

# The Impact of Perceived Barriers on Self-Efficacy for HPV Preventive Behavior

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## Abstract

**Background:** Cervical cancer is one of the most common cancers found among women. Many studies have focused on factors associated with human papilloma virus (HPV) preventive behavior and early detection using models such as the health belief model (HBM). Despite a growing body of knowledge regarding HPV preventive behavior, few studies have examined how self-efficacy affects this behavior in foreign women living in South Korea. This study identified factors affecting the self-efficacy of foreign women living in South Korea and the impact on HPV preventive behavior. **Methods:** A total of 171 participants consisting of international school parents who voluntarily participated in HPV preventive behavior were selected. A multivariate regression analysis included key variables such as demographics, cervical cancer knowledge, perceived susceptibility, and perceived barriers. **Results:** Self-efficacy for HPV preventive behavior was significantly associated with perceived barriers. That is, women with lower perceived barriers were likely to have higher self-efficacy scores. However, demographics, cervical cancer knowledge, and perceived susceptibility did not show any association with self-efficacy. The final model was significant and accounted for 14.4% of the variance in self-efficacy. **Conclusion:** This study showed the importance of considering perceived barriers of HPV preventive behavior related to self-efficacy. However, different from HBM, modifying factors, such as knowledge, perceived susceptibility, and individual demographics were not related to self-efficacy. Based on these findings, future research should investigate self-efficacy and HPV preventive behavior among individuals who do not participate in HPV preventive behavior.

**Keywords:** Cervical cancer- self-efficacy- barrier- susceptibility- immigrant

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## Introduction

Cervical cancer is one of the most common forms of cancer in the world (World Health Organization; WHO, 2014). It is the 7<sup>th</sup> most common cancer among Korean women, and accounts for 1.6% of the total cancer incidence in Korea (National Cancer Information Center, 2014). Human papilloma virus (HPV) is the most common cause of cervical cancer. Cervical cancer can easily be treated through early detection of HPV and early diagnosis of abnormal cells in the cervix (Jeong and Choi, 2013; National Cancer Information Center, 2013; Park and Park, 2012a; WHO, 2014). Therefore, early HPV preventive behavior is important to prevent cervical cancer.

Considering the importance of HPV preventive behavior, many previous studies have addressed factors that influence this behavior, and ways to improve early detection through regular screening based on the health belief model (Park et al., 2009; Park and Park, 2012b; Jeong and Choi, 2013; Choi and Lee, 2015; Moore de Peralta et al., 2015; Majdfar et al., 2016). Factors influencing HPV preventive behavior include general characteristics (e.g., age, education, marital status, economic status, religion),

individual beliefs (e.g., perceived barriers, perceived susceptibility, self-efficacy), knowledge, and cultural background (Moore de Peralta et al., 2015; Nguyen et al., 2012; Park and Park, 2012a; Park et al., 2009; Tae, 2016). In particular, people with high self-efficacy were found to have high HPV preventive behavior (Fernandez et al., 2009; Moore de Peralta et al., 2015). Self-efficacy is conceptually defined as a belief regarding one's ability to behave in a manner required to achieve a specific outcome (Bandura, 1997). Nevertheless, only a few studies have examined factors associated with self-efficacy for HPV preventive behaviors in Korea.

The number of foreign people residing in Korea has steadily increased from 1.12 million in 2012, to 1.219 million in 2013, 1.377 million in 2014, and 1.467 million in 2015 (Statistics Korea, 2016). This increase has caused people of various cultural backgrounds to live together in Korea. HPV preventive behavior is influenced by factors such as, but not limited to, personal beliefs, cultural background, and medical insurance (Nguyen et al., 2012; Gang et al., 2013; Moore de Peralta et al., 2015). In response to rapid expansion of a multicultural society, researchers based in Korea have conducted

various studies on foreigners residing in Korea in relation to HPV preventive behavior (Koh and Koh, 2009; Kim and Choi, 2010; Jeong and Choi, 2013; Choi and Lee, 2015). However, most research studies regarding HPV preventive behavior were conducted on married immigrant women from nearby Asian countries such as Vietnam, the Philippines, and China (Koh and Koh, 2009; Kim and Choi, 2010; Jeong and Choi, 2013; Choi and Lee, 2015). Unfortunately, these studies do not account for nearly 78,300 (Statistics Korea, 2016) women from Western countries living in Korea.

Based on Korean Law, international school admission is permitted for “Korean nationals who returned after residing for a specified period in a foreign country... and the children of foreigners” (Elementary and Secondary Education Act in Korea, 2012). Foreign national and Korean national mothers of international school children come from various countries, representing many different cultures, ethnicities, and races. As members of international parents’ social groups, most have had to adapt to the Korean medical system, including the medical culture environment. Thus, the cultural membership of international school parents and their experience uniquely represent the larger pool of Western women living in Korea.

The purpose of this study was to identify factors leading to HPV preventive behavior of women from Western countries in Korea. Hence, this study focused on the self-efficacy of parents of international school children in Korea who were voluntarily performing HPV preventive behavior, to identify predictive factors related to self-efficacy of HPV preventive behavior.

## Materials and Methods

### *Design and sample*

A descriptive cross-sectional design was employed. Participants were international school parents with English and Korean proficiency. All study participants were parents who voluntarily participated in HPV preventive behavior. Of 214 surveyed participants, data from 171 were used (79.9%); 43 had incomplete data and were excluded from the study. The sample size was calculated using the G\* Power program. Using the post-hoc method, when  $R^2$  value was 0.18, the effect size was 0.22. The required sample size was 87 by the G\* Power program with a calculated effect size of 0.22, at an alpha level of 0.05 and 11 predictors. Therefore, the sample size of 171 satisfied the requirement of 87 by the power analysis.

### *Procedure*

The Institutional Review Board (IRB No 2-1046881-A-N-01-20146-HR-028-01-03) of Chungnam National University approved the research procedures. After obtaining IRB approval, a letter (e-mail) was sent to principals of four international schools describing the purpose of the study and requesting their permission to recruit participants from their respective schools. After obtaining schools’ permission, data were collected using online (internet-based) and paper methods. Informed consent forms and the survey were offered in both English

and Korean language. Prior to the on-line survey, parents were contacted via e-mail to confirm their willingness to participate in the survey. Out of 171 data forms, 104 were collected via the online method and 67 were collected via the paper method. Self-reported questionnaires such as those on cervical cancer knowledge and perceived susceptibility were used based on tools that were proven reliable in previous studies (Park, 1999). The scale for self-efficacy for pap smear screening participation, HPV knowledge, and perceived barriers about cancer screening were first translated from Korean into English and from English back to Korean. Then, a bilingual expert, who was fluent in English and Korean, again confirmed the accuracy of the translated questionnaire. Finally, a nursing faculty member proficient in English and Korean language verified the content validity of the translated questionnaire and confirmed the final questionnaire.

### *Variables*

**Demographics:** Demographic questions were asked, including age, presence of spouse, mother tongue, education level, having a religion, level of perceived economic comfort, and number of children.

**Self-efficacy:** Self-efficacy for HPV preventive behavior was measured using the Self-Efficacy Scale for Pap Smear Screening Participation (Hogenmiller et al., 2007). Twelve out of 18 original items were used. Six items were excluded in the study: 3 items related to housing for sheltered women, 2 items related to the medical insurance system, and 1 item related to drugs. A 5-point Likert scale was used with choices ranging from “definitely” to “definitely not.” Higher self-efficacy indicated greater self-efficacy for HPV preventive behavior. The stem question was “How likely are you to get a pap smear?” followed by 12 questions that described various challenging circumstance related to engaging in HPV preventive behavior, such as “If you were without a regular health care provider?” and “If you were too busy during clinic hours?” The reliability of the original questionnaire was indicated by a Cronbach’s alpha score of 0.95. In this study, the reliability was 0.94.

**Cervical cancer knowledge:** Cervical cancer knowledge was measured using Park’s scale (1999). Cervical cancer consists of 7 items measured dichotomously. It categorized a correct answer as 1 point and a wrong or don’t know answer as 0. Higher scores indicate higher knowledge about cervical cancer. The reliability rate of Park’s scale (1999) showed Cronbach’s alpha score of 0.64. In this study, the reliability was 0.53.

**HPV knowledge:** HPV knowledge was measured using Pitts et al.’s (2009) scale. Correct answers were coded as 1 point, and wrong or don’t know answers as 0. Higher scores indicated more knowledge about HPV. The reliability of Pitts et al.’s scale showed a Cronbach’s alpha score of 0.70. In this sample, the reliability was 0.79.

**Perceived susceptibility:** Perceived susceptibility was measured using the Perceived Susceptibility Scale (Park, 1999). It consists of 5 items rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate more perceived susceptibility. In this study, Cronbach’s alpha was 0.88.

Perceived barriers: Perceived barriers about cancer screening were assessed using Tang et al.'s (2000) scale. It consists of 17 items rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Examples of barriers included modesty, crisis orientation, utilization of Eastern medicine, and lack of family support. Higher scores indicate greater perceived barriers to practicing HPV preventive behavior. In the present study, the Cronbach alpha coefficient for the scale was 0.61.

#### Data analysis

Demographics of participants were computed using descriptive statistics in terms of frequencies, percentages, means, and standard deviations. T-test and analysis of variance (ANOVA) were performed to compare self-efficacy for HPV preventive behavior by demographics. A hierarchical regression analysis was used to estimate the factors that affected self-efficacy for HPV preventive behavior. An alpha level for significance was set at 0.05.

## Results

#### Demographics and knowledge, individual beliefs and self-efficacy

Distribution of demographics and mean scores of main variables are presented in Table 1. A total of 171 women who voluntarily performed HPV preventive

Table 1. Demographics, Knowledge, Individual Belief and Self-Efficacy of Participants (N=171)

Variable	Categories	n	% or M±SD
Age (yrs)	≤ 39	51	29.8
	40-49	92	53.8
	≥ 50	28	16.4
Living with spouse	Yes	166	97.1
	No	5	2.9
Language used at home	Korean	104	60.8
	English	67	39.2
Education level	≤ Undergraduate	83	48.5
	≥ Graduate	88	51.5
Religious	Yes	145	84.8
	No	26	15.2
Perceived economic comfortability	Not bad	55	32.2
	Satisfied	78	45.6
Number of child (ren)	Very satisfied	38	22.2
	1	39	22.8
Cervical cancer knowledge	2	99	57.9
	≥ 3	33	19.3
	range:0-7	4.98±1.17	
HPV Knowledge	range:0-12	6.43±2.65	
Perceived susceptibility	range: 1-5	2.65±0.80	
Perceived barrier	range: 1-5	2.40±0.38	
Modesty	1-5	2.27±0.69	
Crisis Orientation	1-5	2.22±0.61	
Utilization of Eastern medicine	1-5	2.51±0.55	
Lack of Family Support	1-5	2.68±0.67	
Self-efficacy	range: 1-5	4.27±0.66	

behavior participated in this study. The mean age of participants was 43.1 years (SD = 6.9). A majority (97%) of respondents lived with their spouses and 57.9% lived with two children. About 60.8% of the participants felt more comfortable using Korean language at home while the rest (39.2%) felt more comfortable using English. The mean score of self-perceived economic comfort was 2.10 (SD=0.73) with scores ranging from 1 to 3. The mean score of perceived barriers was 2.40 (SD=0.38) with scores ranging from 1 to 5. Perceived barriers' sub-categories and their scores were modesty 2.27 (SD=0.69), crisis orientation 2.22 (SD=0.61), utilization of Eastern medicine 2.51 (SD=0.55), and lack of family support 2.68 (SD=0.67).

#### Comparisons of self-efficacy for HPV preventive behavior according to demographics

Table 2 shows the mean score of self-efficacy for HPV prevention behavior by demographics. Mean scores of self-efficacy for HPV prevention behavior were not statistically different according to age (F=1.01, p=.365), presence of spouse (t=1.27, p=.205), types of language used at home (t=-.067, p=.946), educational level (F=-.60, p=.546), having religion (t=-1.47, p=.141), level of perceived economic comfort (F=1.46, p=.234), and number of children (F=.22, p=.801).

#### Factors affecting self-efficacy for HPV preventive behavior

To estimate factors that affected self-efficacy for HPV preventive behavior, a hierarchical regression analysis was performed. As shown in Table 3, demographic characteristics (i.e., age, existence of spouse, education level, religious belief, perceived economic comfort, language used at home, number of children) were entered as variables in model 1. Results from model 1 showed that demographic characteristics had no effect on self-efficacy

Table 2. Comparisons Self-Efficacy on HPV Prevention Behavior According to Demographics

Variable	Categories	Self-efficacy		
		M±SD	t or F	p
Age (yrs)	≤ 39	50.43±7.67	1.01	0.365
	40-49	51.27±8.48		
	≥ 50	53.11±6.83		
Living with spouse	Yes	51.19±8.04	1.27	0.205
	No	55.80±5.21		
Language used at home	Korean	51.29±8.01	-0.067	0.946
	English	51.37±8.04		
Education level	≤ Undergraduate	50.94±7.11	-0.6	0.546
	≥ Graduate	51.68±8.78		
Religious	Yes	49.19±8.13	-1.47	0.141
	No	51.70±7.94		
Perceived economic comfortability	Not bad	49.87±8.06	1.46	0.234
	Satisfied	52.27±7.97		
	Very satisfied	51.47±7.85		
Number of child (ren)	1	51.23±10.13	0.22	0.801
	2	51.08± 7.49		
	≥ 3	52.15± 6.17		

Table 3. The Factors Affecting Self-Efficacy on HPV Preventive Behavior

Model	variable	B	beta	SE	t	p	F/p	R <sup>2</sup>
1	(Constant)	45.4		5.93	7.65	<0.001	1.152 (0.334)	0.006
	Age	1.19	0.1	0.97	1.22	0.222		
	Living with spouse (yes=1, no=2)	-4.42	-0.09	3.74	-1.18	0.24		
	Education level	0.04	0	1.3	0.03	0.973		
	Religious (yes=1, no=2)	2.82	0.12	1.78	1.58	0.115		
	Perceived economic comfortability	1.25	0.11	0.93	1.35	0.178		
	Language used at home (1=English, 0=Korean)	-0.43	-0.02	1.42	-0.3	0.76		
	Number of child (ren)	0.41	0.03	1	0.41	0.679		
2	(Constant)	58.74		8.48		<0.001	3.567 (<0.001)	0.144
	Age	0.83	0.07	0.91	0.9	0.365		
	Living with spouse (yes=1, no=2)	-1.11	-0.02	3.54	-0.31	0.754		
	Education level	-1.15	-0.07	1.23	-0.94	0.349		
	Religious (yes=1, no=2)	2.13	0.09	0.166	1.27	0.203		
	Perceived economic comfortability	1.38	0.1	0.87	1.3	0.195		
	Language used at home (1=English, 0=Korean)	-0.16	-0.01	1.46	-0.11	0.909		
	Number of children	0.23	0.01	0.93	0.25	0.802		
	Cervical cancer knowledge	0.44	0.06	0.54	0.81	0.415		
	HPV Knowledge	-0.05	-0.02	0.25	-0.23	0.816		
	Perceived susceptibility	0.31	0.15	0.16	1.86	0.063		
	Perceived barrier	-0.46	-0.38	0.09	-4.78	<0.001		

for HPV preventive behavior. Model 1 explained 1% of the variance. In model 2, cervical cancer knowledge, HPV knowledge, and individual beliefs such as perceived susceptibility and perceived barriers were then entered. The results showed that self-efficacy for HPV preventive behavior was significantly affected by perceived barriers ( $\beta = -0.38$ ,  $p < .001$ ), indicating a negative association. Model 2 was significant ( $F = 3.567$ ,  $p < .001$ ), and accounted for 14.4% of self-efficacy for HPV preventive behavior.

## Discussion

The study results showed that perceived barriers were the only factors that significantly influenced the self-efficacy for HPV preventive behavior in international school parents. This was consistent with the findings of Egbert and Parrott (2001) in a study of rural women, which showed that perceived barriers were significant contributors to the self-efficacy of preventive behaviors in detecting cancer. Both studies show that when perceived barriers' scores were low, self-efficacy for HPV preventive behavior was high, indicating a negative correlation between these two factors.

The study also showed that among perceived barriers' sub-categories, the lack of family support score was the highest, which indicates support from family and friends had a significant impact on perceived barriers. This suggests that support from family members and friends plays a moderating or mediating role between perceived barriers and self-efficacy for HPV preventive behavior. Given that family and friends' support is an important predictor of self-efficacy (Egbert and Parrott, 2001), further study in this area is highly recommended.

In addition to support from family and friends,

previous studies showed a relationship between patients' health insurance status and their self-efficacy of cervical cancer screening (Nguyen and Clark, 2014). Although the study did not consider type of health insurance as a variable, a closer look at the relationship between medical expense payment method and type of health insurance a person carries can be very useful in understanding how perceived barriers influence foreigners' participation in the Korean health care system. Foreigners residing in Korea possess various types of private health insurance, including the Korean National Health Insurance program. In general, most foreign health insurance coverage includes HPV testing costs. However, the payment method can be different for each insurance company. If a foreign patient is not covered under the Korean National Health Insurance, most Korean hospitals and clinics require the medical costs to be paid in full at the hospital. After paying for the medical costs up front, patients can claim reimbursement from their respective insurance companies. However, being required to pay a large sum up front may be perceived as a significant barrier. Therefore, it is strongly recommended that a future study be conducted to assess the relationship between type of health insurance program and perceived barriers of foreign patients in South Korea.

In contrast with perceived barriers, perceived susceptibility in this study did not appear to have a significant impact on self-efficacy for HPV preventive behavior. This was similar to the results of a study by Lambert et al., (2015) on HIV-infected women, which showed no significant correlation between perceived susceptibility and self-efficacy for cervical cancer. Parents of international schools migrate to South Korea for various reasons. Traveling and migrating to foreign countries with

potentially harsh conditions requires good health. If the destination's medical support quality is inadequate, or if the family is not healthy enough to travel, they often decide not to migrate. Hence, perceived risk of illness tends to be low among foreigners.

The self-efficacy scores for HPV preventive behavior of this study group were higher than those among married immigrant women living in South Korea, immigrant women living in the United States, and domestic married women in South Korea (Kim and Choi, 2007; Nguyen and Clark, 2014; Choi and Lee, 2015). The apparent high self-efficacy scores of this study group can be attributed to their overall higher education and economic sufficiency level (Fernandez et al., 2009; Nguyen and Clark, 2014).

The results of this study showed findings inconsistent with other prominent studies on similar topics. Contrary to Nguyen and Clark (2014), the degree of self-efficacy of the general characteristics of the subjects revealed no difference in self-efficacy scores for cervical cancer in respect to the level of education. The cause for this difference can be inferred as resulting because the education level of the study group participants was well above high school level and each members' values did not stray far from the group's mean score. In addition, in contrast to the findings from Fernandez et al., (2009), which pointed to differences in self-efficacy based on economic levels, this study showed no such differences. This was probably because most of the study group members possessed a high level of perceived economic comfort and the costs of cervical cancer screening were virtually zero since it was covered by insurance. Ultimately, the cost factor was irrelevant as a barrier within the group.

There were a couple of limitations that restrict this study. First, the study samples were collected based on the convenience method, so it is not representative of all international school parents in South Korea. Second, the study sample was limited to parents who voluntarily participated in HPV preventive behavior because the study's focus was to isolate behavior-inducing factors. Nonparticipants were not surveyed, which limits the study's prediction of behavior of the non-sampled population. Despite these limitations, this was the first study in South Korea to investigate the influence of self-efficacy on HPV preventive behavior among parents of international school children. The results provide useful data for developing an intervention program targeting parents' self-efficacy on HPV preventive behavior at international schools. Furthermore, it lays the groundwork for practical information that can aid Korean nurses and nursing students as they continue to support an increasingly multicultural patient population in South Korea.

#### Statement of Conflict of Interest

The authors have no conflicts of interest.

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