one quarter ($n = 27$, 23%) had a family history of gynecologic cancer and 46% ($n = 52$) reported previous gynecologic clinic visits for gynecologic problems. Thirty-seven percent ($n = 43$) reported sexual experience with a mean age at first sexual experience of 17.1 years.

Over half of the subjects ($n = 39$) 27–47 years old were married and 64% ($n = 46$) reported college education. Similar to the 18–26-year-old age group, one quarter of 27–47-year-old subjects ($n = 18$) had family history of gynecologic cancer, though more ($n = 46$, 64%) reported previous gynecologic visits for gynecologic diseases. Most of the adult women ($n = 56$, 78%) reported sexual experiences with a mean age at first sexual experience of 21 years.

3.1. Health beliefs

The health beliefs towards HPV vaccinations were compared between the young adult women aged 18–26 years and adult women aged over 26 years (Table 2). Analysis showed that young adult women differed from adult women in their health beliefs, specifically with respect to cost, availability, and attribution of HPV. The young adult women were more likely than the adult women to report that cost and availability were barriers to HPV vaccination ($t = 2.07$, $p = 0.04$). The young adult women were less likely than the adult women to consider that sexually transmitted attributes of HPV influenced their decision to seek the HPV vaccination ($t = -2.26$, $p = 0.03$).