Factors affecting HPV vaccination to the children of married immigrant women

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Factors affecting HPV vaccination to the children of married immigrant women

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I am standing at the starting line again, I wish next journey will take me a little further down the road.

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ABSTRACT

Factors affecting HPV vaccination to the children of married immigrant women

Human Papillomavirus (HPV) is a common virus transmitted through sexual contact which causes a variety of diseases including cervical cancer and genital warts. HPV vaccines developed for preventing those diseases were first adopted in 2007 in Korea and have since seen continuous use. While a free HPV vaccination program for girls aged 12 years and above has been administered in Korea, the HPV vaccination levels among children of multicultural families has not yet been identified. Thus, this study aims to confirm the HPV vaccination level of children of married immigrant women and identify key determinants influencing their HPV vaccination.

Based on the health belief model, the conceptual framework of this study was proposed to reflect recent studies on HPV vaccination. The dependent variable in this study was the level of the children's HPV vaccination, operationalized as an array of five different groups (named refusing, intending, ceasing, maintaining, and completing).

The sample used in this study included 262 Chinese, Vietnamese, and Korean Chinese married immigrant women with children aged between 9 and 19 years living in Seoul and Gyeonggi-do and the Busan and Gyeongnam areas. The survey was carried out by a self-report questionnaire either on-site or via the internet. Out of five HPV vaccination groups, the 'intending group' occupied the largest share at 57%, followed by the 'refusing, completing, maintaining, ceasing groups' in descending order. The results of multinomial logistic regression analysis

revealed that health literacy, perceived discrimination in health care, sexual disinhibition belief about HPV vaccination and perceived barrier to HPV vaccine exerted negative influence on the children's HPV vaccination level. The variables which had positive impact on the level of children's HPV vaccination included social norms for HPV vaccination, perceived benefit to HPV vaccine and perceived severity of HPV infection.

The results of sequential logistic regression are as follows. Health literacy had negative influence on the 1st transition ('Intention') of HPV vaccination. And perceived barriers to HPV vaccines exerted negative impact upon both 1st and 2nd transition ('Initiation'). On the other hand, perceived severity of HPV infection, perceived susceptibility to HPV infection and sexual disinhibition belief about HPV vaccination turned out to exert positive influence upon the children's HPV vaccination. Specifically, perceived severity had its role in the 1st transition, and remaining ones had its role in the 2nd transition. Lastly, social norm had the opposite influence according to the stage of transitions. It had positive influence in the 1st transition, but it had negative influence in the 2nd transition. Based on the above analyses, it can be concluded that different variables are responsible for explaining the decision making at different stages of HPV vaccination.

From above perspectives, it is important to check which HPV vaccination level the children of married immigrant women fall into and provide them with more comprehensive, customized intervention such as educational content or materials.

Keywords : Married immigrant women, HPV vaccination, Health belief model

Ⅰ. Introduction

A. Significance of the Study

Human Papillomavirus (HPV) is a common sexually transmitted virus. It is the main cause of cervical cancer (World Health Organization [WHO], 2018), the fourth most common cancer in women, with approximately 600,000 patients being newly diagnosed annually and 300,000 dying from the disease globally in 2020 (Sung et al., 2021). In Korea, roughly 3,500 new patients of cervical cancer are diagnosed, with 900 among them dying from the disease annually (Korea Centers for Disease Control and Prevention [KCDC], 2019a). However, cervical cancer is the only cancer to have a vaccine. In United States, the rate of male and female adolescents aged 13 through 17 years with at least one injection of the HPV vaccine was 75.1% in 2020. This rate of HPV vaccination was 77.1% in female students and 73.1% in male students (Pingali et al., 2021).

After being approved by the Food and Drug Administration (FDA) in 2006, the HPV vaccination was adopted in Korea and has been in use since 2007 (Kim, Han, Kim, & Seo, 2018). In 2016, the Korean government began to provide free HPV vaccination for 12-year-old female adolescents, allowing them to receive 2 rounds of divalance or quadrivalance HPV vaccination (KCDC, 2017). Since the HPV vaccine was adopted as a national vaccination program, the initial round vaccination rate has increased every year; the rates were 61.5% in 2016, 72.7% in 2017, and 87.2% in 2018 (KCDC, 2019a). However, 46% of the targeted population born in 2003 who missed the deadline of the second-round vaccination were found to be non-vaccinated, showing the necessity of monitoring people who received only the first dose (KCDC, 2019b). On the other hand, HPV vaccination rates were less than 2% in male students, who are responsible for vaccination fees

(Park & Kim, 2020; H. W. Kim, 2019).

In Korea, adolescents are required to either be accompanied by their parents or bring a filled out parental consent form to receive a vaccination (KCDC, 2016). According to previous studies, most female adolescents were found to decide on HPV vaccination together with their mothers. However, most mothers were found to report that they made vaccination decision and the daughters trusted their decisions (Griffioen et al., 2012). The parents' intention of HPV vaccination was found to be significant predictor of the children's HPV vaccination (Hofman et al., 2014; Pot et al., 2017). In Pot et al's study (2017), the parents' intention explained 43% of the variance of the children's HPV vaccination. Additionally, the parents' intention for the children's influenza and rota virus vaccination were reported to be a main predictor (Dube et al., 2012; Wu et al., 2020), suggesting that the mother's intents on vaccination plays the strong role in the decisions regarding their children's vaccination.

Recently, as the number of multicultural families increase in Korea, there are increasing numbers of married immigrant women. The number of multicultural children under 18 living in Korea has consistently increased from 44,000 in 2007 to 222,000 in 2017. The ratio of multicultural students had also shown an increasing trend from 0.7% in 2012 to 2.5% in 2019 (Ministry of Gender Equality and Family, 2020). However, the ratio of multicultural childrens' mandatory vaccination uptake was lower than that of the children from ordinary families (Kim et al, 2012). A major barrier for the vaccination of the multicultural children is a lack of knowledge about vaccination dates and information regarding vaccines (Kim et al, 2012). It is then necessary that the HPV vaccination issues be dealt with from the mothers' perspective by acknowledging their roles in multicultural families.

The previous studies have adopted the health belief model to identify factors which influence HPV vaccination rates of children (Grandahl et al., 2018; Park et

al., 2020). The health belief model was developed by socio-psychologists associated with U.S. Public Health Service in the 1950s to explain the reasons why people did not participate in programs for the prevention and early findings of diseases (Champion & Skinner, 2008). It shows that the sociodemographic characteristics and health related knowledge affect health behavior through health beliefs which play a mediating role upon health behavior. Health beliefs include perceived benefit, perceived barrier, perceived susceptibility, perceived severity and perceived self-efficacy. And cues to action directly affect health behavior. According to the previous studies, health belief generally affects health behavior. HPV vaccination related studies report that health belief affects HPV vaccination level (Kim et al., 2019; Hong & Chung, 2019). While HPV knowledge and health literacy were found to positively affect this level (Ntiamoah, 2018; Zhu et al., 2019), social stigma against HPV vaccination and sexual disinhibition belief were found to affect HPV vaccination negatively (Al-Dubai et al., 2010; Rodriguez et al., 2018). Also, acculturation and social norms regarding HPV vaccination were reported to have an influence upon decision making in HPV vaccination (Chaparro et al., 2020; Gerend, Zapata, & Reyes, 2013). In addition, perceived discrimination in healthcare was found to make the person either postpone or give up on receiving medical services (Alcala & Cook, 2018).

Barboza and Dominguez (2016) confirms the factors that are responsible for the child's HPV vaccination transition include sociodemographic factors, influenza vaccination, and periodic tests. However, it has limitations in that it did not consider personal factors such as HPV knowledge, cultural, and health belief factors. For the purposes of inducing sequential changes in HPV vaccination, it is important to identify the influencing factors in an integrative fashion.

Considering that married immigrant women are important decision makers in HPV vaccination, there exist some problems which need to be addressed.

Typically, there exists a lack of necessary HPV vaccination experience and a presence cultural bias in health beliefs which originate from different cultures that act as barriers to vaccination (Kim & Choi, 2014; Joseph et al., 2014). However, in Korea, there have been no studies which account for the roles of health beliefs of married immigrant women and cultural factors which influence the levels of HPV vaccination. Since multicultural families consist of family members with different cultural backgrounds, there needs to be a differentiated approach for effective changes in health behaviors. Therefore, this study plans to identify the factors that influence HPV vaccination of children of married immigrant women. It is hoped that the results of the study be utilized as the base data for the development of a comprehensive HPV vaccination education program.

B. Purpose of the Study

The purpose of this study is to identify the factors that influence HPV vaccination of children of married immigrant women. Specific aims are to:

1) Identify the level of HPV vaccination of children of married immigrant women;
2) Identify the levels of HPV vaccination according to demographics (religion, education, monthly income, length of stay), personal factors (HPV knowledge, health literacy, perceived discrimination in health care), and cultural factors (social stigma, sexual disinhibition beliefs, social norms, acculturation) together with health belief (perceived benefit, perceived barrier, perceived susceptibility, perceived severity, perceived self-efficacy) and cues to action factors;
3) Identify the factors which influence upon HPV vaccination of children of married immigrant women; and
4) Identify the factors which influence upon the transitions of HPV vaccination

levels of the children of married immigrant women.

C. Research Hypotheses

The hypotheses about how influencing factors affect the level of HPV vaccination of children are proposed here. Since there are virtually no relevant theories and/or empirical studies about HPV vaccination transition, there is no reason to suggest a priori hypotheses for these less well-established phenomena. Therefore, an exploratory approach was taken on these issues. The hypotheses are as follows:

H1: The more HPV knowledge the married immigrant women possesses, the higher her child's level of HPV vaccination will be.

H2: The higher the health literacy of the married immigrant women is, the higher her child's level of HPV vaccination will be.

H3: The more discrimination the married immigrant women perceives in the health care, the lower her child's level of HPV vaccination will be.

H4: The higher the married immigrant women's awareness of the social stigma against HPV vaccination is, the lower her child's level of HPV vaccination will be.

H5: The higher the married immigrant women's sex disinhibition belief is, the lower her child's level of HPV vaccination will be.

H6: The higher the married immigrant women's social norm for HPV vaccination is, the higher her child's level of HPV vaccination will be.

H7: The higher the married immigrant women's acculturation is, the higher her child's level of HPV vaccination will be.

H8: The higher the married immigrant women's perceived benefits of HPV

vaccination are, the higher her child's level of HPV vaccination will be.

H9: The higher the married immigrant women's perceived barrier of HPV vaccination is, the lower her child's level of HPV vaccination will be.

H10: The higher the married immigrant women's perceived susceptibility to HPV infection is, the higher her child's level of HPV vaccination will be.

H11: The higher the married immigrant women's perceived severity of HPV infection is, the higher her child's level of HPV vaccination will be.

H12: The higher the married immigrant women's self-efficacy is, the higher her child's level of HPV vaccination will be.

H13: The higher the married immigrant women's cues to action are, the higher her child's level of HPV vaccination will be.

D. Definitions of Concepts

1. HPV knowledge

1) Conceptual definition

This is the body of knowledge about HPV including symptoms, contagion paths, diagnosis and testing, and the distinctions between low-risk and high-risk groups (Kim & Ahn, 2007).

2) Operative definition

In this study, it indicates the measurement domain as specified by the 8 items which Kim (2011a) reduced from the original questionnaire developed by Kim and Ahn (2007). High scores indicate high levels of knowledge.

2. Health literacy

1) Conceptual definition

This is the ability with which one acquires, processes, and understands information when making medical decisions (Ratzan & Parker, 2000).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale developed by An and Yang (2015). High score indicates high level of health literacy.

3. Perceived discrimination in health care

1) Conceptual definition

This is a belief that one received unfair treatment at the medical institutions because of race or other sociodemographic characteristics (Gonzales et al., 2013).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale 'Williams' Everyday Discrimination Scale' developed by William, Yan, Jackson, and Anderson (1997), revised by Bird and Borgart (2001) ('Perceived discrimination in health care') and translated into Korean by Hong et al. (2018). High score indicates high level of perceived discrimination in health care.

4. Social stigma of HPV vaccination

1) Conceptual definition

This is the condition of feeling ashamed and discriminated against when receiving the HPV vaccination (Kim & Shin, 2014).

2) Operative definition

In this study it indicates the measurement domain as specified in the scale 'Perceived social norm-related barriers' developed by J. Kim (2018). High score indicates high levels of social stigma regarding HPV vaccination.

5. Sexual disinhibition beliefs about HPV vaccination

1) Conceptual definition

These beliefs are that HPV vaccination will cause adolescents to be more likely to be engaged in sexual behavior (Mayer, Reiter, Zucker, & Brewer, 2013).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale 'Beliefs in sexual disinhibition' developed by Mayer et al. (2013). High score indicates high level of sexual disinhibition belief from HPV vaccination.

6. Social norms for HPV vaccination

1) Conceptual definition

These are the beliefs and needs for a parent to follow the opinions of families, spouses, friends, and doctors regarding daughters' HPV vaccination (Hofman et al., 2014).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale 'Subjective norms' developed by Hofman et al. (2014), which calibrated social norm scale regarding mammography by Tiro et al. (2005). High score indicates a high level of conformity to social norms regarding HPV vaccination.

7. Acculturation

1) Conceptual definition

This is the process by which the immigrants adopt culturally new customs, beliefs, values, attitudes, and behaviors (Abraido-Lanza, Chao, & Florez, 2005).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale 'SASH (Short Acculturation Scale for Hispanics)' developed by Marin, Sabogal, Marin, Otero-Sabogal, & Perez-Stable (1987) and translated and used by Choi & Reed (2011) ('SAS-K (Short Acculturation Scale for Koreans)'). High score indicates high level of acculturation.

8. Health belief regarding HPV vaccination

1) Conceptual definition

This consists of perceived benefit and barrier of HPV vaccine, perceived susceptibility, and perceived severity of HPV infection. Among these, the perceived benefits mean the belief about the effects of HPV vaccination. The perceived barrier means the belief regarding psychological burden and cost. The susceptibility of HPV infection means the belief about the possibility of getting the diseases and fear associated with it. The perceived severity of HPV infection

means the belief about HPV infection and consequent severity of the disease (Lee, 2010).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale which Choi et al. (2008) developed based on the health belief model that Lee & Park (2011) ('Health beliefs about HPV vaccination') revised for their use. High score indicates high level of perceived benefit, perceived barrier, perceived susceptibility, and perceived severity.

9. Self-efficacy about HPV vaccination

1) Conceptual definition

This means self-assuredness about getting HPV vaccination regardless of potential barriers like pain and cost resulting from HPV vaccination (Gerend & Shepherd, 2012).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale 'Self efficacy' developed by Gerend & Shepherd (2012) and translated and used by S. Y. Kim (2018). High score indicates high self-efficacy about HPV vaccination.

10. Cues to action for HPV vaccination

1) Conceptual definition

It means the activation of readiness to trigger actual behavior (Champion & Skinner, 2008).

2) Operative definition

In this study, it indicates the measurement domain as specified in the scale 'Cues to action' developed by Chen et al. (2011). High score indicates high level of cues to action for HPV vaccination.

11. Level of HPV vaccination

1) Conceptual definition

This is the degree of advances in getting HPV vaccination according to the current status of vaccination and future intention to get vaccinated (Lim, Ho, Lee, Chow, & Kyaw, 2020).

2) Operative definition

In this study, it indicates five different groups arranged in the order of 'refusing, intending, ceasing, maintaining and completing.'

Ⅱ. Literature review

A. HPV vaccination

HPV is a virus that causes genital warts, recurrent respiratory papillomatosis, and genital and oropharyngeal cancer. This virus commonly affects sexually active individuals (CDC, 2021a). In the United States, more than 42 million people are infected with HPV, with 13 million new cases of infections every year (CDC, 2021b). HPV infects male and female genitalia, anus, and oral cavity. More than 40 different types of HPV exist and are divided into two groups: low-risk group that causes warts and high risk group which leads to cancer (CDC, 2018). Both low- and high-risk HPVs do not commonly show symptoms in infected individuals, and most virus are cleared spontaneously from the body within two years. However, when the immune system malfunctions, the infection continues, and normal tissues become abnormal, developing into cancer (CDC, 2018).

There are different HPV vaccines approved by the U.S Food and Drug Administration (FDA): Gardasil, Gardasil 9, and Cervarix. All three vaccines are effective in preventing HPV 16 and 18, which are high-risk HPV types accounting for 70% of cervical cancer. The vaccines show differences in the range of prevention (National Cancer Institute [NCI], 2019). Cervarix protects against HPV 16 and 18 while Gardasil prevents HPV 16 and 18 as well as HPV 6 and 11, which cause 90% of genital warts among low-risk types of HPV. Gardasil 9 vaccine protects HPV 6, 11, 16 and 18 that are protected by Gardasil and HPV 31,33, 45, 52, and 58 which are associated with cervical cancer (NCI, 2019). The Centers for Disease Control and Prevention (CDC) recommends HPV vaccinations in boys and girls between the age of 11 and 12 and that everyone is vaccinated

before the age of 26. Sexual activities increase the risk of exposure to HPV infection, and this reduces the efficacy of HPV vaccination (CDC, 2016a). Approximately 70 countries worldwide provide HPV vaccination as part of the national vaccination program for girls, and around 10 countries also provide HPV vaccination for boys (WHO, 2017). The U.S was one of the first countries to introduce HPV vaccination program. In 2006, HPV vaccine was recommended for 11-12 year-old girls and 13-26 year-old women for catch-up vaccination. In 2011, boys were also included as targets of HPV vaccination (Sriram & Ranganathan, 2019). The quadrivalent vaccine (HPV 6, 11, 16 and 18) in the U.S decreased the incidence of HPV infection in women between the age of 14 and 19 (Markowitz et al., 2013). In 2007, Australia also provided quadrivalent HPV vaccine for 12- and 13-year-old girls as part of national vaccination program. Shortly after, in 2013, 12- and 13-year-old boys were also received the quadrivalent HPV vaccine. The inclusion of HPV vaccine as a part of national vaccination program reduced the incidence of HPV infection in young women (Patel et al., 2018).

In Korea, HPV vaccine was first introduced in 2007, followed by the inclusion of the vaccine as a part of the national vaccination program in 2016. As HPV vaccine was included in the national vaccination program in 2016, awareness of adult men and women about HPV infection and importance of vaccination increased. However, the intent to receive HPV vaccination decreased from 55% to 26%. In addition, the intent to vaccination children against HPV was also reduced. The greatest reason for not receiving HPV vaccination was "lack of importance of the vaccine", followed by lack of awareness and high cost (Oh, Jeong, Yun, & Lim, 2018). Currently, HPV vaccines are provided for free in Korea include 'Gardasil (quadrivalent) and Cervarix (bivalent)'. On the other hand, the U.S, Australia, Sweden, and Germany offer the 9-valent HPV vaccine as a part of the national vaccination program. In Korea, women have a higher rate of HPV 52 and

58 infection than women in other countries, suggesting that the 9-valent HPV vaccine needs to be included in the national vaccination program (Lee, 2019). Furthermore, HPV vaccination is supported for only girls aged 12 in Korea. In contrast, in the U.S and Australia, boys are also vaccinated against HPV (Kim et al., 2018). In a study on the policy research service project of the Korea Disease Control and Prevention Agency, approximately 50% of the cost related to HPV may be saved when males are vaccinated against HPV. On the other hand, the cost of saving was four times greater when girls were vaccinated against HPV. Vaccinating women by increasing age range was also as cost-effective (KCDC, 2019b).

B. Factors related to HPV Vaccination

The systematic literature review was conducted in order to identify the HPV vaccination related factors of married immigrant women. The studies on HPV vaccination have been conducted early in other countries; however, in Korea, studies have been only recently conducted as HPV vaccination support project was implemented in 2016. Therefore, the studies that analyzed factors affecting HPV vaccination in various population groups of Asian immigrants in addition to domestic married immigrant women were extensively searched to identify related factors. The factors of HPV vaccination reported in previous studies are largely explained as 'Sociodemographic, personal, cultural, health belief, and cues to action factors' based on the theoretical framework of the health belief model.

To review studies published from the point of HPV vaccine approval by the U.S FDA until recent years, those studies published between June 2006 to June 30, 2020 were searched. In addition, to include studies that analyzed factors of HPV vaccination unique to Asian immigrants, the country of origin was not limited to Asia even though immigrants from other countries were included. The search also did not have limits on the age and gender of the participants. The abstract and contents of the studies were reviewed to exclude those that did not include Asian immigrants. International search database (DB) included PubMed and Embase, which are core DBs in the COSI (Core, Standard, Ideal) model as well as CINAHL, a DB specialized for studies related to nursing. Domestic DBs included Research Information Sharing Service (RISS), National Digital Science Library (NDSL), DBpia, and Korean studies Information Service System (KISS). The search terms for PubMed, Embase, and CINAHL were MeSH terms, Embase controlled vocabulary (Emtree), and CINAHL headings. MeSH term included those

related to immigrants (Ethnic groups, emigrants and immigrants), and HPV vaccines (Papillomavirus vaccines). Afterwards, the abstract of articles including the related search terms were reviewed to check the keywords. A search formula including the keywords was established. Search formulas for Embase and CINAHL were established through the same procedures as the one for PubMed. In domestic DBs, related studies were searched using the following keywords: immigration, marriage immigration, multiculturalism, Papillomavirus, and vaccination. The selection criteria for studies included 1) studies that analyzed factors affecting HPV vaccination in Asian immigrants, 2) articles published in Korean or English journals, and 3) studies with full text. The literature search and selection processes followed the PRISMA 2020 flow diagram (Figure 1).

A total of 963 articles were searched including 609 articles on PubMed, 182 articles on Embase, and 164 articles on CINAH as well as 3, 1, 2, and 2 articles in RISS, KISS, NDSL, and DBpia. A total of 64 studies that were searched multiple times were excluded, and 591 articles that did not meet the purpose of this study were excluded after reviewing the titles and abstracts of 899 articles that included the researcher. Out of 308 studies, 14 articles were excluded because the full-text were not available. The remaining 294 studies that included the researcher were reviewed for the participant, purpose, and results of the unique characteristics of Asian immigrants. A total of 22 studies that met the selection criteria were included in the final analysis. Author (year of publication), study design, country of the study, country of origin of the participants, sex (number of participants), age, number of participants according to sex, outcome variables, and primary findings were summarized in a Table (Appendix 1).

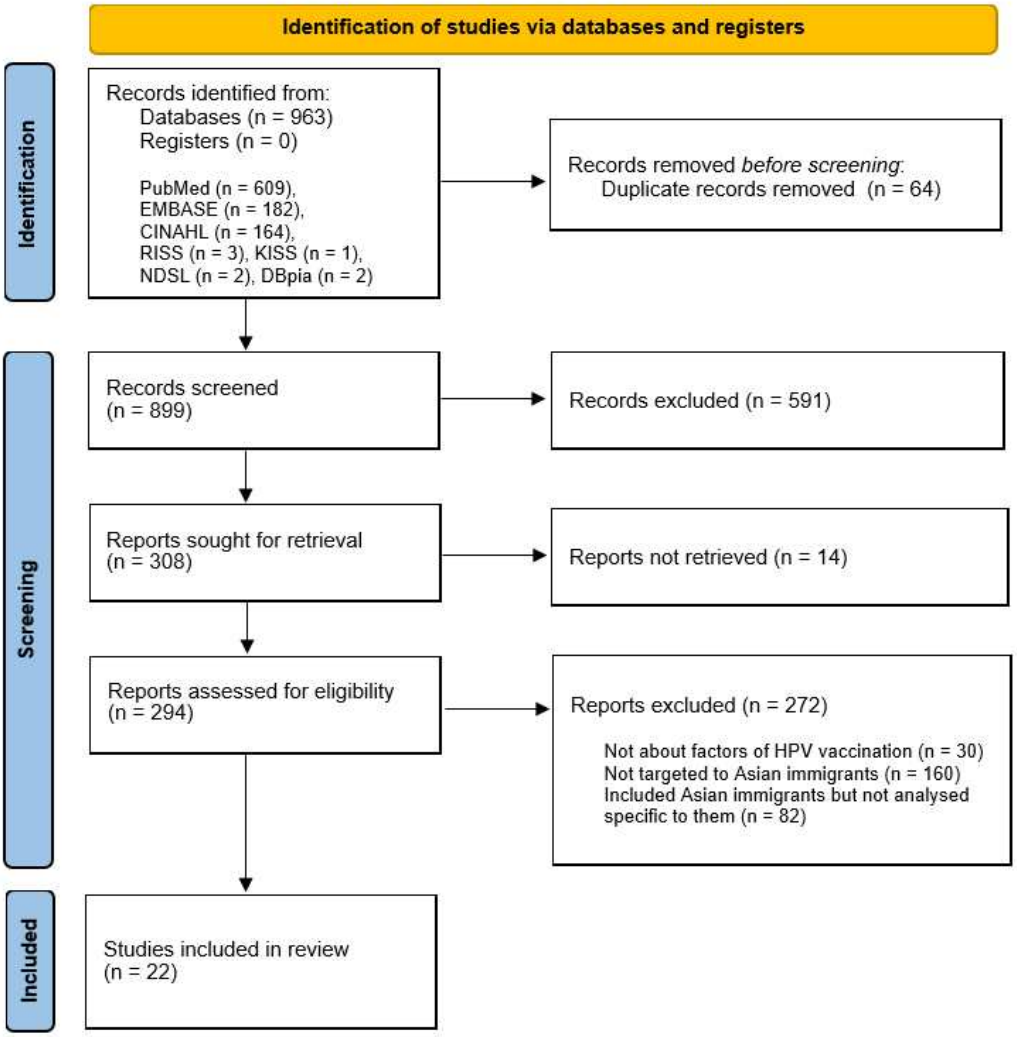

Figure 1. PRISMA flow diagram

Table 1. Factors affecting the HPV vaccination of children

Factors	Variables
Sociodemographic factors	Mother's HPV vaccination status, HPV test experience, pap smear test experience, family history of female cancer, education, monthly income, religion, length of stay, English proficiency
Personal factors	HPV knowledge, awareness of HPV
Cultural factors	Sexual disinhibition belief about HPV vaccination, social norm, acculturation
Health belief factors	Perceived benefits, perceived barriers, perceived susceptibility, perceived severity, self-efficacy
Cues to action factors	Recommendations from medical staffs and friends, school policy

1) Sociodemographic factors

Sociodemographic factors included 'HPV vaccination of the mother (Kim, Sung, Kim, & Park, 2019), HPV test experience (Yoo, 2014), pap smear experience (Kim, 2011b), family history of cancer in women (Gang, 2011; Park & Jang, 2017), monthly income (Kim, 2011b; Shim & Ha, 2017), and education level (Park & Jang, 2017)'. In detail, those who were vaccinated against HPV (Kim et al., 2019), those with pap smear experience assuming that HPV vaccination is covered by health insurance (Kim, 2011b), and those with monthly income of less than two million won (Kim, 2011b; Shim & Ha, 2017) showed a greater intent to vaccinate daughters against HPV. In addition, a greater proportion of those who had been tested for HPV (Yoo, 2014), had a family history of female cancer such as uterine cancer (Gang, 2011; Park & Jang, 2017), and graduated from university than high school (Park & Jang, 2017) vaccinated their daughters against HPV. Also

sex-mediated infection history and cervical cancer test experience of mother were found to have to do with the child's HPV vaccination(Chao, Slezak, Coleman, & Jacobsen, 2009; Taylor et al., 2014).

Previous international studies on Asian immigrants showed that 'age, gender, religion, length of stay, and English proficiency' were related to HPV vaccination. First, in terms of age, a higher age was associated with a lower intention for HPV vaccination among adult male and female college students (Tung, Lu, Qiu & Ervin, 2019). Additionally, in a study on women over the age of 18, although there was no significant difference, the older participants believed that daughters or granddaughters would become more sexually active after HPV vaccination (Nguyen, Chen, & Chan, 2012). Second, in terms of gender, female college students showed a higher intention to receive HPV vaccination than male college students (Tung et al., 2019). Third, in terms of religion, mothers who were Islamic believed that their daughters did not require HPV vaccination as sexual activity outside of marriage was banned by religious beliefs, which would lead to no risk of exposure to HPV infection (Marlow, Wardle, & Waller, 2009). In other studies, several Asian female immigrants were not vaccinated against HPV for religious reasons (Marlow, Wardle, Forster, & Waller, 2009). Fourth, in terms of residence period parents who have lived in the U.S for more than 15 years had a higher intent to vaccinate the children against HPV (Zhu et al., 2019). On the other hand, in a study on Korean female college students by M. Kim et al. (2019), those who lived in the U.S for less than five years showed a higher intent to be vaccinated against HPV. Fifth, according to a study on Cambodian mothers living in the U.S by Lee et al. (2016), a greater English reading ability of the mothers was associated with greater rate of HPV vaccination of the daughters. Most mothers believed that their daughters who were educated in the U.S and spoke fluent English had a higher level of health knowledge than themselves. Consistent

with these findings, Nguyen et al. (2012) showed that adult women over the age of 18 who spoke English had the intent to vaccinate their daughters or granddaughters against HPV even though they had to pay for the vaccination. Those women who spoke English believed that HPV vaccine prevented sexually transmitted infections compared to non-English speaking women.

2) Personal factors

Personal factors related to HPV vaccination included "knowledge on HPV, health literacy, perceived discrimination in health care, negative attitudes towards HPV and HPV vaccines, and lack of awareness'. First, knowledge on HPV refers to knowledge on HPV symptoms and routs of transmission (Kim & Ahn, 2007). In a study conducted in Korea, a higher level of knowledge on HPV and cervical cancer of the mothers was associated with a higher rate of HPV vaccination in the daughters (Park & Jang. 2017; Shim & Ha, 2017); however, in a study on Southeast Asia, women had low levels of knowledge about HPV while having a high intent to receive HPV vaccines (Kristina & Permitasari, 2019). In previous studies on Asian immigrants, knowledge of HPV was associated with intention to receive HPV vaccines. In one study on adult male and female college students, the higher level of knowledge on HPV, the higher the intention for HPV vaccination (Otanez & Torr, 2018; M. Kim et al., 2019). On the other hand, in a study by Kim et al., adult Korean women living in the U.S were open to receive HPV vaccines while lacking knowledge about HPV. In a study of Chinese immigrants living in the U.S, a higher knowledge on HPV and HPV vaccine of the parents was associated with a higher intention to vaccinate the children against HPV (Zhu et al., 2019). In contrast, in another study of Korean immigrant parents living in the U.S, there was no significant difference in the parents' knowledge on HPV between those whose children were and were not vaccinated against HPV. In

addition, the parents had a low level of knowledge on HPV (Lee, Riesche, Lee, & Shim, 2018). Misunderstandings of HPV vaccine function also decreased mother's confidence about HPV vaccination intention of the children (Burke et al., 2015). Previous studies have evaluated the relationship between HPV knowledge and vaccination. In studies on male and female college students and mothers with daughters, a higher level of knowledge on HPV was associated with a higher rate of HPV vaccination (Lee et al., 2016; Tung et al., 2019).On the contrary, the lack of knowledge of HPV and HPV vaccines was a factor that affected refusal to receive HPV vaccines (Kim & Choi, 2014; Taylor et al., 2014).

Health literacy refers to the capacity to obtain and understand basic information and services required to make health decisions (Ratzan & Parker, 2000). Various studies have shown that health literacy was related to health behavior (Jang & Kim, 2015; de Buhr & Tannen, 2019; Ozturk & Ayaz-Alkay, 2020). According to previous studies, health literacy of female adult immigrants affected health behaviors such as HPV vaccination and cervical cancer screening (Eo & Kim, 2019; Ntiamoah, 2018). Moreover, another study showed a significant positive relationship between Internet health literacy and health beliefs (Cho & Ha, 2019). Therefore, these findings suggest that health literacy is related to health beliefs and behaviors. Recently, studies on the concept of 'HPV literacy' have been conducted. In previous studies, a higher HPV literacy of adults was associated with higher initial and complete rate of HPV vaccination (Lee, Lee, Henning-Smith, & Choi, 2017). In addition, HPV literacy was negatively correlated with age and positively correlated with education level, English proficiency, cervical cancer screening literacy, and number of visits to doctors (Beltran, Simms, Lee, & Kwon, 2015; Lee, Choi, Yoon & Oh, 2018). However, the definition of HPV literacy is not clearly established, and tools to measure HPV literacy were similar to HPV knowledge tools. Thus, HPV literacy was not considered as an

adequate factor related to HPV vaccination intention. Therefore, herein, health literacy was included, instead of HPV literacy, as a factor related to HPV vaccination intention.

Discrimination in medical institutions refers to the belief that an individual has been treated unfairly in a medical institution due to demographic and socioeconomic factors (Gonzales et al., 2013). In a study by Schulson, Paasche-Orlow, Xuan and Fernandez (2019) in the U.S, changes in discrimination experiences by immigrants at medical institutions were different according to the race. In Latino Americans, there was a statistically significant decrease in discrimination experiences 2015-2017 compared to that in 2003-2005; however, in Asian and African Americans, there was no significant change. In studies conducted in Korea, married immigrant women experienced discrimination by medical staffs when they used medical services (Koh & Koh, 2009). In another study on nurses, there were differences in attitudes toward patients depending on the nationality of the foreigners. In particular, nurses practiced discriminatory medical treatment with a sense of superiority when treating patients from Southeast Asian countries than treating those from developed countries (Nam & Moon, 2015). Such discrimination in medical institutions caused the patients to believe that the quality of care was low and that they were unable to participate in decision-making of treatments (Benjamins & Middleton, 2019).

In previous studies, attitude toward HPV vaccine was related to HPV vaccination. Tung et al. (2019) studied Chinese male and female university students in the U.S and showed that a higher age of the students was associated with negative attitudes toward HPV and HPV vaccines. Positive attitude toward HPV vaccines led to greater HPV vaccination. In addition to attitude toward the vaccine, awareness of HPV vaccine also affected HPV vaccination. In detail, awareness of HPV and HPV vaccine had positive effects on the intent of HPV

vaccination, and a higher awareness of HPV of mothers with daughters led to greater vaccination of the daughters against HPV (M. Kim et al., 2019; Lee et al., 2016). On the other hand, Kim et al. (2015) showed that most Korean adult women living in the US had never heard of HPV or HPV vaccine. Consistent with this finding, in a study of Cambodian mothers living in the U.S, more than 50% responded that they had never heard of HPV and showed a low awareness of HPV (Lee et al., 2016). In a study by Marlow et al. (2009b) on white and immigrant women living in the U.K, approximately 40% of white British women had heard of HPV whereas less than 20% of Asian immigrant women were aware of HPV. Furthermore, in a study by Barnack-Tavlaris et al. (2016), Asian women had less experiences of hearing about HPV vaccine than white women and showed a lower level of awareness about HPV vaccine. In a most recent study by M. Kim et al. (2019), approximately 50% of Korean university students had heard of HPV. However, based on the overall findings of previous studies, the level of HPV and HPV vaccine awareness in Asian immigrants is significantly low. This study aimed to measure 'social stigma and beliefs in sexual disinhibition' as a cultural factor, instead of attitude toward HPV vaccine, and identify 'awareness of the importance of HPV vaccination for men' in relation to the awareness of HPV vaccine.

3) Cultural factor

Cultural factors affecting HPV vaccination included 'social stigma, beliefs in sexual disinhibition, social norms, and acculturation'. Social stigma means recognition of shame and discrimination (Kim & Shin, 2014). According to previous studies, HPV vaccine serves the purpose of preventing sexually transmitting infection. Thus, HPV vaccine was evaluated for moral aspect rather than vaccination for health (Siu, Fung, & Leung, 2019). Women vaccinated against

HPV were considered morally promiscuous, and such social stigma inhibited HPV vaccination (Siu et al., 2019; Wong, 2008). In a study of Malaysian women, approximately 20% had negative feelings about social stigma related to HPV vaccination, and this was a factor hindering HPV vaccination (Al-Dubai et al., 2010). Previous studies on Asian immigrants showed that, assuming they are infected with HPV, East Asian and South Asian males had higher stigma scores than white males, and the more serious the HPV infection was, the higher the stigma about HPV in male college students. This stigma related to HPV was high in men who were not familiar with HPV vaccine in the early stage of deciding to receive HPV vaccines (Jones et al., 2016). Additionally, for Vietnamese female immigrants living in the U.S, silence and stigma in the family about sexual health acted as a barrier of HPV vaccination. Conservative family culture also forbade family conversations about sexual health and HPV (Hopfer et al., 2017). In agreement with these findings, Marlow et al. (2009c) conducted a study on Asian immigrants in the U.K and observed that children would have difficulties to discuss HPV vaccines and sex with parents as discussion about sexual are culturally prohibited.

Second, sexual disinhibition beliefs about HPV vaccination are concerns of increased sexual activity after vaccination against HPV. Sexual disinhibition belief about HPV vaccination in mothers was one factor that rejected vaccination of their children against HPV (Rodriguez et al., 2018). Parents' sexual disinhibition beliefs about their children's HPV vaccinations tended to increase with age, lower income, lack of cervical cancer screening, lower knowledge about HPV, and lack of HPV vaccination in the daughters (Marlow, Forster, Wardle, & Waller, 2009; Mayer et al., 2013; Schuler, Reiter, Smith, & Brewer, 2011). Similarly, in other previous studies on Asian immigrants, the parents were concerned that HPV vaccination may seem like a permit for their children to become more sexually

active or promiscuous, which hindered HPV vaccination of the children (Forster et al., 2017; Kim et al, 2015; Marlow et al., 2009b; Nguyen et al., 2012).

Third, social norms for HPV vaccination refers to the desire to follow the opinions of the family members and other close individuals for HPV vaccination (Hofman et al., 2014). According to previous studies, a higher social norm for HPV vaccination was associated with a higher intention to receive HPV vaccines (Chaparro et al., 2020; Hofman et al., 2014; Young et al., 2010). In particular, in the study by Chaparro et al. (2020), positive attitude of parents toward HPV vaccines and positive influence of social norms were main factor affecting the parent's intention to vaccinate their children against HPV. In contrast, another study conducted in Hong Kong reported that as preventive care is not common, patients often have doubts and distrust when doctors recommend vaccinations. Such social norms negatively affect HPV vaccination decisions (Siu et al., 2019). In a previous study on Asian immigrants, Vietnamese adult women were influenced by their mother's attitude toward HPV vaccination when they were making decision to receive HPV vaccines (Hopfer et al., 2017). Similarly, in a study by Forster, Waller, Bowyer, and Marlow (2015), female adolescents were not vaccinated against HPV as their parents did not want them to be vaccinated. On the other hand, parents who wanted to see their children's intention in making decisions on children's vaccination against HPV were less likely to let the children to be vaccinated (Zhu et al., 2019). In a study on women over the age of 16 by Marlow et al. (2009b), one of the reasons refusing HPV vaccination was the desire to discuss HPV vaccination with other family members.

Fourth, acculturation is the process of adapting to a new culture for immigrants (Abraido-Lanza, Chao, & Florez, 2005). The immigrants move to new countries with their own culture and beliefs. They respect the culture and customs of their mother's country and gradually adapt to the new culture (Shipley, Bajwa, &

Corral, 2019). Previous studies in Korea showed that the younger the married immigrant women, longer the length of stay in Korea, Korean citizenship, residence in urban area, greater family relationship, and higher self-efficacy were associated with higher level of acculturation. Among these factors, family relationship and self-efficacy were the factors with the greatest influence on acculturation. In addition, length of stay in Korea, self-efficacy, social support, and discrimination influenced the level of maintaining the culture of their mother's country (Kim, 2013). Acculturation is related to health such as physical activity and obesity (Alidu & Grunfeld, 2017; Gerber, Barker, & Puhse, 2012). The level of acculturation of Vietnamese mothers living in the U.S was low, and lower levels of acculturation was associated with lower awareness of HPV (Jenny, Lackey, Zahn, Castaneda, & Hwang, 2013). Furthermore, higher acculturation increased the likelihood of being vaccinated against HPV (Gerend et al., 2013; Shipley et al., 2019).

4) Health belief factors

According to the health belief model, an individual's health belief consists of the following sub-factors: 'perceived benefit, barrier, susceptibility, severity, and self-efficacy'. In previous studies conducted in Korea and other countries, higher perceived benefit, susceptibility, and severity of mothers' HPV vaccination were associated with greater intention to vaccinate the children (S. H. Kim et al., 2019). Hong and Chung (2019) showed that perceived benefit and barrier of mother's HPV vaccination indirectly affected the children's HPV vaccination behavior through the mother's intention for vaccination. Additionally, mother's self-efficacy on HPV vaccination was related to the children's HPV vaccination and intention to receive vaccines (Moon, 2018; Park & Kim, 2020; Rodriguez et al., 2018). Self-efficacy on prevention of cervical cancer was higher in HPV-vaccinated

group than in non-HPV-vaccinated group (Park et al., 2020). The sub-factors of health belief in Asian immigrants shown in previous studies are as follows.

① Perceived benefit

Perceived benefits of HPV vaccine indicate beliefs in the effects of HPV vaccines (Lee, 2010), and Asian immigrants had positive thoughts on the 'prevention and protection' effects of HPV vaccination. In a study by Kim et al. (2015), Korean adult women living in the U.S were accepting of HPV vaccine for prevention of unexpected circumstances. In another study on Korean husbands married to wives from other countries, the husbands responded that their wives were vaccinated as HPV vaccination prevents cervical cancer (Kim & Choi, 2014). Mothers from Korea and Cambodia who had children had positive views about HPV vaccination for offering protection against HPV (Burke et al., 2015; Kim et al., 2015). However, in a study by Y. M. Lee et al. (2018), many Korean parents living in the U.S had low perceived benefit on HPV vaccines.

② Perceived barrier

Perceived barrier to HPV vaccine means belief in the psychological burden and material cost of HPV vaccination (Lee, 2010). Perceive barrier of Asian immigrants included 'lack of information on HPV vaccine, distrust of health care and HPV vaccine, concern about side effects and safety of HPV vaccine, concern about cost, and lack of time'. The lack of information on HPV vaccination was one of the reasons hindering vaccination (Forster et al., 2015). In particular, parents who lacked information about the side effects of HPV vaccination did not vaccinate their children against HPV due to concerns of safety (Forster et al., 2017). In a study by Bastani et al. (2011) on mothers whose daughters were not vaccinated, there were significant differences in the proportion of mothers who believed they

needed more information of HPV vaccination according to race. In detail, approximately 40% of African American mothers required more information about HPV vaccine while about 80% of Chinese and 70% of Korean mothers need more information. This may be attributed to the lack of information accessible to the immigrants. Additionally, low language level of immigrations and lack of translated data on HPV vaccines were also factors affecting HPV vaccination. Thus, immigrant mothers misunderstood the purpose of HPV vaccine and were not confident in vaccinating their children against HPV (Burke et al., 2015).

Second, distrust in medical care and effects of HPV vaccine was another factor preventing HPV vaccination (Burke et al., 2015; Kolar et al., 2015; Marlow et al., 2009b; Kim & Choi, 2014). According to Kolar et al. (2015), Asian women who were not vaccinated against HPV had higher levels of distrust in medical staffs and medical institutions than those who were vaccinated Furthermore, Cambodian mothers did not vaccinate their daughters as the vaccines have been only recently developed (Burke et al., 2015).

Third, concerns about the side effects and safety of HPV vaccine were factors affecting HPV vaccination (Forster et al, 2015; Forster et al, 2017; Kim et al, 2015; Marlow et al., 2009b; Marlow et al., 2009c; Kim & Choi, 2014). Some mothers who were concerned about the side effects of HPV vaccines stated that HPV vaccination would be reassuring if the effects and safety were verified for all ethnic groups (Marlow et al., 2009c).

Fourth, high cost of HPV vaccines was another factor affecting HPV vaccination (Kim et al., 2015; Kim & Choi, 2014).

Fifth, adults lacked the time to receive HPV vaccines. In a study by Kim and Choi (2014), approximately 2% of the participants were not vaccinated as they did not have time to receive the vaccines. On the other hand, M. Kim et al. (2019) showed that about 50% were not vaccinated for the same reason.

③ Perceived susceptibility

Perceived susceptibility to HPV infection refers to the belief in the possibility and fear of contracting HPV infection (Lee, 2010). Perceived susceptibility of Asian immigrants included 'no risk of HPV infection, no need for health problems, and too young to receive HPV vaccination'. In a study by Forster et al. (2017), a proportion of Asian parents living in the UK believed that their daughters were not promiscuous and thus had a low risk of HPV infection. In another study by Forster et al. (2015), adult Vietnamese women were not vaccinated against HPV as they would not engage in risky behaviors such as premarital sex and sexual activity with multiple partners and that their parents did not also require HPV vaccination. In a study on adult Vietnamese women living in the U.S by Hopfer et al. (2017), HPV vaccination was not deemed necessary as they believed that their partners were not infected with HPV. In other words, the level of trust in the partner affected the perceived susceptibility of HPV infection.

Second, HPV vaccination was not necessary as there were no health problems. Cambodian mothers living in the U.S believed that they did not need HPV vaccines as they are currently healthy (Burke et al., 2015; Taylor et al., 2014). In addition, some parents preferred alternative medicine to prevent HPV-related cancers and prevent disease with natural immunity through a healthy lifestyle (Forster et al., 2017). In another study by Marlow et al. (2009b), women over the age of 16 did not provide a specific reason for not receiving HPV vaccines and were shown to consider that HPV vaccination was unnecessary.

Third, the age of 12 and 13 was considered too young for vaccination against HPV. Asian mothers wanted to know why the age of 12 and 13 years was appropriate for HPV vaccination and believed that HPV vaccination was not necessary at the age of 12 and 13 (Marlow et al., 2009b; Marlow et al., 2009c).

5) Cues to action

Cues to action refers to a strategy that induces an individual who is ready to carry out the actions (Champion & Skinner, 2008). Cues to action related to HPV vaccination of Asian immigrants included 'recommendation from medical staff, family and friends, school policy'. First, recommendation of medical staffs had positive effects on HPV vaccination of children and the intention of parents and adults to receive vaccines (Burke et al., 2015; Kim et al., 2015; M. Kim et al., 2019; Zhu et al., 2019). In a study by Hopfer et al. (2017), approximately 80% of Vietnamese women vaccinated against HPV were vaccinated after conversations with medical staffs. Additionally, in another study by Taylor et al. (2012), a greater number of daughters of Cambodian mothers who were advised by their doctors or asked about HPV vaccines were vaccinated. More than 60% of married immigrant women in Korea were also vaccinated against HPV after recommendations from medical staffs (Kim & Choi, 2014). In contrast, one factor hindering HPV vaccination of children of Cambodian mothers living in the U.S was the lack of recommendation for HPV vaccines from doctors (Taylor et al., 2014). Recommendations from not only doctors, but also parents, spouses, and relatives were also associate with vaccination and intentions for vaccination in adults (M. Kim et al., 2019; Kim & Choi, 2014). Recommendations from friends had effects on children and adult's HPV vaccination (Kim et al., 2015; Kim & Choi, 2014). Second, school policies such as school admissions were also related to HPV vaccination (Kim et al., 2015).

In previous studies conducted in Korea, mothers with daughters were mostly surveyed to identify factors related to HPV vaccination in children (Moon, 2018; Park & Jang, 2017; Shim & Ha, 2017), and a few studies also investigated mothers with sons (Park & Kim, 2020). The age of the children of the mothers included in the studies ranged from children in elementary school (Moon, 2018;

Shim & Ha, 2017) and middle school (Kang, 2011; Park & Oh, 2014) to those in high school (Yoo, 2014). In a few studies, mothers with children of all grades from elementary to high school were included (Kang, 2011), and all mothers with children regardless age were evaluated (Kim, 2011b).

In summary, searching and analyzing the previous studies revealed 5 factors including 'sociodemographic, personal, cultural, health belief, and cues to action'. In particular, in Korea, there was a lack of previous studies that identified factors affecting HPV vaccination of children of married immigrant women and that evaluated cultural factors related to HPV vaccination.

Ⅲ. Conceptual framework

In this study, the health belief model was used as the theoretical framework to identify factors related to HPV vaccination of children of married immigrant women.

A. Health Belief Model

The health belief model was developed by social psychologists affiliated with the US Public Health Service in the 1950s and has been used in many studies, following Hochbaum (1958)'s study on participation in tuberculosis screening. The model includes factors that predict disease prevention, detection, and control behavior and related reasons. The constructs include 'perceived susceptibility, severity, benefit, barrier, cues to action, and self-efficacy'. Perceived susceptibility refers to the belief about the likelihood of acquiring a condition or disease, and perceived severity refers to belief about the seriousness of the condition. Perceived benefits are beliefs that a suggested action will be effective in reducing the risk or severity, and perceived barriers are beliefs about the actual and psychological costs of a suggested action. Cues to action is a strategy to carry prepared states into action, and self-efficacy is defined as confidence in one's ability to take action (Champion & Skinner, 2008).

According to the health belief model, demographic factors, personality, socioecomic status and knowledge affect health beliefs (perceived benefit, barrier, susceptibility, severity, and self-efficacy) and that health beliefs induce health behaviors. In addition, cues to action stimulated actions, and perceived susceptibility and severity are collectively regarded as a perceived threat (Champion & Skinner, 2008) (Figure 2). In the health belief model, people who are

susceptible to a condition, believe that the condition will have serious consequences, and believe that taking action will be more effective than the obstacle or cost of the action are more likely to practice health behaviors (Champion & Skinner, 2008).

The health belief model has been used as the theoretical framework in the previous studies in order to identify factors affecting various health behaviors such as cancer screening and vaccination (Kan & Zhang, 2018; Lau, Lim, Wong, & Tan, 2020). Bastani et al. (2011) applied the health belief model to identify factors affecting HPV vaccination and established the Heath Belief Framework. The questionnaire included items on 'practice of HPV vaccination, HPV awareness and knowledge, beliefs about HPV and HPV vaccines (perception of the effects of HPV vaccine, perception of risk of HPV, severity of HPV infection), general attitude toward vaccination, access to medical services, and demographic factors. Barrier to HPV vaccination was assessed in parents of children who have not been vaccinated against HPV. In one study of Korean parents living in the U.S, differences in perception and knowledge of HPV were compared with parents who were vaccinated but did not vaccinate their children against HPV (Y. M. Lee et al., 2018). Y. M. Lee et al. (2018) used the health belief model as the theoretical framework and included 'HPV knowledge, sources of HPV information, and parents' perception of HPV'.

The health belief model includes components related to health behavior; however, the relationship between the components is not clearly established. Due to such unclear characteristics, the major dimensions were regarded as independent or interrelated according to the studies (Champion & Skinner, 2008).

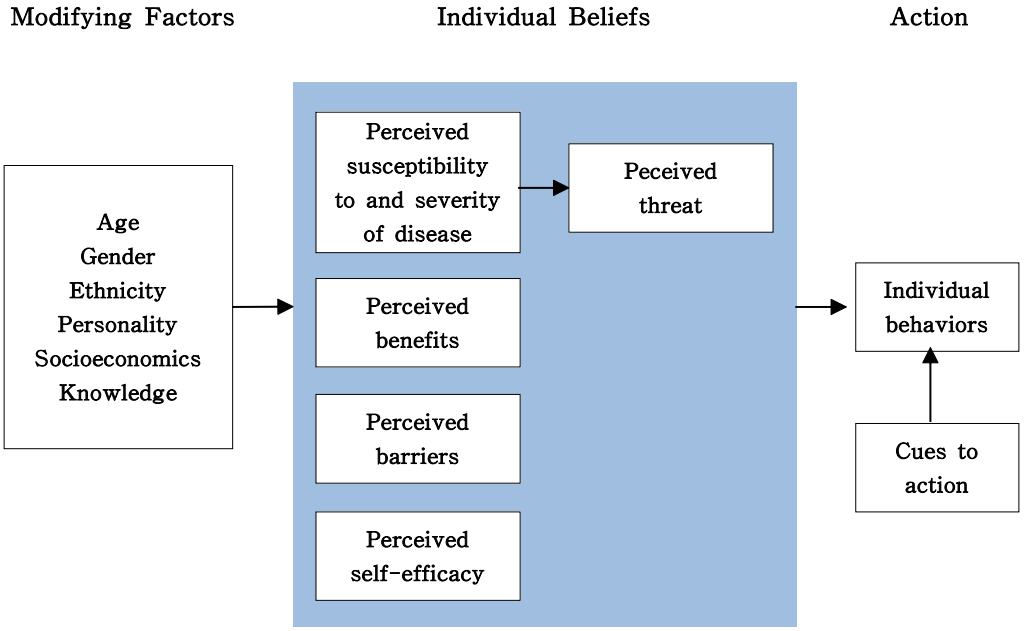

Figure 2. Health belief model

B. Conceptual Framework of the Study

The conceptual framework of this study was constructed based on the health belief model, including the influencing factors reported in previous studies. According to the health belief model, the conceptual framework is largely composed of 'modifying factors, health beliefs, and action', which affected individual health behaviors (Figure 3).

In addition to modifying factors of health belief model, other factors identified from the previous studies were considered as independent variables in order to evaluate the importance of each variable in predicting the dependent variable.

Since this study was focused on the HPV vaccination level of married immigrant women's children, there needed to be additional consideration on the aspect of cultural background. Previous study found out many cultural influences on a various dimensions of individual health behaviors (Lopez-Class, Castro, & Ramirez, 2011). Also Unger and Schwartz (2012) maintained that one needs to consider cultural factors in the study of health behavior. Therefore, this study included the following four cultural factors: social stigma, sexual disinhibition beliefs, social norm and acculturation. In addition to the above mentioned modifying factors in the original Health Belief Model and the cultural factors, personal factors including HPV knowledge, health literacy, perceived discrimination in health care were also considered.

Health beliefs consisted of 'perceived benefit to HPV vaccine, perceived barrier to HPV vaccine, perceived susceptibility to HPV infection, perceived severity of HPV infection, and perceived self-efficacy about HPV vaccination'. Moreover, according to the health belief model, cues to action factors were set to affect health behaviors in addition to health beliefs.

In this study, health behavior was the HPV vaccination practice level in

children, which was divided into five groups (refusing group, intending group, ceasing group, maintaining group, completing group) according to HPV vaccination history and completion of vaccination in children and mother's intention for vaccination. In previous studies, health behavior was divided into three groups: group that has not been vaccinated and has no intention for vaccination, group that has not been vaccinated, but has intention for vaccination, and group that has been vaccinated (Krawczyk et al., 2012). However, such classification limits the differentiation between 'ceasing group, maintaining group, completing group'. Therefore, herein, health behavior was divided into five mutually exclusive groups.

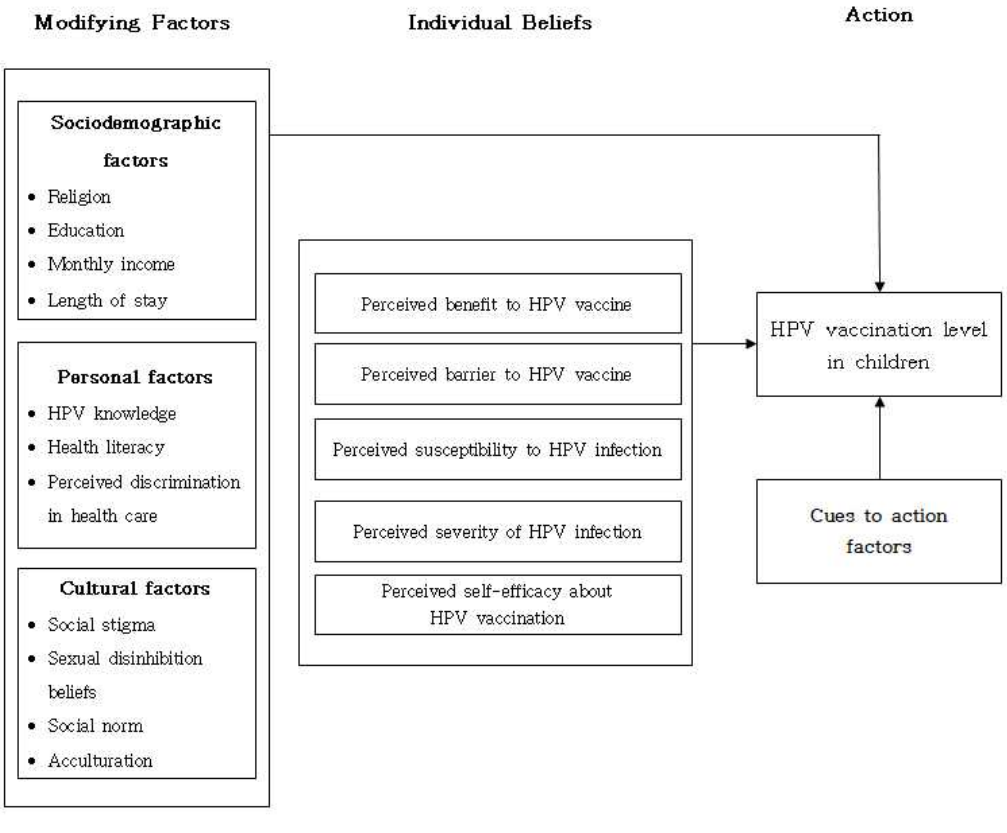

Figure 3. Conceptual framework of the study

Ⅳ. Methods

A. Study Design

This was a descriptive correlational design study to confirm HPV vaccination level and identify factors that affect HPV vaccination level in children of married immigrant women.

B. Study Sample

1. Research participants

Married immigrants are foreigners residing in Korea who are married to Korean citizens (Ministry of Justice, 2020). As of 2020, a total of 140,000 married immigrant women were in Korea. By region, Gyeonggi-do had the highest number of about 40,000, followed by Seoul with about 20,000 and Gyeongsangnam-do with about 9,000 married immigrant women. In addition, approximately 6,000 married immigrant women resided in Busan, next to Gyeongsangnam-do (Ministry of Justice, 2021). In a survey on mandatory vaccinations for children residing in Korea with citizenship, the rate of complete vaccination in children between the age of 1 and 3 living in Busan lower than the national average (KCDC, 2020). Thus, married immigrant women living in Gyeonggi area of Seoul and Gyeongnam area of Busan with the highest population of married immigrant women were included as participants of this study. A recruitment notice in three languages (Korean, Chinese, and Vietnamese) were posted to relevant institutions to recruit participants. In addition, a document summarizing this study was delivered to married immigrant women through those in charge of institutions. Convenience sampling method was used for the ease of participant recruitment.

As of 2019, approximately 30% of married immigrant women were from Vietnam, followed by 23% from China and 6% from Korean-Chinese families (Statistics Korea, 2020) Therefore, married immigrant women from Vietnam and China (including Korean-Chinese) who satisfied the following selection criteria were included in this study.

1) Those whose native country was Vietnam or China (including Korean-Chinese)
2) Those whose son or daughter's age was between 9 and 19
3) Those who lived in Seoul, Gyeonggi area, Busan or Gyeongnam area
4) Those who could understand and respond to the questionnaire
5) Those who understood the purpose of the study and voluntarily agreed to participate
6) Those who did not participate in the preliminary survey

Although the target age of national HPV vaccination program in Korea is 12 years old, HPV vaccination is available for those between the age of 9 and 26 and most countries, vaccination is recommended between the age of 9 and 14 (KCDC, 2017; WHO, 2018). Therefore, in this study, married immigrant women with children aged 9 to 19 (Ministry of Justice, 2018) who are yet incapable of making independent decisions, were included. In Korea, only female adolescents are provided with HPV vaccines but in Australia, HPV vaccines are also available for male adolescents (Brotherton, Winch, Bicknell, Chappell, & Saville, 2017). HPV is known as a virus that causes cervical cancer in women; however, HPV may also cause genital and anal cancer in men, which suggests the importance of vaccinating men against HPV (CDC, 2016b). Therefore, in this study, both male and female adolescents were selected for the gender of the children of the participants.

Out of 130 participants who completed the self report paper and pencil questionnaires, 9 respondents who did not meet the criteria of child age were

excluded. In the case of online survey, 274 respondents replied the questionnaire, and 62 who did not meet the eligibility criteria in the study were excluded: Out of 62 respondents, 50 were found to have answered questionnaire despite their ineligibility and were excluded at the stage of eligibility screening. And 12 respondents did not meet the child eligibility criteria for questionnaire at the stage of data cleaning. Therefore, a total of 333 individuals were enrolled as eligible participants.

2. Number of participants

The number of participants in this study was calculated using G*Power 3.1.9.7 program. The odds ratio required to calculate the number of participants for logistic regression analysis was referred from a study by Barboza & Dominguez (2016) that analyzed factors affecting HPV vaccination with a similar study design to this study. Based on the age of the children which was a variable included in this study and a factor with significant effects on HPV vaccination in previous studies, the odds-ratio was 1.4. A minimum of 271 participants were required based on two-tailed test with a significance level (α)=.05, power (1-β)=.80, and control fraction (Probability H_0)=0.3. A total of 333 participants were enrolled in this study. Excluding the cases with no response in dependent variable and insincere responses, 262 cases were employed for final analyses.

C. Instruments

A structured self-report questionnaire was used in this study. The questionnaire was available in Korean, Chinese, and Vietnamese for the convenience of the participants. Each study tool was used with the approval from the original developer, and the questionnaire for each language was translated into Korean, Chinese, and Vietnamese according to the committee translation procedure (Furukawa, Driessnack, & Colclough, 2014). The steps of translating the tools were as follows (Figure 4).

First, the original tools in English were translated into Korean by two translators fluent in English and Korea, and a draft of the questionnaire in Korean was completed. The researcher and two translators reviewed the translated draft, and under mutual agreement, expressions that most accurately connoted the meaning of the original tool were selected. Afterwards, a nursing professor who was proficient in both English and Korean reviewed the translated questionnaire to ensure the meanings of the original tool was conveyed accurately. Any inappropriate words and expressions were modified. The questionnaire was translated into Chinese and Vietnamese by two translators each who were fluent in Korean and Chinese or Vietnamese. One of Chinese translators had a mater's degree of the domestic university, and had work experience at the interpretation and translation center. The other Korean-Chinese translator graduated from domestic graduate school of interpretation and translation, and is currently employed as an interpreter and translator. Two Vietnamese translators completed the medical interpreter course, and now work as an interpreter and translator. The researcher and two translators reviewed the translated draft, and under mutual agreement, expressions that most accurately connoted the meaning of the original tool were selected.

The number of participants in the pre-test of the translated questionnaire were

3 Chinese (Chinese questionnaire), 4 Korean-Chinese (Korean questionnaire), 3 Vietnamese (Vietnamese questionnaire). A total of 10 married immigrant women completed pre-test questionnaire via online questionnaire survey (Survey Monkey) URL. As stated in the WHO tool translation guidelines, the clarity and difficulty of the translated questionnaire items were evaluated in the pre-test ('Are questionnaire items clear?', 'Are questionnaire items easy to understandable?'), and the response time was recorded (WHO, 2015). As the participants of this study were married immigrant women with a different cultural background, the cultural relevance of the questionnaire items ('Are the terms and expressions included in the questionnaire properly stated as the way it is used in your home country?') was evaluated with reference to a previous study (Palmieri et al., 2020). The average length of stay in Korea of 10 married immigrant women who participated in the pre-test was 170.71±90.49 months (approximately 14 years). The mean response time to complete the questionnaire was 24±18.53 minutes. With the regards to clarity of questionnaire items, all but 3 respondents replied that questionnaire items were clearly stated, and all of respondents evaluated that the questionnaire items were easy to understand above average. In terms of cultural appropriateness, all the respondents replied that the terms and expressions were properly stated well aligned with their home country culture. Therefore, it was concluded that the questionnaire was appropriate for married immigrant women to complete. In the case of online survey, it was confirmed that the response system had no problems to use via the pre-test.

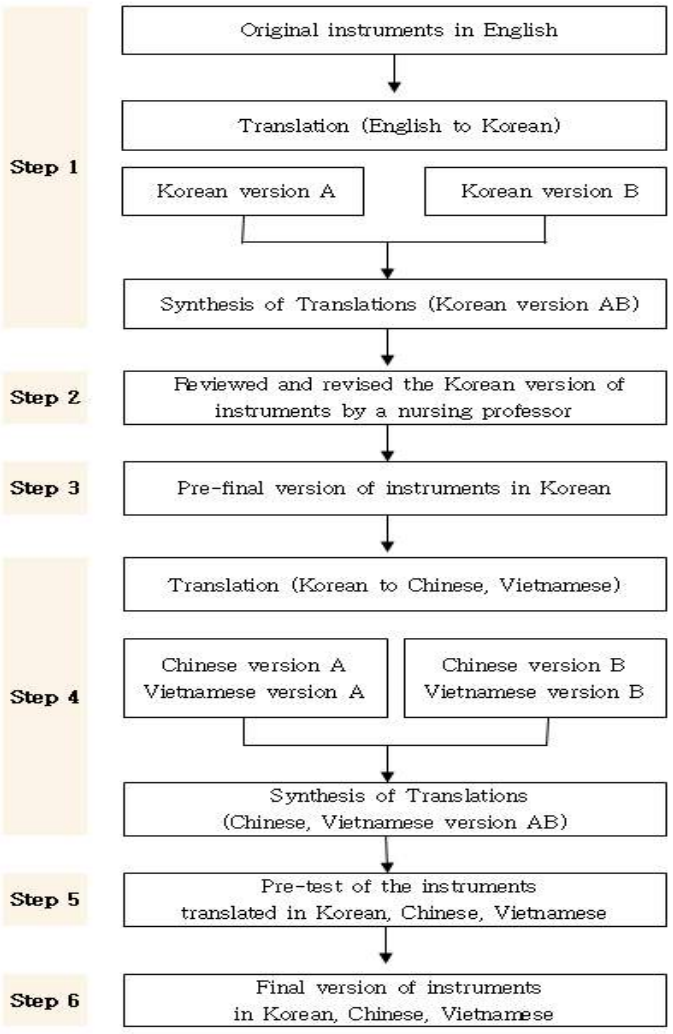

Figure 4. Translation process

Table 2. Measurement of variables

Construct	Concept	Variable	Instrument	Items	Scale	Range of Score	Cronbach's alpha at development	Cronbach's alpha in this study
Action	Individual behavior	Child HPV vaccination	-	1	Norminal Scale 1=Refusing group 2=Intending group 3=Ceasing group 4=Maintaining group 5=Completing group	-	-	-
	Cues to action	Cues to action of HPV vaccination	Cues to action Chen et al (2011)	3	5-point Likert Scale (1=strongly disagree, 5=strongly agree)	1~5	.82	.90
	Intention	Intention of HPV vaccination	Intentions S, Y. Kim (2018)	5	7-point Likert Scale (1=no chance at all, 7=very likely)	5~35	.96	.95
Modifying factors	Personal factors	HPV knowledge	HPV knowledge Kim (2011a)	8	True, False (0=not correct, don't know, 1=correct)	0~8	.88	.83
		Health literacy	HLAS (Health Literacy Assessment Scale for Asian Immigrant Women) Ahn & Yang (2015)	10	5-point Likert Scale (0=not at all, 4=very much)	0~40	.77	.72

Construct	Concept	Variable	Instrument	Items	Scale	Range of Score	Cronbach's alpha at development	Cronbach's alpha in this study
		Perceived discrimination in health care	Perceived discrimination in health care Hong et al (2018)	7	5-point Likert Scale (1=never, 5=always)	7~35	.88	.88
	Cultural factors	Social stigma	Perceived social norm-related barriers J. Kim (2018)	3	7-point Likert Scale (1=strongly disagree, 7=strongly agree)	1~7	.79	.89
		Beliefs in sexual disinhibition	Beliefs in sexual disinhibition Mayer et al (2013)	3	5-point Likert Scale (1=strongly disgaree, 5=strongly agree)	1~5	.76	.80
		Social norms	Social norms Hofman et al (2014)	8	5-point Likert Scale (1=strongly disagree, 5=strongly agree)	1~5	.82	.93
		Acculturation	SAS-K (Short Acculturation Scale for Koreans) Choi & Reed (2011)	12	5-point Likert Scale (1=only Korean, 5=only English)	1~5	.93	.89
Individual beliefs	Perceived benefits	Perceived benefit to HPV vaccination	Health beliefs about HPV vaccination Lee & Park (2011)	2	4-point Likert Scale (1=not at all, 4=very much)	2~8	.74	.69
	Perceived barriers	Perceived barriers to HPV vaccination		4		4~16	.62	.71

Construct	Concept	Variable	Instrument	Items	Scale	Range of Score	Cronbach's alpha at development	Cronbach's alpha in this study
	Perceived susceptibility	Perceived susceptibility to HPV infection		2		2~8	.71	.48
	Perceived severity	Perceived severity of HPV infection		2		2~8	.74	.77
	Perceived self-efficacy	Perceived self-efficacy about HPV vaccination	Self efficacy S. Y. Kim (2018)	3	7-point Likert Scale (1=disagree strongly, 7=agree strongly)	3~21	.97	.95

The details of the tools used in this study are as follows.

1) Personal factors

(1) HPV knowledge

HPV knowledge was adopted from 8 items questionnaire by Kim (2011a) which was originally developed by Kim and Ahn (2007) that consisted of 20 items in total. Each item was answered with 'true, false, don't know'. A score of 1 point was given for each correct answer, and in the case of incorrect answer or being unable to answer were given a score of 0 point. The total score of the tool ranged between 0~8 points, and a higher total score indicated higher level of HPV knowledge. Cronbach's α of the tool was .87 in the study by Kim and Ahn (2007), .88 in the study by Kim (2011a) and .83 in this study

(2) Health literacy

Health literacy was assessed using Health Literacy Assessment Scale for Asian Immigrant Women (HLAS), developed by Ahn and Yang (2015), and the tool consisted of 10 items in total. Each item was evaluated on a five-point scale with 0, 1, 2, 3, and 4 points for 'strongly disagree', 'disagree', 'neutral', 'agree', and 'strongly agree', respectively. The total score of the tool ranged between 0~40 points, and a higher score indicated higher health literacy. Cronbach's α was .77 in the study by Ahn and Yang (2015) and .72 in this study.

(3) Perceived discrimination in health care

Perceived discrimination in health care was evaluated using a tool, originally developed by William et al. (1997), modified by Bird and Bogart (2001), and translated into Korean by Hong et al. (2018). The tool consisted of seven items, which were evaluated on a five-point scale with 1 point for 'never' and 5 points

for 'always'. The total score of the tool ranged between 7~35 points, and a higher total score indicated more experiences of discrimination in health care. Cronbach's α of the tool in the study by Hong et al. (2018) was .88 and .88 in this study.

2) Cultural factors

(1) Social stigma of HPV vaccination

Social stigma of HPV vaccination was assessed using Perceived social norm-related barriers tool developed by J. Kim (2018). The tool consisted of 3 items including 'If I receive the HPV vaccine, other people will see me promiscuous'. The items were evaluated on a seven-point scale with one point for 'strongly disagree' and seven points for 'strongly agree'. The score of this tool was calculated by dividing the total score by the number of items, and a higher average score indicated higher social stigma of HPV vaccination. Cronbach's α was .79 in the study by J. Kim (2018) and .89 in this study.

(2) Beliefs in sexual disinhibition about HPV vaccination

Beliefs in sexual disinhibition about HPV vaccination were evaluated using a tool developed by Mayer et al. (2013). In this tool, children were described as 'sons'. Thus, the tool was used after modifying to 'children'. The tool consisted of three items including 'If a teenage boy gets the HPV vaccine, he may be more likely to have sex.' The items were evaluated on a five-point scale with one point for 'strongly disagree' and five points for 'strongly agree'. The score of this tool was calculated by dividing the total score by the number of items, and a higher average score indicated greater sexual disinhibition beliefs about HPV vaccination. Cronbach's α was .76 in the study by Mayer et al. (2013) and .80 in this study.

(3) Social norms for HPV vaccination

Social norms for HPV vaccination were evaluated using a tool originally developed by Tiro et al. (2005) on the social norms of mammography, which was modified and supplemented by Hofman et al. (2014) according to HPV vaccination in children. The tool consisted of eight items in total, which were evaluated on a five-point scale with one point for 'strongly disagree' and five points for 'strongly agree'. The score of this tool was calculated by dividing the total score by the number of items, and a higher average score indicated higher social norms for HPV vaccination Cronbach's α was .84 in the study by Tiro et al. (2005), .82 in the study by Hofman et al. (2014), and .93 in this study.

(4) Acculturation

Acculturation was evaluated using Short Acculturation Scale for Koreans (SAS-K), which was originally developed by Marin et al. (1987) and translated into Korean by Choi and Reed (2011). The tool consisted of three sub-domains. The sub-domain consisted of 12 items in total, including five items for language, three items for media, and four items for ethnic social relations. The items were evaluated on a five-point scale. Language and media were given one point for 'only mother tongue' and five points for 'only Korean'. Ethnic social relation was given one point for 'all the natives' and five points for 'all Koreans'. The score of this tool was calculated by dividing the total score by the number of items. The total score ranged from one to five points, and a higher average score indicated higher acculturation. Cronbach's α was .92 in the study by Marin et al. (1987), .93 in the study by Choi and Reed (2011), and .89 in this study.

3) Health belief

(1) Health beliefs about HPV vaccination

Health beliefs about HPV vaccination were evaluated using a tool originally developed by Choi et al. (2008) based on health belief model, which was modified and supplemented for sub-domains of 'perceived benefit, barrier, susceptibility, and severity' by Lee and Park (2011). A total of 10 items were used for the sub-domains: two items for perceived benefit, four items for perceived barrier, two items for perceived susceptibility, and two items for perceived severity. The items were evaluated on a four-point scale with 1, 2, 3, and 4 for 'strongly disagree', 'disagree', 'agree,' and 'strongly agree', respectively. All sub-domain scores were calculated as sum of associated items, and higher scores mean higher level of the concept. Cronbach's α for each sub-domain in the study by Lee and Park (2011) was as follows: .74 for perceived benefit, .62 for perceived barrier, .71 for perceived susceptibility, and .74 for perceived severity. In this study, Cronbach's α for each sub-domain in the study were as follows: .69 for perceived benefit, .71 for perceived barrier, .48 for perceived susceptibility, and .77 for perceived severity.

(2) Self-efficacy about HPV vaccination

Self-efficacy about HPV vaccination was evaluated using a tool originally developed by Gerend and Shepherd (2012), which was translated into Korea, modified, and supplemented by S. Y. Kim (2018). The two studies evaluated the respondent's own self-efficacy for HPV vaccination. In this study, mother's self-efficacy for HPV vaccination of children was assessed. Therefore, the item 'I am confident that I will be vaccinated against HPV' was changed to 'I am confident that I will vaccinate my child against HPV'. The tool consisted of three

items in total, which were evaluated on a seven-point scale with one point for 'strongly disagree' and seven points for 'strongly agree'. The total score of the tool ranged between 3~21 points, and a higher score indicated higher self-efficacy of mothers for child's vaccination against HPV. Cronbach's α of the tool was .85 in the study by Gerend and Shepherd (2012), .97 in the study by S. Y. Kim (2018), and .95 in this study.

4) Action

(1) Cues to action for HPV vaccination

Cues to action for HPV vaccination was evaluated using a tool developed by Chen et al. (2011). The cues to action for HPV vaccination measured the level to which people agree that the 'media and recommendations of doctors and nurses' influence decisions about children's HPV vaccination. The type of vaccine, which was described as 'influenza' was modified to 'HPV' prior to use. The tool consisted of three questions, which were evaluated on a five-point scale with one point for 'strongly disagree' and five points for 'strongly agree'. The score of this tool was calculated by dividing the total score by the number of items, and a higher average score indicated greater cues to action for HPV vaccination. Cronbach's α in the study by Chen et al. (2011) was .82 and .90 in this study.

(2) HPV vaccination level in children

HPV vaccination level in children was classified into five groups (refusing group, intending group, ceasing group, maintaining group, completing group) using a single item on HPV vaccination of children. The intention for HPV vaccination was evaluated using a tool originally developed by Gerend and Shepherd (2012), which was translated into Korea, modified, and supplemented by S. Y. Kim (2018).

The two studies evaluated self-intention for HPV vaccination. In this study, mother's intention to vaccinate their children against HPV was measured. Thus, the item 'how likely are you to consider HPV vaccination?' was modified to 'how likely is your child to be vaccinated against HPV?'. The tool consisted of five items which were evaluated on a seven-point scale with one point for 'not at all likely' and seven points for 'very likely'. The total score of the tool ranged between 5~35 points, and a higher score indicated higher mother's intention to vaccinate the children against HPV. Cronbach's α of the tool was .96 in the study by Gerend and Shepherd (2012), .96 in the study by S. Y. Kim (2018), and .95 in this study.

5) HPV vaccination related characteristics

Based on previous studies (Lee, 2010; Hsu, Hsu, Cheng, Fetzer, & Chou, 2010), HPV vaccination related characteristic included a total of six items: 'reasons for not vaccinating children against HPV, number of times children were vaccinated against HPV, person making the decision for HPV vaccination, father's intention to vaccinate the children against HPV, mother's HPV vaccination status, and perceived need of HPV vaccination for male'. HPV vaccination related characteristics were answered according to the level of HPV vaccination in children except for some questions. In detail, those whose children were not vaccinated against HPV were asked to answer all items except for the item the number of HPV vaccinations in children. Those participants whose children were vaccinated against HPV answered all items except for the item on the reasons for not vaccinating children against HPV. Additionally, the item on intention for HPV vaccination was excluded for those participants whose children were fully vaccinated against HPV. In the written survey, explanations were provided to exclude certain items for the participants according response on the children's

HPV vaccination level. In online survey, certain items were automatically omitted.

6) General characteristics

General characteristics of the participants were evaluated using eight items on 'mother's country of origin and ethnicity, religion, education level, income level, length of stay in Korea' and 'child's age, sex, and immigrated children'. If the participant had more than two children between the age of 9 and 19, the participant was asked to answer for the oldest child. Immigrated children refer to those 'children who were born and raised in other country and moved to Korea with the mother'.

7) Other

One item to freely express 'opinions to suggest regarding children's HPV vaccination' was included.

D. Data Collection

Data was collected after the approval of the Institutional Review Board (IRB) of Severance Hospital, Yonsei Medical Center. Data was collected in writing or online from February 5 to February 7 for the pre-test and from February 17 to August 14 for the main survey.

Prior to data collection, the researcher visited the multicultural family support centers, multicultural schools, and others in Seoul, Gyeonggi-do, Gyeongsangnam-do, and Busan. The researcher provided explanations on the purpose, method, and questionnaire content for cooperation. The researcher requested a recruitment notice written in three languages (Korean, Chinese, Vietnamese) on 'research purpose, research subject selection criteria, research method, QR code, and researcher phone number' to be posted on the bulletin board and website of multicultural family support centers, and multicultural schools and related institutions. A brief summary of the recruitment notice was distributed to the parents of multi-cultural families who visited the institutions through the person in charge of the institution. For multicultural schools, students delivered the form on research explanation and written consent that included explanations on 'research purpose, research subject selection criteria, research method, QR code, and phone number of the researcher' to the mothers. The written questionnaire as distributed to and collected from the mothers who met the selection criteria and agreed to participate through the students. Those who preferred online responses participated in the online questionnaire.

The main test was conducted both in person and online. For the written survey, the researcher met with married immigrant women in 1:1 or small groups with the help of related organizations to explain the purpose, method, and content of the questionnaire and confirm that the participants satisfied the selection criteria.

The researcher distributed and collected the questionnaire from the married immigrant women with children who met the selection criteria and agreed to participate in the study. The written questionnaire was prepared in three different languages (Korea, Chinese, and Vietnamese) for the convenience and easy understanding of the participants.

The online questionnaire was provided in three different links depending on the language (Korean, Chinese, and Vietnamese). The participants were allowed to access the questionnaire link in the language that was easy to understand and respond for them. First, the participants were asked to read the explanation and consent form and asked to check 'Consent for study participation' box if they agreed to participate. Then, the participants were asked to answer four items to confirm that they satisfied the selection criteria. The questionnaire was designed to be terminated if the participants did not meet the selection criteria. The four items were as follows: 'country of origin is Vietnam or China (Chinese and Korean-Chinese), spouse is Korean male, have son or daughter between the age of 9 and 19', and 'have not participated in the pre-test and is participating in this questionnaire for the first time'. The items were evaluated as 'yes' or 'no', and only those who answered 'yes' to all four items were allowed to participate and complete the questionnaire. If any of the four items was answered 'no', the participant was disqualified, and the questionnaire was terminated automatically. A small compensation (gift certificate or gift card worth 10,000 won) was provided to the participants who completed the written or online questionnaire.

E. Ethical Considerations

This study was conducted after approval from the IRB prior to data collection. The purpose and necessity of this study were explained to the participants. Only those who voluntarily wished to participate were told to provide own's signature in a written consent form and completed the questionnaire. For online questionnaires, checking the consent for participation prior to starting the questionnaire was considered as agreeing to participate. The consent form stated that the participants may withdraw from the study at any time while completing the questionnaire and that the anonymity and confidentiality of the responses were guaranteed. A small compensation (gift certificate or gift card worth 10,000 won) was provided to the participants who completed the questionnaire. After completion of the questionnaire, the responses were coded by assigned IDs to prevent identification. In addition, the questionnaires were in a place that can only be accessed by the researcher and will be discarded three years after extracting the study results.

F. Data Analysis

The collected data were analyzed using SPSS 21.0, STATA 17.0 programs using the following analysis method.

1) Sociodemographic factors, personal factors, cultural factors, health beliefs and self-efficacy about HPV vaccination, cues to action factor, and HPV vaccination level in children were analyzed using descriptive statistics including frequency, percentage, mean, and standard deviation (SD).
2) Pearson's correlation coefficient analysis was conducted for the correlation between study variables.
3) χ^2-test, Fisher's exact test, and one-way ANOVA were conducted to compare sociodemographic factors, personal factors, cultural factors, health beliefs and self-efficacy about HPV vaccination, cues to action factor, and HPV vaccination level in children, and Scheffé test was conducted for post-hoc analysis.
4) Multinomial logistic regression analysis was conducted to identify factors affecting HPV vaccination level in children.
5) Sequential logistic regression analysis was conducted using seqlogit of STATA to identify factors affecting the transition of HPV vaccination level in children

The participants were assigned into five different groups according to 'HPV vaccination of their children and intention of vaccination in married immigrant women' (refusing group, intending group, ceasing group, maintaining group, completing group). Each group was defined as follows.

- Refusing group included those whose children have not been vaccinated against HPV and have no intention of being vaccinated in the future.

- Intending group included those whose children have not been vaccinated against HPV, but have intentions of getting in the future.
- Ceasing group included those whose children have been vaccinated against HPV, but have no intention to receive the remaining vaccinations.
- Maintaining group included those whose children have been vaccinated against HPV and intend to receive the remaining vaccinations.
- Completing group included those whose children have been fully vaccinated against HPV.

The classification of each group is summarized in tables and figures as follows (Table 3).

Table 3. Classification of respondents

Group name	Vaccination history	Vaccination intention	Completion of vaccination
Refusing group	None	None	N/A
Intending group	None	Yes	N/A
Ceasing group	Yes	None	N/A
Maintaining group	Yes	Yes	N/A
Completing group	Yes	N/A	Completed

Ⅴ. Results

A. General Characteristics of Participants

The characteristics of the study participants are shown in Table 4. Among the 262 married immigrant women included in this study, in terms of country of origin and ethnic race, China (Chinese) occupied the largest shared at 43.5% (n=114), followed by Vietnam at 40.1% (n=105). In terms of religion, no religion ranked first sharing 47.3% (n=124), and the most of respondents were high school graduates (43.9%). Monthly income which belonged to the 1 million to 2 million category shared the largest portion (n=98, 37.4%), and the average length of stay in Korea was 132.68±62.44 months. The minimum age of child was 9, and the maximum age was 18 with the average of 12.05±2.63. In terms of child gender, the portion of the girls was the largest (n=115, 43.9%), and most of the children were not immigrant status (n=203, 77.5%).

Table 4. Characteristics of respondents (N=262)

Characteristics	Categories	N(%)	Mean±SD
Characteristics of participants			
Country of origin	Vietnam	105(40.1)	
	China	114(43.5)	
	China(ethnic Koreans)	43(16.4)	
Religion	No religion	124(47.3)	
	Buddhism	63(24.0)	
	Christian	30(11.5)	
	Catholic	22(8.4)	
	Others	21(8.0)	
	Islam	2(0.8)	
Education	No education	9(3.4)	
	Graduated from elementary school	15(5.7)	
	Graduated from middle school	47(17.9)	
	Graduated from high school	115(43.9)	
	Graduated from college or university	72(27.5)	
	Graduated from graduate school	4(1.5)	
Monthly income (10,000 KRW)	< 100	71(27.1)	
	100 ~ < 200	98(37.4)	
	200 ~ < 300	42(16.0)	
	300 ~ < 400	14(5.3)	
	≥ 400	4(1.5)	
	Don't know	33(12.6)	
Length of stay in Korea(months)			132.68±62.44
	< 5 years	45(17.2)	
	5 years ~ < 10 years	42(16.0)	
	10 years ~ < 15 years	110(42.0)	
	15 years ~ < 20 years	51(19.5)	
	≥ 20 years	14(5.3)	
Characteristics of child			
Age(years)			12.05±2.63
	9~11	102(38.9)	
	12~18	91(34.7)	
	No response	69(26.3)	
Gender	Boy	80(30.5)	
	Girl	115(43.9)	
	No response	67(25.6)	
Immigrant child	Yes	59(22.5)	
	No	203(77.5)	

B. HPV Vaccination associated Characteristics of Participants

The characteristics related to HPV vaccination of the respondents are as follows (Table 5). For the children's vaccination, the cases in which married immigrant women discussed with their husband shared largest portion (n=121, 46.2%), and the cases in which husband had intention to get their children vaccinated against HPV was the largest in proportion (n=140, 53.4%). The number of respondents (n=170, 64.9%) agreeing that male needed to be vaccinated against HPV was larger than not agreeing respondents. Most of married immigrant women did not have experienced having HPV vaccination (72.5%). 100 respondents answered open-ended question asking for their thoughts or suggestions about children's HPV vaccination. Out of 100, 12 respondents were excluded from the analysis because they answered with 'no opinion'. The answers were largely divided into the followings: 'worried about the side effects of HPV vaccination', 'do not have knowledge on HPV vaccination', 'have intentions to have children vaccinated against HPV if certain conditions are satisfied', 'HPV vaccination is necessary', 'HPV vaccination is not necessary', 'Others' (Table 6).

Table 5. HPV vaccination associated characteristics of respondents

(N=262)

Characteristics	Categories	N(%)
Decision maker on child's vaccination	Herself	103(39.3)
	Husband	37(14.1)
	Joint decision with husband	121(46.2)
	Others	1(0.4)
Husband's intention of child's HPV vaccination	Yes	140(53.4)
	No	34(13.0)
	Don't know	88(33.6)
Perceived need of HPV vaccination for male	Yes	170(64.9)
	No	92(35.1)
Maternal HPV vaccination uptake	Yes	72(27.5)
	No	190(72.5)

Table 6. Opinions regarding HPV vaccination (N=88)

Theme	Sub-theme
1. Worried about the side effects of HPV vaccination	
2. Do not have knowledge on HPV vaccination	Heard HPV vaccination for the first time
	Do not know about the side effects of HPV vaccination
	Do not know when to get HPV vaccination
	Do not know whether boys need to get HPV vaccination
3. Have intentions to have children vaccinated against HPV if certain conditions are satisfied	Sufficient proof of the effects and safety of HPV vaccination
	Sufficient age (upon reaching adulthood) of children
	Recommended by the government
4. HPV vaccination is necessary	HPV vaccination is necessary for the health of their children and hoped for more supply of HPV vaccines
5. HPV vaccination is not necessary	Because of child gender (i.e. boy)
	They did not want their children to have unnecessary pain from vaccines
	Refused to have their children vaccinated against HPV as they could be discriminated by other people
6. Others	Missing important vaccination dates because of insufficient information
	When income is enough, and the vaccination is mandatory, get the children vaccinated.
	Everyone wish to be vaccinated against HPV
	Wish the children to live a healthier and better life

7. Suggestions	Hope education opportunities and PR sessions/ materials regarding HPV vaccination Desire to receive HPV vaccines for free or at low cost

C. HPV Vaccination Level of Children and Mothers' Vaccination Intent

The HPV vaccination level of child and mother's vaccination intent are shown in Table 7. In the health belief model, the level of HPV vaccination level in children is largely divided into 'refusing group, intending group, ceasing group, maintaining group, completing group'. The greatest number of the participants were in intending group at 148 participants (56.5%), followed by refusing group (54 participants, 20.6%), completing group (28 participants, 10.7%), maintaining group (21 participants, 8.0%), and ceasing group (11 participants, 4.2%). There were 60 mothers whose children had received at least 1 dose HPV vaccination. Among them, the cases which completed HPV vaccination (24 participants, 40%) were similar to the cases which did not complete HPV vaccination (25 participants, 41.6%). Mother's intention to vaccinate the children against HPV was analyzed for 234 participants, excluding 28 participants whose children were fully vaccinated. The mean score for mother's intention to vaccinate their children against HPV was 23.24±8.31 points. A total of 202 mothers whose children were not vaccinated against HPV answered the item on 'reasons for not vaccinating children against HPV'. The most common reason was lack of information about HPV vaccination (65 participants, 32.2%), followed by concerns about side effects of HPV vaccination (40 participants, 19.8%), too early to vaccinate (39 participants, 19.3%), cost burden (26, 12.9%), cultural reasons such as social myths and customs in home country (13 participants, 6.4%), and other reasons (11 participants, 5.4%).

Table 7. HPV vaccination level of children and mothers' vaccination intent

(N=262)

Characteristics	Categories	N(%)	Mean±SD
HPV vaccination status of child	Refusing group	54(20.6)	
	Intending group	148(56.5)	
	Ceasing group	11(4.2)	
	Maintaining group	21(8.0)	
	Completing group	28(10.7)	
Completion of child's HPV vaccination (n=60)	1 shot out of 2 doses	8(13.3)	
	2 shots out of 2 doses	16(26.7)	
	1 shot out of 3 doses	14(23.3)	
	2 shots out of 3 doses	3(5.0)	
	3 shots out of 3 doses	8(13.3)	
	No response	11(18.3)	
Intention of child's HPV vaccination (n=234)			23.24±8.31
The reasons for not receiving the HPV vaccine (n=202)	Lack of information about HPV vaccination	65(32.2)	
	Concerns about side effects of HPV vaccination	40(19.8)	
	Cultural reasons such as social norms, custom of the homeland	13(6.4)	
	Burden of cost	26(12.9)	
	Too young to be vaccinated	39(19.3)	
	Others	11(5.4)	
	No response	8(4.0)	

D. Descriptive Statistics of Research Variables

The descriptive statistics of the research variables are shown in Table 8. The mean score of knowledge on HPV, which is a personal factor among sub-factors of modifying factor of the health belief model, was 2.76±1.72 points. The mean score for health literacy and perceived discrimination in health care was 24.92±6.34 and 14.15±5.71 points, respectively. The mean score for social stigma to HPV vaccination, which is a cultural factor, was 2.62±1.45 points. The mean score for sexual disinhibition belief about HPV vaccination, social norms for HPV vaccination, and acculturation was 1.99±0.96, 3.37±0.92, 2.79±0.79 points. The mean score 'language, media, ethinic social relations' which are the sub-factors of acculturation was 2.62±0.90, 3.18±1.22, and 2.71±0.79 points.

The mean score for 'perceived benefit to HPV vaccine, perceived barrier to HPV vaccine, perceived susceptibility to HPV infection, and perceived severity of HPV infection', which are the sub-factors of health belief about HPV vaccination, was 6.37±1.45, 10.76±2.67, 4.59±1.61, 6.04±1.67 points, respectively. The mean score for self-efficacy about HPV vaccination was 14.87±5.54 points. The mean score for cues to action for HPV vaccination was 2.51±0.99 points.

Table 8. Descriptive statistics of the variables (N=262)

Variables	Possible range	Actual range		Mean±SD
		Min	Max	
Personal factors				
HPV Knowledge	0~8	0	7	2.76±1.72
Health literacy	0~40	0	40	24.92±6.34
Perceived discrimination in health care	7~35	7	30	14.15±5.71
Cultural factors				
Social stigma	1~7	1	7	2.62±1.45
Beliefs in sexual disinhibition	1~5	1	5	1.99±0.96
Social norm	1~5	1	5	3.37±0.92
Acculturation	1~5	1	5	2.79±0.79
Language	1~5	1	5	2.62±0.90
Media	1~5	1	5	3.18±1.22
Ethnic social relations	1~5	1	5	2.71±0.79
Individual beliefs				
Perceived benefit	2~8	2	8	6.37±1.45
Perceived barriers	4~16	4	16	10.76±2.67
Perceived susceptibility	2~8	2	8	4.59±1.61
Perceived severity	2~8	2	8	6.04±1.67
Self efficacy	3~21	3	21	14.87±5.54
Cues to action				
Cues to action regarding HPV vaccination	1~5	1	5	2.51±0.99

E. Correlations between the Study Variables

The correlations between the major study variables are shown in Table 9. Mother's intention to vaccinate the children against HPV was negatively correlated with social stigma to HPV vaccination (r=-.303, p<.001), and sexual disinhibition beliefs toward HPV vaccination (r=-.257, p<.001), perceived barrier to HPV vaccine (r=-.244, p<.001), perceived susceptibility to HPV infection (r=-.208, p=.002). On the other hand, mother's intention to vaccinate the children against HPV was positively correlated with social norms for HPV vaccination (r=.661, p<.001), acculturation (r=.230, p<.001), perceived benefit to HPV vaccine (r=.266, p<.001), self-efficacy for HPV vaccination (r=.664, p<.001).

Cues to action for HPV vaccination in children was negatively correlated with knowledge on HPV (r=-.275, p<.001), health literacy (r=-.329, p<.001), perceived benefit to HPV vaccine (r=-.156, p=.011), perceived susceptibility to HPV infection (r=-.140, p=.023), perceived severity of HPV infection (r=-.202, p=.001). On the other hand, cues to action for HPV vaccination in children was positively correlated with perceived discrimination in health care (r=.308, p<.001), social stigma about HPV vaccination (r=.244, p<.001), sexual disinhibition beliefs toward HPV vaccination (r=.130, p=.035), social norms for HPV vaccination (r=.237, p<.001), and acculturation (r=.168, p=.006).

Self efficacy for HPV vaccination was negatively correlated with social stigma about HPV vaccination (r=-.245, p<.001), sexual disinhibition beliefs toward HPV vaccination (r=-.176, p=.004), perceived barrier to HPV vaccine (r=-.187, p=.002), and perceived susceptibility to HPV infection (r=-.250, p<.001). In contrast, self efficacy for HPV vaccination was positively correlated with social norms about HPV vaccination (r=.620, p<.001), acculturation (r=.230, p<.001), and perceived

benefit to HPV vaccine.

Acculturation was negatively correlated with health literacy (r=-.194, p=.002) and positively correlated with sexual disinhibition beliefs toward HPV vaccination (r=.164, p=.008), and social norms for HPV vaccination (r=.288, p<.001). Social norm for HPV vaccination was negatively correlated with health literacy (r=-.123, p=.047) and social stigma about HPV vaccination (r=-.182, p=.003). Sexual disinhibition belief toward HPV vaccination was negatively correlated with knowledge on HPV (r=-.180, p=.003) and health literacy (r=-.180, p=.003), and positively correlated with perceived discrimination in health care (r=.316, p<.001) and social stigma about HPV vaccination (r=.533, p<.001). Social stigma about HPV vaccination was negatively correlated with knowledge on HPV (r=-.123, p=.047) and health literacy (r=-.123, p=.047), and positively correlated with perceived discrimination in health care (r=.408, p<.001). Perceived discrimination in health care was negatively correlated with health literacy (r=-.322, p<.001), and health literacy was positively correlated with knowledge on HPV (r=.255, p<.001).

Table 9. Pearson's correlation coefficient between the variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. HPV knowledge	1													
2. Health literacy	.255 (<.001)	1												
3. Perceived discrimination in health care	-.118 (.057)	-.322 (<.001)	1											
4. Social stigma	-.123 (.047)	-.227 (<.001)	.408 (<.001)	1										
5. Beliefs in sexual disinhibition	-.180 (.003)	-.234 (<.001)	.316 (<.001)	.533 (<.001)	1									
6. Social norm	-.016 (.796)	-.123 (.047)	-.003 (.956)	-.182 (.003)	.011 (.863)	1								
7. Acculturation	-.009 (.889)	-.194 (.002)	.017 (.788)	.108 (.080)	.164 (.008)	.288 (<.001)	1							

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8. Perceived benefit	.195 (.001)	.377 (<.001)	-.316 (<.001)	-.454 (<.001)	-.300 (<.001)	.216 (<.001)	-.070 (.256)	1						
9. Perceived barriers	.026 (.679)	.255 (<.001)	-.084 (.174)	-.083 (.182)	-.098 (.115)	-.242 (<.001)	-.210 (.001)	.215 (<.001)	1					
10. Perceived susceptibility	.175 (.004)	.274 (<.001)	-.009 (.891)	-.106 (.085)	-.057 (.356)	-.101 (.103)	-.212 (.001)	.176 (.004)	.353 (<.001)	1				
11. Perceived severity	.208 (.001)	.275 (<.001)	-.282 (<.001)	-.303 (<.001)	-.264 (<.001)	-.013 (.837)	-.151 (.014)	.488 (<.001)	.358 (<.001)	.390 (<.001)	1			
12. Self efficacy	-.023 (.707)	-.062 (.316)	-.095 (.125)	-.245 (<.001)	-.176 (.004)	.620 (<.001)	.230 (<.001)	.235 (<.001)	-.187 (.002)	-.250 (<.001)	-.023 (.715)	1		
13. Cues to action	-.275 (<.001)	-.329 (<.001)	.308 (<.001)	.244 (<.001)	.130 (.035)	.237 (<.001)	.168 (.006)	-.156 (.011)	-.099 (.111)	-.140 (.023)	-.202 (.001)	.102 (.098)	1	
14. Intention of child's HPV vaccination	.026 (.693)	-.101 (.128)	-.091 (.174)	-.303 (<.001)	-.257 (<.001)	.661 (<.001)	.230 (<.001)	.266 (<.001)	-.244 (<.001)	-.208 (.002)	.045 (.500)	.664 (<.001)	.114 (.088)	1

F. Level of HPV Vaccination in Children according to the Characteristics of Participants

The level of HPV vaccination in children according to the characteristics of study participants is shown in Table 10. Among participant characteristics, 'religion (x^2=15.28, p=.047), education level (x^2=27.24, p=.001), length of stay (F=4.59, p=.001), gender of child (x^2=20.69, p=.008), father's intention to vaccinate children against HPV (x^2=17.10, p=.002), and perceived need of HPV vaccination for male (x^2=26.95, p<.001)' were significantly related to HPV vaccination level in children.

For religion, 'Christianity' and 'Catholicism', which have similar characteristics, were grouped together and 'no religion or other religions' were grouped for analysis. About 23.8% of 'no religion or other religions' was in refusing group, which was higher than 23.1% in 'Christianity and Catholicism' and 11.1% in 'Buddhism'. Approximately 65.1% of those who believed in Buddhism were in intending group, which was higher than 57.1% in 'no religion or other religions' and 44.2% in 'Christianity or Catholicism'. The proportion of 'Christianity or Catholicism' (9.6%) in ceasing group was higher than that of 'Buddhism' (3.2%) and 'no religion or other religions' (2.7%). Additionally, the proportion of 'Christianity or Catholicism' (13.5%) in maintaining group was higher than that of 'Buddhism' (11.1%) and 'no religion or other religions' (4.8%). The proportion of 'no religion or other religions' (11.6%) in completing group was the highest, followed by that of 'Christianity or Catholicism' (9.6%) and 'Buddhism' (9.5%) (x^2=15.28, p=.047).

For education level, 'no education, elementary school graduates, and middle school graduates' were grouped together, and 'college, university or graduate

school graduates' were grouped for analysis. The proportion of 'middle school graduates or below' (35.2%) in refusing group was the highest, followed by 'high school graduates' (18.3%) and 'college graduates or above' (10.5%). Approximately 71.1% of 'college graduates or above' was in intending group, which was higher than 58.3% in 'high school graduates' and 38.0% in 'middle school graduates or below'. The proportion of 'middle school graduates or below' in ceasing group was 8.5%, which was higher than that of 'high school graduates' (3.5%) and 'college graduates or above' (1.3%). The proportion of 'middle school graduates or below' in maintaining group was 11.3%, and this was higher than that of 'high school graduates' (8.7%) and 'college graduates or above' (3.9%). The proportion of 'college graduates or above' in completing group was 13.2%, which was significantly higher than that of 'high school graduates' (11.3%) and 'middle school graduates or below' (7.0%) (x^2=27.24, p=.001).

The length of stay in Korea was the longest in completing group, then in intending group, refusing group, ceasing group, and maintaining group. There were significant differences in the length of stay between the groups (F=4.59, p=.001). Post-hoc analysis showed that the length of stay was significantly higher in intending group and completing group than ceasing group.

With respect to child gender, the samples were divided into 3 groups: 'boy, girl, and unknown'. Approximately 23.9% of 'unknown' was in refusing group, which was higher than 21.3% in 'boy' and 18.3% in 'girl'. The proportion of 'boy' in intending group was 67.5%, and this was higher than that of 'girl' (55.7%) and 'unknown' (44.8%). The proportion of 'unknown' in ceasing group was 9.0%, which was higher than that of 'girl' (2.6%) and 'boy' (2.5%). The proportion of 'unknown' (14.9%) in maintaining group was the highest, followed by 'girl' (7.8%) and 'boy' (2.5%). The proportion of 'girl' in completing group was 15.7%, which was higher than that of 'unknown' (7.5%) and 'boy' (6.3%) (x^2=20.69, p=.008).

Among the characteristics related to HPV vaccination, for father's intention to vaccinate the children against HPV, a higher proportion of 'those had the intent to vaccinate the children' was in intending, maintaining and completing groups compared to 'those who had no intentions to vaccinate the children and those answering with 'don't know'. In intending group, 61.4% had intention to get the children vaccinated and 50.8% had no intention or 'did not know'. In maintaining group, 10.7% had intention to get the children vaccinated and 4.9% had no intention or 'did not know'. In completing group, 12.9% had intention to get the children vaccinated and 8.2% had no intention or 'did not know'. On the other hand, in refusing and ceasing group, those who did not have intentions to vaccinate the children and those answering with 'don't know' were higher in proportion as compared to those who had intentions. In refusing group, 12.1% had intention to get the children vaccinated and 30.3% had no intention or 'did not know'. In ceasing group, 2.9% had intention to get the children vaccinated and 5.7% had no intention or 'did not know' (x^2=17.10, p=.002). A higher proportion of those with intentions believed that HPV vaccination for male was necessary than those without intentions (those with vs. without intentions: 65.3% vs. 40.2% in intending group, 9.4% vs. 5.4% in maintaining group). On the other hand, a significantly higher proportion of those without intentions was in refusing group, ceasing group, completing group than those with intentions (those with vs. without intentions: 11.8% vs. 37.0% for refusing group, 4.1% vs. 4.3% for ceasing group, and 9.4% vs. 13.0% for completing group) (x^2=26.95, p<.001).

Table 10. Level of HPV vaccination in children according to the characteristics of participants (N=262)

Characteris-tics	HPV vaccination status of child					$x2$ or F(p) Scheffé
	Refusing Group[a] (n=54)	Intending Group[b] (n=148)	Ceasing Group[c] (n=11)	Maintaining Group[d] (n=21)	Completing Group[e] (n=28)	
	n (%) or M±SD					
Characteristics of participants						
Country of origin						
Vietnam	22(21.0)	59(56.2)	5(4.8)	8(7.6)	11(10.5)	4.76 (.830)†
China	21(18.4)	62(54.4)	5(4.4)	11(9.7)	15(13.2)	
China (ethnic Koreans)	11(25.6)	27(62.8)	1(2.3)	2(4.7)	2(4.7)	
Religion						
Christian, Catholic	12(23.1)	23(44.2)	5(9.6)	7(13.5)	5(9.6)	15.28 (.047)†
Buddhism	7(11.1)	41(65.1)	2(3.2)	7(11.1)	6(9.5)	
No religion, Others (including Islam)	35(23.8)	84(57.1)	4(2.7)	7(4.8)	17(11.6)	
Education						
None~ Middle school	25(35.2)	27(38.0)	6(8.5)	8(11.3)	5(7.0)	27.24 (.001)
High school graduate	21(18.3)	67(58.3)	4(3.5)	10(8.7)	13(11.3)	
College graduate and above	8(10.5)	54(71.1)	1(1.3)	3(3.9)	10(13.2)	
Monthly income (10,000 KRW)						
< 200	36(21.3)	99(58.6)	10(5.9)	11(6.5)	13(7.7)	10.26 (.200)†
≥ 200	11(18.3)	33(55.0)	0(0.0)	7(11.7)	9(15.0)	
Unknown	7(21.2)	16(48.5)	1(3.0)	3(9.1)	6(18.2)	
Length of stay in Korea (months)	124.22±74.66	139.39±55.22	100.27±67.51	94.00±63.03	155.29±54.80	4.59 (.001) b,e>c

Characteris-tics	HPV vaccination status of child					$x2$ or F(p) Scheffé
	Refusing Group[a] (n=54)	Intending Group[b] (n=148)	Ceasing Group[c] (n=11)	Maintaining Group[d] (n=21)	Completing Group[e] (n=28)	
	n (%) or M±SD					
Characteristics of child						
Age(years)	12.49±2.60	11.68±2.66	12.80±3.27	11.82±2.04	13.13±2.40	1.95 (.104)
Gender						
Boy	17(21.3)	54(67.5)	2(2.5)	2(2.5)	5(6.3)	20.69 (.008)†
Girl	21(18.3)	64(55.7)	3(2.6)	9(7.8)	18(15.7)	
Unknown	16(23.9)	30(44.8)	6(9.0)	10(14.9)	5(7.5)	
Immigrated						
Yes	12(20.3)	30(50.8)	5(8.5)	7(11.9)	5(8.5)	5.50 (.239)
No	42(20.7)	118(58.1)	6(3.0)	14(6.9)	23(11.3)	
Characteristics of HPV vaccination						
Decision maker on child's vaccination						
Myself	21(20.4)	52(50.5)	5(4.9)	9(8.7)	16(15.5)	22.49 (.091)†
Husband	8(21.6)	19(51.4)	3(8.1)	5(13.5)	2(5.4)	
Decision with husband	25(20.7)	77(63.6)	3(2.5)	6(5.0)	10(8.3)	
Others	0(0.0)	0(0.0)	0(0.0)	1(100.0)	0(0.0)	
Husband's intention of child's HPV						
Yes	17(12.1)	86(61.4)	4(2.9)	15(10.7)	18(12.9)	17.10 (.002)
No, Don't know	37(30.3)	62(50.8)	7(5.7)	6(4.9)	10(8.2)	
Maternal HPV vaccination uptake						
Yes	13(18.1)	37(51.4)	4(5.6)	5(6.9)	13(18.1)	6.39 (.172)
No	41(21.6)	111(58.4)	7(3.7)	16(8.4)	15(7.9)	
Perceived need of HPV vaccination for male						
Yes	20(11.8)	111(65.3)	7(4.1)	16(9.4)	16(9.4)	26.95 (<.001)
No	34(37.0)	37(40.2)	4(4.3)	5(5.4)	12(13.0)	

† Fisher's exact test

G. Level of HPV Vaccination in Children according to Study Variables

The level of HPV vaccination in children according to study variables is shown in Table 11. Perceived discrimination in health care among personal factors (F=4.80, p=.001) and social stigma about HPV vaccination (F=4.72, p=.001), sexual disinhibition belief about HPV vaccination, (F=3.51, p=.008), social norms about HPV vaccination (F=11.59, p<.001), acculturation (F=2.55, p=.040) and its sub-domain mass media (F=5.06, p<.001) among cultural factors. Perceived benefit (F=4.14, p=.003), perceived barrier (F=3.73, p=.006), perceived susceptibility (F=4.46, p=.002), and self-efficacy about HPV vaccination (F=11.75, p<.001) among individual beliefs was significantly related with the level of HPV vaccination in children.

For personal factor, perceived discrimination in health care were the greatest in ceasing group, followed by refusing, maintaining, intending, and completing groups. There were significant differences between the groups (F=4.80, p=.001). Post-hoc analysis showed that the perceived discrimination in health care was significantly higher in ceasing group than intending and completing groups.

For cultural factors, the score for social stigma about HPV vaccination was the greatest in vaccination refusing group, followed by ceasing, maintaining, intending, completing groups with significant differences between the groups (F=4.72, p=.001). Post-hoc analysis showed that social stigma score was significantly higher in refusing group than intending and completing groups. The sexual disinhibition belief score was the highest in ceasing group, followed by refusing, maintaining, completing, intending groups with significant differences between the groups (F=3.51, p=.008). Post-hoc analysis showed that the sexual disinhibition belief was

significantly higher in refusing group than intending group. The social norm score for HPV vaccination was the highest in vaccination completing group, followed by intending, maintaining, ceasing, and refusing groups with significant differences between the groups (F=11.59, p<.001). Post-hoc analysis showed significantly higher social norm score in intending and completing groups than in refusing group. Acculturation score was the highest in completing group, followed by intending, ceasing, refusing, and maintaining groups with significant differences between the groups (F=2.55, p=.040). Post-hoc analysis showed no significant differences between the groups. Among the sub-domains of acculturation, there was a significant difference in the media score between the groups (F=5.06, p=.001). The media score was the greatest in completing group, followed by intending, ceasing, refusing, and maintaining groups. Post-hoc analysis showed that the media score was significantly higher in intending and completing groups than in refusing group.

Among the sub-domains of health beliefs about HPV vaccination, perceived benefit (F=4.14, p=.003), perceived barrier (F=3.73, p=.006), and perceived susceptibility (F=4.46, p=.002) scores were significantly different between the groups. The perceived benefit score was the highest in completing group, followed by intending, maintaining, ceasing, and refusing groups. Post-hoc analysis showed that perceived benefit was significantly higher in intending and completing groups than in refusing group. The perceived barrier score was the highest in refusing group, followed by maintaining, ceasing, intending, and completing groups. Post-hoc analysis showed that the score was significantly higher in refusing group than in completing group. The perceived susceptibility score about HPV infection was the highest in maintaining group, followed by ceasing, refusing, completing, and intending groups. Post-hoc analysis showed that the perceived susceptibility score was significantly higher in maintaining group than in intending

group. Self efficacy score was the highest in completing group, followed by intending, maintaining, refusing, and ceasing groups with significant differences between the groups (F=11.75, p<.001). Post-hoc analysis showed that self efficacy score was significantly higher in intending and completing groups than in refusing group. Additionally, self efficacy score was significantly higher in intending and completing groups than in ceasing group.

Table 11. Level of HPV vaccination in children according to study variables (N=262)

Variables	HPV vaccination status of child					F(*p*) Scheffé
	Refusing Group[a] (n=54)	Intending Group[b] (n=148)	Ceasing Group[c] (n=11)	Maintaining Group[d] (n=21)	Completing Group[e] (n=28)	
	M±SD					
Personal factors						
HPV Knowledge	2.44±1.92	2.88±1.73	2.27±1.35	2.95±1.63	2.79±1.50	0.91(.457)
Health literacy	25.98±8.62	24.64±5.45	25.45±7.50	25.52±6.82	23.64±4.62	0.80(.528)
Perceived discrimination in health care	15.87±6.52	13.41±5.20	19.27±6.10	14.29±6.00	12.68±4.75	4.80(.001) b,e<c
Cultural factors						
Social stigma	3.31±1.38	2.44±1.40	2.76±1.14	2.67±1.41	2.15±1.56	4.72(.001) a>b,e
Beliefs in sexual disinhibition	2.31±1.07	1.84±0.90	2.52±0.83	2.11±0.99	1.90±0.87	3.51(.008) a>b
Social norm	2.78±0.88	3.60±0.82	2.85±0.94	3.15±1.02	3.69±0.80	11.59(<.001) a<b,e
Acculturation	2.57±0.92	2.87±0.74	2.69±0.83	2.55±0.77	3.01±0.71	2.55(.040)
Language	2.46±0.95	2.68±0.87	2.69±1.13	2.47±0.92	2.70±0.84	0.82(.513)
Media	2.72±1.22	3.37±1.15	2.82±1.13	2.70±1.06	3.61±1.37	5.06(.001) a<b,e
Ethnic social relations	2.60±0.93	2.73±0.77	2.59±0.69	2.55±0.86	2.96±0.53	1.26(.287)
Individual beliefs						
Health belief						
Perceived benefit	5.70±1.59	6.52±1.37	6.36±1.86	6.48±1.47	6.82±1.06	4.14(.003) a<b,e
Perceived barriers	11.54±2.91	10.66±2.50	11.09±3.24	11.29±2.70	9.29±2.31	3.73(.006) a>e
Perceived susceptibility	4.87±1.93	4.32±1.46	5.18±1.83	5.67±1.32	4.39±1.42	4.46(.002) b<d
Perceived severity	5.56±1.84	6.22±1.61	5.91±1.58	6.29±1.38	5.89±1.81	1.75(.140)

Variables	HPV vaccination status of child					F(p) Scheffé
	Refusing Group[a] (n=54)	Intending Group[b] (n=148)	Ceasing Group[c] (n=11)	Maintaining Group[d] (n=21)	Completing Group[e] (n=28)	
	M±SD					
Self efficacy	11.83±4.93	16.09±5.12	10.18±5.10	12.95±6.27	17.54±4.67	11.75(<.001) a<b,e c<b,e
Cues to action						
Cues to action regarding HPV vaccination	2.49±0.88	2.52±1.01	2.33±1.02	2.38±1.12	2.62±1.02	0.27(.898)

H. Factors Affecting HPV Vaccination Level in Children

Multinomial logistic analysis was performed and included all study variables as well as sociodemographic factors as control variables in the hypothesis test. Among sociodemographic factors, categorical variables such as 'gender of child, age of child, religion, education' were converted into dummy variables. In terms of child gender, two dummy variables, 'girl' and 'unknown (no response)' were created. According to child age, the whole sample was divided into two, one being below 12 years old and the other being 12 and above, and no response group was included in the below 12 years old group. Therefore, one dummy variable was used for child age. Dependent variables were the five groups for the level of HPV vaccination in children (refusing, intending, ceasing, maintaining, and completing groups). The refusing group was treated as baseline group. The results of analysis according to HPV vaccination level are as follows (Table 12).

The proposed model was shown to be adequate for this study (χ^2=448.735, p<.001). In the analysis that follows, the baseline group was refusing group. The factors which decreased the probability of belonging to intending group as compared to refusing group were health literacy (OR=0.90, p=.008), perceived discrimination in health care (OR=0.89, p=.005), sexual disinhibition belief (OR=0.56, p=.043), perceived barrier to HPV vaccine (OR=0.80, p=.025). In contrast, those who believed in Buddhism (as compared to those who did not believe in Buddhism), college graduates and above (as compared to high school graduates and below), every one point increase in social norm and perceived severity increased the odds of being in intending group by the multiple of 5.03 (OR=5.03, p=.015), 4.30 (OR=4.30, p=.035), 4.04 (OR=4.04, p<.001), and 1.51 (OR=1.51, p=.025), respectively.

Every one-point increase in perceived discrimination in health care increased the odds of being in ceasing group by the multiple of 1.24 (OR=1.24, p=.038).
Length of stay was found to decrease the probability of belonging to maintaining group (OR=0.99, p=.049). Those who believed in Buddhism (as compared to those who did not believe in Buddhism) and every one-point increase in social norm increased the odds of being in maintaining group by the multiple of 11.63 (OR=11.63, p=.008), 2.71 (OR=2.71, p=.044), respectively. The factors which decreased the probability of belonging to completing group were health literacy (OR=0.87, p=.026) and perceived barrier to HPV vaccine (OR=0.59, p<.001). In contrast, every one-point increase in perceived benefit increased the odds of being in completing group by the multiple of 1.71 (OR=1.71, p=.045).

Table 12. Factors affecting the HPV vaccination level of children (N=262)

Variables	B	SE	OR	*p*	95% CI	
					Lower	Upper
Intending group						
Intercept	1.378	2.148	-	-	-	-
Gender of child†						
Girl	-.483	.508	.617	.341	.228	1.668
Unknown	.717	.696	2.048	.303	.524	8.009
Age of child (years)†						
≥ 12	.085	.565	1.089	.880	.360	3.293
Religion†						
Christian, Catholic	.060	.625	1.062	.923	.312	3.617
Buddhism	1.616	.664	5.032	.015	1.368	18.504
Education†						
Highshool	.898	.517	2.455	.082	.891	6.766
College or university, graduate school	1.458	.691	4.296	.035	1.110	16.632
Length of stay in Korea(months)	-.003	.005	.997	.539	.988	1.006
HPV knowledge	.244	.132	1.277	.065	.985	1.655
Health literacy	-.107	.040	.899	.008	.831	.973
Perceived discrimination in health care	-.121	.043	.886	.005	.815	.965
Social stigma	.029	.198	1.029	.884	.699	1.516
Beliefs in sexual disinhibition	-.583	.288	.558	.043	.317	.982
Social norm	1.396	.376	4.041	<.001	1.936	8.436
Acculturation	.029	.293	1.030	.920	.580	1.829
Health belief						
Perceived benefit	.088	.189	1.092	.641	.754	1.581
Perceived barriers	-.226	.101	.798	.025	.655	.972
Perceived susceptibility	-.272	.151	.762	.073	.566	1.026
Perceived severity	.414	.184	1.512	.025	1.054	2.170
Self efficacy	.018	.055	1.018	.745	.914	1.134
Cues to action	.007	.292	1.007	.982	.568	1.783
Ceasing group						
Intercept	-5.582	5.058	-	-	-	-
Gender of child†						
Girl	.325	1.096	1.384	.767	.162	11.846
Unknown	1.455	1.446	4.283	.314	.252	72.913

Variables	B	SE	OR	*p*	95% CI	
					Lower	Upper
Age of child (years)†						
≥ 12	.923	1.148	2.516	.422	.265	23.882
Religion†						
Christian, Catholic	.745	1.122	2.107	.506	.234	18.980
Buddhism	-1.202	1.520	.301	.429	.015	5.914
Education†						
Highschool	-.733	.991	.481	.460	.069	3.352
College or university, graduate school	-1.252	1.543	.286	.417	.014	5.883
Length of stay in Korea(months)	.003	.009	1.003	.745	.985	1.021
HPV knowledge	-.121	.257	.886	.637	.535	1.466
Health literacy	-.021	.078	.979	.789	.841	1.141
Perceived discrimination in health care	.214	.103	1.239	.038	1.012	1.517
Social stigma	-.829	.457	.436	.069	.178	1.068
Beliefs in sexual disinhibition	.499	.559	1.648	.372	.551	4.931
Social norm	.809	.716	2.245	.259	.552	9.127
Acculturation	.360	.591	1.434	.542	.450	4.571
Health belief						
Perceived benefit	.597	.360	1.816	.097	.897	3.676
Perceived barriers	-.348	.202	.706	.084	.475	1.048
Perceived susceptibility	-.140	.294	.869	.633	.488	1.546
Perceived severity	.391	.387	1.478	.312	.693	3.155
Self efficacy	-.145	.109	.865	.181	.699	1.070
Cues to action	-.655	.606	.519	.279	.158	1.703
Maintaining group						
Intercept	-1.780	3.259	-	-	-	-
Gender of child†						
Girl	.988	.964	2.687	.305	.406	17.784
Unknown	1.931	1.200	6.896	.108	.656	72.468

Variables	B	SE	OR	*p*	95% CI	
					Lower	Upper
Age of child (years)†						
≥ 12	.936	.842	2.550	.266	.489	13.290
Religion†						
Christian, Catholic	.872	.886	2.393	.325	.421	13.597
Buddhism	2.453	.928	11.629	.008	1.886	71.683
Education†						
Highschool	1.253	.832	3.502	.132	.685	17.888
College or university, graduate school	.813	1.118	2.254	.467	.252	20.155
Length of stay in Korea(months)	-.015	.007	.985	.049	.971	1.000
HPV knowledge	.169	.196	1.184	.389	.807	1.737
Health literacy	-.106	.058	.899	.069	.802	1.008
Perceived discrimination in health care	-.130	.069	.878	.061	.767	1.006
Social stigma	-.170	.297	.844	.567	.471	1.511
Beliefs in sexual disinhibition	-.266	.427	.767	.534	.332	1.771
Social norm	.998	.496	2.714	.044	1.026	7.182
Acculturation	-.170	.501	.844	.734	.316	2.252
Health belief						
Perceived benefit	.072	.264	1.074	.786	.640	1.804
Perceived barriers	-.260	.136	.771	.056	.590	1.007
Perceived susceptibility	.456	.265	1.578	.085	.939	2.651
Perceived severity	.166	.279	1.181	.551	.683	2.041
Self efficacy	.073	.078	1.075	.355	.922	1.254
Cues to action	.215	.440	1.239	.625	.524	2.934
Completing group						
Intercept	.455	3.413	-	-	-	-
Gender of child†						
Girl	.782	.841	2.186	.352	.421	11.359
Unknown	2.571	1.049	13.084	.014	1.674	102.272
Age of child (years)†						
≥ 12	1.423	.775	4.150	.066	.908	18.966
Religion†						
Christian, Catholic	-.091	.832	.913	.912	.179	4.657
Buddhism	.922	.883	2.513	.297	.445	14.180

Variables	B	SE	OR	*p*	95% CI	
					Lower	Upper
Education†						
Highschool	.038	.788	1.039	.962	.221	4.871
College or university, graduate school	.701	.946	2.015	.459	.315	12.879
Length of stay in Korea(months)	-.001	.006	.999	.915	.987	1.012
HPV knowledge	.171	.187	1.186	.362	.822	1.712
Health literacy	-.141	.063	.868	.026	.767	.983
Perceived discrimination in health care	-.130	.067	.878	.055	.770	1.003
Social stigma	-.222	.284	.801	.435	.459	1.399
Beliefs in sexual disinhibition	-.242	.402	.785	.547	.357	1.728
Social norm	.780	.498	2.181	.118	.821	5.794
Acculturation	.284	.433	1.329	.511	.569	3.103
Health belief						
Perceived benefit	.538	.269	1.712	.045	1.011	2.899
Perceived barriers	-.528	.140	.590	<.001	.448	.775
Perceived susceptibility	-.058	.220	.944	.791	.614	1.451
Perceived severity	.118	.238	1.125	.621	.705	1.795
Self efficacy	.113	.080	1.120	.157	.957	1.309
Cues to action	-.005	.380	.995	.990	.473	2.095

† References : 1) Gender of child: Others besides Girl or Unknown, 2) Age of child: Others besides aged above 12, 3) Religion: Others besides Christian, Catholic or Buddhism, 4) Education: Others besides graduated from highschool, college, university or graduate school

A separate analysis for the group of 12 years old and above girls (n=61) was conducted. This group was eligible for getting free HPV vaccination. In the univariate analysis, the distribution of five groups was found to be significantly different according to education level, and social stigma, social norms and perceived benefit significantly varied according to the levels of HPV vaccination. However, there was statistical limitation due to small sample size when including education and social norms. Therefore, these variables were excluded from main analysis. Included in the main analysis were (1) 'social norms and perceived benefit' which were statistically significant in univariate anaylsis, (2) 'perceived barrier, perceived susceptibility, perceived severity, perceived self efficacy' from theoretical framework. The results from multinomial logistic regression were as follows (Table 13).

The proposed model was adequate (χ^2=108.501, p=.001). In following analyses, refusing group was treated as baseline group. Every one point increase in perceived benefit was shown to increase the possibility of belonging to maintaining group by the multiple of 11.90 (OR=11.90, p=.012). The factor which decreased the probability of belonging to completing group was social stigma (OR=0.29, p=.035). On the other hand, perceived benefit was found to increase the possibility of belonging to completing group by the multiple of 3.69 (OR=3.69, p=.043).

Table 13. Factors affecting the HPV vaccination level of girls aged 12 and above (N=61)

Variables	B	SE	OR	*p*	95% CI	
					Lower	Upper
Intending group						
Intercept	4.659	4.243	-	-	-	-
Social stigma	-.891	.514	.410	.083	.150	1.123
Health belief						
Perceived benefit	.877	.510	2.405	.085	.885	6.533
Perceived barriers	-.146	.206	.864	.479	.578	1.294
Perceived susceptibility	-.531	.397	.588	.181	.270	1.281
Perceived severity	-.184	.558	.832	.742	.279	2.485
Self efficacy	.005	.108	1.005	.967	.813	1.241
Ceasing group						
Intercept	9.049	11.012	-	-	-	-
Social stigma	-.331	1.192	.718	.781	.069	7.434
Health belief						
Perceived benefit	-.637	2.146	.529	.767	.008	35.504
Perceived barriers	-1.003	.673	.367	.136	.098	1.373
Perceived susceptibility	-2.838	2.437	.059	.244	.000	6.947
Perceived severity	1.840	2.181	6.297	.399	.088	452.860
Self efficacy	.217	.290	1.243	.454	.704	2.195
Maintaining group						
Intercept	-5.939	7.321	-	-	-	-

Variables	B	SE	OR	*p*	95% CI	
					Lower	Upper
Social stigma	-1.021	.634	.360	.107	.104	1.249
Health belief						
Perceived benefit	2.477	.988	11.901	.012	1.716	82.563
Perceived barriers	-.576	.334	.562	.084	.292	1.081
Perceived susceptibility	.563	.654	1.756	.389	.487	6.329
Perceived severity	-1.108	.733	.330	.131	.078	1.391
Self efficacy	.156	.151	1.169	.300	.870	1.572
Completing group						
Intercept	2.380	5.098	-	-	-	-
Social stigma	-1.238	.586	.290	.035	.092	.915
Health belief						
Perceived benefit	1.307	.645	3.694	.043	1.043	13.085
Perceived barriers	-.360	.263	.698	.171	.417	1.169
Perceived susceptibility	-.312	.501	.732	.534	.274	1.954
Perceived severity	-.425	.613	.654	.488	.197	2.172
Self efficacy	.123	.129	1.131	.341	.878	1.458

I. Factors Affecting the Transition of HPV Vaccination Level in Children

Sequential logit regression analysis can be performed when decisions are made sequentially in a certain phenomenon. In this study, HPV vaccination practice in children consists of four stages of transition as follows (Figure 5).

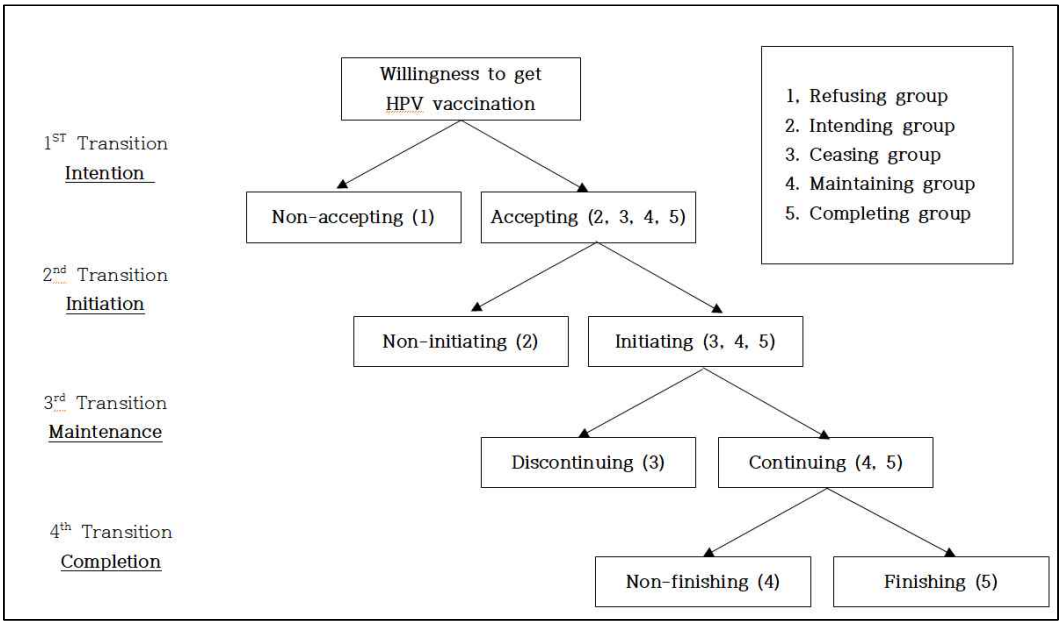

Figure 5. Sequential logit model

Sociodemographic factors of 'gender and age of child' were included as control variables, and study variables 'HPV knowledge, health literacy, perceived discrimination in health care, social stigma, sexual disinhibition belief, social norm, acculturation, perceived benefit, perceived barrier, perceived susceptibility, perceived

severity, self efficacy, and cues to action' were included in the analysis. The factors affecting transition of HPV vaccination level in children are as follows (Table 14) (Figure 6).

In the 1st transition, the whole sample was divided into non-accepting and accepting groups. In the following analysis, the independent variables were posited to affect the decision making in the choice of either one of them. The results showed that 'health literacy, social norms, perceived barrier and perceived severity' were statistically significant predictors. The factors which decreased the probability of belonging to accepting group as compared to non-accepting group were health literacy (OR=0.93, p=.031) and perceived barrier (OR=0.81, p=.011). Every one point increase in social norms, perceived severity increased the odds of being in accepting group by the multiple of 2.26 (OR=2.26, p=.009) and 1.38 (OR=1.38, p=.032).

In the 2nd transition, which independent variables were responsible for the choice between non-initiating and initiating groups. The results revealed that 'sexual disinhibition beliefs, social norms, perceived barrier and perceived susceptibility' were statistically significant predictors. The factors which decreased the possibility of belonging to initiating group as compared to non-initiating group were social norms (OR=0.48, p=.006), perceived barrier (OR=0.84, p=.033). On the other hand, every one point increase in sexual disinhibition beliefs, perceived susceptibility increased the odds of being in initiating group by the multiple of 1.63 (OR=1.63, p=.036) and 1.52 (OR=1.52, p=.002), respectively.

In the 3rd transition, which independent variables were responsible for the choice between discontinuing and continuing groups. The results showed that 'perceived discrimination in health care' was statistically significant predictors, and it decreased the probability of belonging to continuing group (OR=0.70, p=.020).

In the 4th transition, respondents were considered to choose either non-finishing

or finishing group, and no independent variables were statistically significant. Sequential logit regression analysis showed differences in the factor related to each transition. In particular, in the 1st transition, every one-point increase in social norms increased the odds of being in the accepting group; however, in the 2nd transition, every one-point increase in social norms decreased the odds of being in the initiating group.

Table 14. Sequential logisitic models for HPV vaccination (N=262)

	1st Transition (1 vs 2,3,4,5)		2nd Transition (2 vs 3,4,5)		3rd Transition (3 vs 4,5)		4th Transition (4 vs 5)	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Demographic factors								
Gender of child†								
Girl	0.69	.30-1.56	1.65	.75-3.63	5.59	.15-205.92	0.27	.02-4.39
Age of child (years)†								
≥ 12	0.80	.35-1.84	1.79	.82-3.91	0.29	.01-7.31	3.85	.24-60.55
Personal factors								
HPV knowledge	1.15	.93-1.43	0.96	.77-1.20	1.24	.57-2.72	1.12	.59-2.09
Health literacy	0.93	.88-1.00	0.99	.92-1.05	0.90	.75-1.09	0.95	.78-1.16
Perceived discrimination in health care	0.95	.89-1.02	1.03	.96-1.11	0.70	.52- .95	0.91	.73-1.12
Cultural factors								
Social stigma	0.80	.57-1.11	0.82	.60-1.13	2.11	.65-6.87	0.91	.39-2.13
Beliefs in sexual disinhibition	0.75	.47-1.21	1.63	1.03-2.58	0.54	.13-2.27	0.78	.19-3.23
Social norm	2.26	1.23-4.15	0.48	.29- .81	0.92	.11-8.02	1.12	.20-6.19
Acculturation	1.23	.74-2.04	0.76	.46-1.26	1.47	.26-8.49	1.74	.38-7.90
Individual beliefs								
Perceived benefit	1.25	.92-1.70	1.31	.96-1.78	1.06	.57-1.99	0.90	.43-1.89
Perceived barriers	0.81	.68- .95	0.84	.71- .99	0.90	.53-1.53	0.76	.49-1.19
Perceived susceptibility	0.88	.68-1.15	1.52	1.16-1.99	3.05	.80-11.64	0.43	.17-1.08
Perceived severity	1.38	1.03-1.86	0.82	.62-1.07	0.77	.38-1.57	1.11	.51-2.40
Self efficacy	1.01	.92-1.12	1.00	.92-1.08	1.18	.80-1.76	0.98	.71-1.33
Cues to action								
Cues to action regarding HPV vaccination	0.97	.59-1.59	1.02	.69-1.51	1.70	.41-7.09	1.21	.47-3.13

OR: Odds ratio, $^{*}p < .05$

1 : Refusing group, 2 : Intending group, 3 : Ceasing group, 4 : Maintaining group,

5 : Completing group

† References : 1) Gender of child: Others besides Girl, 2) Age of child: Others besides aged above 12

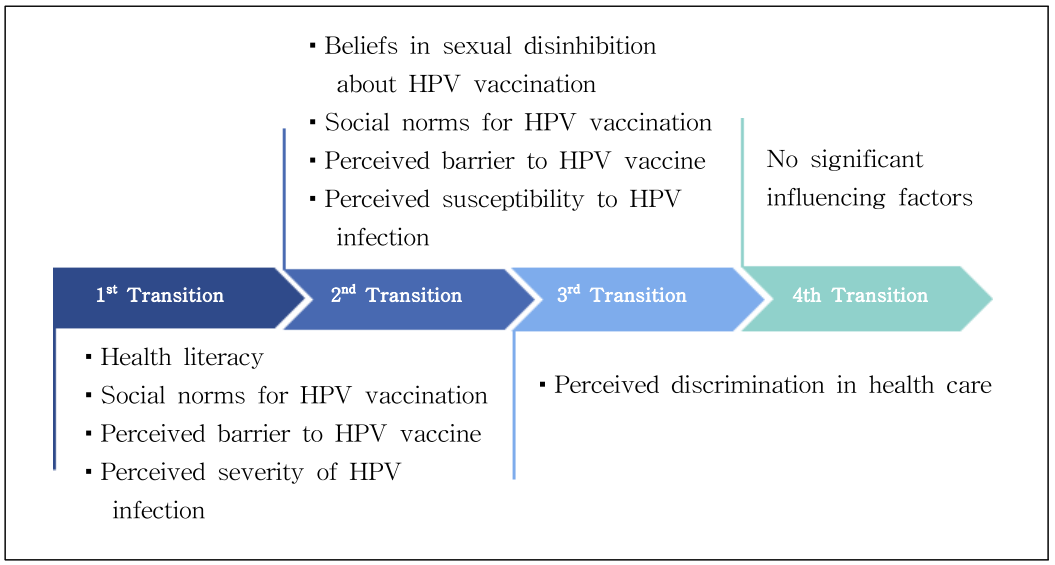

Figure 6. Factors affecting the transition of HPV vaccination level

Ⅵ. Discussion

This study was conducted to find the HPV vaccination level of married immigrant women's children living in Korea and to identify its determinants. Predictors of HPV vaccination transitions were also identified. Since the HPV requires multiple doses, it is important to understand the meaning of level of HPV vaccination. The level of HPV vaccination was operationalized as the array of five constituting groups named 'intending, refusing, maintaining, ceasing, and completing' in the sense that HPV vaccination is a process passing through 4 stages of the decision making including intention, initiation, maintenance, and completion. For instance, at the first transition, called 'intention' the individual has to make his/her mind whether he or she remains to be 'not vaccinated' (refusing group) or 'getting at least the first dose' (intending, maintaining, ceasing, and completing groups). The predictors considered were sociodemographic, personal, cultural factors, health beliefs, and cues to action.

A. Level of HPV Vaccination in Children of Married Immigrant Women

Out of five groups, the 'intending group' occupied the largest portion at 57%, followed by the 'refusing (21%), completing (11%), maintaining (8%), and ceasing groups (4%)' in descending order. And both Lee et al. (2016) and this study asked the mothers whose daughters (aged 12 years old or above) had not yet started HPV vaccination about their intention to get their daughters vaccinated for HPV. The positive reply was 72% in Lee et al. (2016) and 77% in this study. As can be seen from above figures, the ratio of intending group was relatively high and the ratio of completing group seemed to be very low. Without proper and timely

intervention, the intending group may not proceed to the completing stage. For the groups which do not accept HPV vaccination due to misunderstanding or lack of information, the education emphasizing the benefits of vaccination and threats of HPV should be provided. For instance, the fact that finishing 2 rounds of vaccination with an interval of six months at an age between 9 and 14 years produces better protective effects than getting 3 rounds of vaccination at higher ages should be emphasized in the education program (CDC, 2021c). This study asked the intending and refusing groups (i.e., those not having their children get the first shot of HPV vaccination yet) for the reasons why. About 32% mentioned the lack of information, indicating a necessity for information provision regarding HPV vaccination. Other than information contents, education method should also be carefully thought out. For example, the intervention should consider two aspect s of behavioral changes, persuasion and motivation. In the case of persuasion, clients should be provided with the needed information and with the opportunities to correct their prejudice or bias regarding HPV vaccination. And motivation could be improved by providing education using the group setting thus creating positive group norm by allowing active participation in the group discussion. Lewin (1951) proposed to use group setting to change behavior so that group dynamics can be woven into the education activities. If group norms regarding HPV vaccination appears, it can create strong positive force to move participants toward the higher level of HPV vaccination.

According to a systematic literature review about social media intervention to increase vaccination, an intervention method such as uploading education materials on the social media would help to improve knowledge but would not help to change behavior. On the other hand, such method like sharing one's thoughts on vaccination and discussing with others online turned out to be effective in behavior change (Li, Wood, & Kostkova, 2021). Therefore, the opportunities to

exchange one's thoughts and share worries or doubts regarding HPV vaccination should be offered to the participants.

As HPV vaccination involves multiple vaccination at least 2 rounds, ceasing group which received the first round but has no intention to complete the second round. Forster et al. (2015) examined the reasons behind ceasing HPV vaccination for the ages 15 or 16-year-old female students living in Britain. The reasons included 'administrative reasons associated missing the vaccination', 'lack of information regarding multiple vaccination above 2 rounds', 'fear about vaccination', and 'responses after prior vaccination'. Therefore, intervention method to address above reasons for ceasing should be considered. For example, it may help to send remind message for the date of next round while emphasizing that HPV vaccination requires getting multiple doses.

B. Factors Affecting HPV Vaccination Level in Children

The multinomial logistic regression analysis was performed to identify the factors that influence HPV vaccination level of children of married immigrant women. Health literacy of married immigrant women, one of the personal factors, was found to affect the children's HPV vaccination negatively. One study conducted in India targeting the mothers of the babies 12 to 23 months old showed that the mothers' health literacy had a positive relationship with the children's vaccination (Johri et al., 2015). These finding was against with the result of this study. In our analysis, health literacy of married immigrant women had negative influence on the children's HPV vaccination level. This matched with Aharon et al. (2017), which categorized 3 dimensions of health literacy including functional, communicative, and critical health literacy, and related those with the children's vaccination. The results showed that a high level of all three dimensions of health literacy led to low vaccination. In a systematic literature review, Lorini et al. (2018) concluded that the relationship between health literacy and vaccination was uncertain, and the prediction of vaccination acceptance via health literacy depended on factors such as the type of vaccine or the nation of origin. This suggests a possibility that a moderator variable might exist between the mother's health literacy and children's HPV vaccination level. The type of vaccine and the nation of origin might be the candidate to be considered as a moderator. Additionally, other possibility is that the relationship between the mother's health literacy and children's HPV vaccination level might be non-linear.

The other personal factor was perceived discrimination in health care. Perceived discrimination of married immigrant women in health care seemed to negatively affect children's HPV vaccination level. Also perceived discrimination in health care can trigger health injustice issue (Rivenbark & Ichou, 2020), thus it is

necessary that perceived discrimination in health care of married immigrant women should be reduced. To reduce perceived discrimination in health care, it is suggested that health care institutions make a communication channel to deal with complaints from married immigrant women and improve cultural competence of their medical staffs. It is also possible that married immigrant women might feel discrimination despite the medical staffs did not treat them in discriminatory ways due to language barriers. Therefore, in-house translation services better be provided to married immigrant women for smoother communication. Another point to be made is that social desirability might have been influenced respondents whil e answering the questions. In this study, perceived discrimination in health care was relatively low with the average falling below the mid-points of the scale. According to domestic studies, it was found that the nurses treated Asian patients with greater prejudice compared to foreign patients from developed countries (Nam & Moon, 2015; Min, 2018). Thus, the disparity between the realities and the responses from questionnaire connotes that some degree of social desirability on the part of the respondents exists. Accordingly, it is suggested that social desirability be measured and be statistically controlled for.

Social norms of married immigrant women affected children's HPV vaccination positively in this study. Schuler & Coyne-Beasley (2016) found that the parents of 9 to 21-year-old sons who thought other people got their children HPV vaccinated were not only more knowledgeable about HPV but also had higher intentions of getting their child vaccinated. Chaparro et al. (2020) identified the determinants of HPV vaccination based on a sample of parents and guardians of 11-year-old girls and found a positive influence of social norms on intentions to get their children HPV vaccinated. In previous studies, most Asian mothers said that they would seek consultation from their husband (Marlow et al., 2009c). In this study, 46% of mothers consulted with their husbands for child's vaccination. Not only that but

also the fathers seemed to have influence on the level of children's HPV vaccination. As a result, the role of fathers in the processes of the children's HPV vaccination cannot be dismissed. Therefore, it seems to be necessary that education efforts should be directed to both mothers and fathers regarding the necessities of HPV vaccination.

Sexual disinhibition belief was found to also affect HPV vaccination negatively. Previous studies also found that sexual disinhibition belief toward HPV vaccination negatively affected children's HPV vaccination (Rodriguez et al., 2018). From another perspective, Asian immigrants tended not to get their children vaccinated since sexual activities are prohibited due to religious beliefs (Marlow et al., 2009b; Marlow et al., 2009c). However, when the mother's religion was Buddhism, the children's HPV vaccination level tended to become higher. It can be argued that any decisive conclusion could not be drawn regarding how specific religion affect the level of children's HPV vaccination from a single empirical study. Thus, until more empirical evidence accumulates, it would suffice to say that religion played the role of control variable.

Higher perceived benefit and perceived severity, and lower perceived barriers for married immigrant women led to more positive behavior in children's HPV vaccination in this study. This is consistent with the assumptions of the health belief model as supported by previous research. According to previous domestic studies conducted for mothers of the middle school female freshman and junior students, the higher perceived benefits and lower perceived barriers both increased the intention of their daughters' HPV vaccination (Park et al., 2020). In another domestic study (J. Kim, 2018), it was found that graduate students' perceived severity had positive relationships with vaccination intention. Therefore, when developing education programs for married immigrant women's children regarding HPV vaccination, it is needed to consider the elements of health beliefs.

C. Factors Affecting the Transition of HPV Vaccination Level in Children

This study aimed to find the factors responsible for the transitions of decision choices faced by married immigrant women for their children's HPV vaccination. In order to achieve this objective, sequential logistic regression analyses were performed. Sequential logistic regression involves a situation where decision making is done sequentially. In other words, one is assumed to make decision between 2 alternative choices, which is called a 'transition' and a set of independent variables are considered to affect the transition.

This study can be compared with Barboza & Dominguez (2016) in that it classified the transition stages into 4 steps (intention, initiation, maintenance, and completion) while the latter came up with 3 transitions, initiation, continuation, and completion. This study differed from Barboza & Dominguez (2016) in that intending and ceasing group were distinguished. And Barboza & Dominguez (2016) focused on demographic variables to find out the determinants of HPV vaccination. On the other hand, this study aimed to enlarge the range of influencing factors to include individual factors, cultural factors, health beliefs, and cues to action factors.

Among those factors, social norms were found to exert influence in opposite directions in the first and second steps. In the first transition step, positive social norms increased the acceptance of vaccination, but in the second transition step social norms were found to influence vaccination processes negatively. Temporal construal theory in behavioral economics might help in interpreting this seemingly conflicting finding. According to the theory, when there is a long temporal distance, people tend to give attention to the ideal nature of phenomena arriving

late in the future, dismissing implementation feasibility and detailed practical issues. As the future event comes closer to the present time horizon, details such as cost, needed efforts, obstacles, etc. are deemed to exert bigger influence than ideals or the big picture (Liberman & Trope, 1998). Thus, it is suggested that social norms exert positive influences on HPV vaccination at the point of forming intention, but influences negatively on HPV vaccination for the reasons of cost, time consumption, and inconveniences at the time of action. Likewise, at the beginning people might be more likely moved by positive norms, but later at the time of actual injection the same person might be influenced by more negative social norm. There was no previous studies available to confirm the findings of this study so far in the way social norm influences HPV vaccination positively at one transition and negatively influences at another transition stage. Before conclusion is made regarding the role of social norms in determining HPV vaccination, there needs to be follow-up studies to verify the findings.

However, practitioners or researchers need to consider to which transition does the participants belong to and the relevant measure should be taken. To be specific, even though the participants reported that they would get their children HPV vaccinated, it would be better not to assume that intention would turn to action automatically. That means they further needs to be persuaded and motivated to get their children HPV vaccinated.

D. Nursing Implications

1) Nursing theoretical aspect

In this study, it was found that decreased perceived barriers and increased perceived severity led to a higher possibility of belonging to the 'intending' group of HPV vaccination. The fact that the higher perceived benefits and lower perceived barriers to HPV vaccine led to the higher chances of belonging to the completing group presented another empirical basis to support the health belief model. Besides, this study proposes a differentiated conceptual framework by including cultural factors in addition to sociodemographic factors and personal factors in the heath belief model while limiting the target population to married immigrant women. However, the relationship between these cultural factors and health belief factors was not specified in the framework, thus further research regarding how cultural factors affect heath behavior via health beliefs needs to be carried out by using Structural Equation Model.

2) Nursing research aspect

In this study, HPV vaccination levels were operationalized as the array of five different groups and four different transitions according to children's history of HPV vaccination and mother's future intention of the children's HPV vaccination. By identifying influencing factors at each transition, this study could provide empirical ground on which effective intervention leading to behavioral change could be built. Under the circumstances that there is a dearth of studies regarding cultural factors, this study confirmed that social norms significantly affect the level of HPV vaccination in children of married immigrant women. The research implications of this finding include, first of all, it offered the basis of the necessity

to consider cultural factors when dealing with a population group with a multicultural context.

3) Nursing practice aspect

In this study, perceived discrimination of the married immigrant women at medical institutions were found to decrease the possibility of belonging to the 'intending' group and to increase the odds of belonging to the 'ceasing' group. Thus, it is necessary to develop the alternatives to diminish the perceived discrimination in health care. This study confirmed that various factors influence HPV vaccination level and transitions of married immigrant women. This study is then considered to have important implications in that it offered relevant evidence for the necessity of developing differentiated programs at each level and transition when developing intervention programs or education materials to improve HPV vaccination uptake rate. These intervention programs must consider the different factors at work at different transitions.

E. Limitations of the study

Though this study has some important research and practical implications, it is not without limitations.

First, the total number of returned questionnaires were 333, but during the data cleaning stage 71 questionnaires (about 21%) were excluded from the data analysis for missing responses in dependent variable. The reasons behind might include that the 87-item questionnaire in this study may have been very demanding for the respondents to answer. In addition, the terms like 'HPV and HPV vaccination' used in the questionnaire was probably unfamiliar terminology to the majority of respondents. As a result, answering the questions might have been burdensome to them. Especially in the case of online surveys , confusion or unfamiliarity with the content might have made respondents stop answering the questionnaire altogether (Gray, Grove, & Sutherland, 2017).

Second, in the case of multinomial logistic regression analysis for the group aged of 12 and above, the sample used was not big enough in size to obtain sufficient power (n=61). Also, in the sequential logistic regression, none of the independent variables turned out to be statistically significant in the fourth transition of HPV vaccination level. This might have happened because of small sample size used in this analysis. Thus, interpretation of the results must be carefully carried out.

Third, in this study, cues to action was measured as an average of environmental cues (i.e., mass media, doctors, nurses), thusthe overall influence from the environment could be estimated but the specific cues which made a person decide to act could not be pinpointed. In the future studies, whether or not there was any specific cues to action existed before committing health behavior must be identified.

Ⅶ. Conclusion and suggestions

This study was performed to identify the level of HPV vaccination of children of married immigrant women living in Korea and to confirm the factors that influence this level and transition among the levels. This study constructed a conceptual framework based on the health belief model and additional factors suggested by previous studies. In this framework, 'sociodemographic, personal, cultural factors, health beliefs, and cues to action factors' were treated as independent variables which were posited to affect the children's HPV vaccination level.

Summarizing the results, it could be concluded that different sociodemographic, personal, cultural, health belief factors were working at different HPV vaccination levels. Thus, it is argued that health care institutions need to confirm which group or transition each individual client falls into and then provide customized vaccination services instead of a uniform intervention approach.

Considering both the increasing trends of multicultural families and the increased prevalence of cervical cancer, more research efforts need to be directed towards the studies of the children's HPV vaccination level of married immigrant women. To overcome the limitations of this study, some improvements must be made.

First, since this study focused on a wide spectrum of independent variables for the purpose of identifying the important determinants, the number of variables included in the analysis was large. This made the survey difficult because it complicated the problem associated with unfamiliarity of the terms used in the questionnaire. Therefore, it is suggested that the number of questionnaire items be reduced in the future survey in order to reduce the numbers of missing values, insincere responses, or dropout rates.

Second, in order to conduct multinomial logistic regression for the groups aged 12 years old or above, a reduced number of independent variables had to be entered into the logistic regression equation because of the limited sample size. In future studies, a larger set of samples must be secured so that the analysis with any subset of the data could be made possible with enough statistical power.

Third, the original health belief model considered health belief factors as mediators between modifying factors and health behavior. However, as the first step to apply the model to the HPV vaccination levels of children of married immigrant women, we treated health belief factors as independent variables instead of mediators. Subsequent studies should consider to include health belief factors as mediators.

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Appendix 1. Previous studies regarding HPV vaccination among Asian immigrants (N=22)

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
1	Marlow, Wardle, Forster, & Waller (2009)	Cross-sectional survey	UK	Asian (Indian, Pakistani, Bangladeshi, Chinese)(with White British, Caribbean, African	Women (N=950)	Over the age of 16	N/A	950	N/A	HPV awareness and acceptability of HPV vaccination	• Asian had lower awareness of HPV • Much lower HPV vaccine acceptability (Indian (25%), Bangladeshi (18%), Pakistani (11%)) 1) Reasons for accepting • Protection : less among Indian (16%), Bangladeshi (13%) compared with white mothers (29%) 2) Reasons for not accepting • Needing more information • Sex-related reasons (ex: 'it encourages promiscuity' or 'risk of premature sex') • Safety/side-effects • Religion/culture (ex: no sex before marriage) • No necessity • Age related reasons (ex:

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
											12-13 years is too young) • Lack of trust in vaccination • Wanting to discuss the decision with other family members
2	Bastani et al (2011)	Cross-sectional survey	USA	Chinese, Korean, (with African American, another race/ethnicity)	Mothers of child aged 9~18 (N=490)	43.8	N/A	490	N/A	HPV vaccination uptake	• 25% of Chinese, 24% of Korean daughter had initiated the vaccine • No ethnic differences were observed in vaccine initiation or completion rates • Korean mothers were less aware of HPV compared to others • Chinese mothers were less likely to endorse this statement "immunization against disease is a good thing" than other groups • Chinese and Korean mothers believed their daughters should be vaccinated at older ages

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
											(15, 14.6 years respectively) • Koreans were more likely to supportive of school mandates compared to African American and Chinese mothers • Barriers to uptake among unvaccinated girls → needing more information (66% of Korean, 81% of Chinese)
3	Nguyen, Chen & Chan (2012)	Cross-sectional survey	USA	China	Women aged 18 or older (N=158)	67 ± 14	N/A	158	N/A	Acceptability of a HPV vaccine	• About 50% had heard of HPV vaccine • HPV vaccination acceptance: Higher english proficiency • Women with limites English proficiency have low HPV awareness • Older participants were slightly more likely to think HPV vaccine cause their daughters or granddaughters

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
											to be more sexually active
4	Taylor et al (2012)	Cross-sectional survey	USA	Cambodia	Mothers having at least one girl aged 9~18 (N=96)	<40 (36%) ≥40 (64%)	N/A	96	N/A	HPV vaccine uptake	• HPV vaccine uptake was low • HPV vaccine uptake ↑ : Having received a doctor's recommendation for vaccination, Having asked a doctor for vaccination
5	Kim & Choi (2014)	Cross-sectional survey	Korea	• Husband's nationality : South Korea • Wife's nationality : Vietnam, Philippines, Cambodia, Thailand	Immigrant women's husband (N=200)	• Husband's age : 44 • Wife's age : 28.1	200	N/A	N/A	Knowledge and health beliefs about cervical cancer	• About 90% women were not vaccinated against HPV. 1) Reason for getting HPV vaccine among vaccinated participants • Believe that HPV vaccination prevent cervical cancer (4.3%) • Recommended by husban (21.8%) • Recommended by relatives (8.8%) • Recommended by friend (4.3%) • Recommended by health

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
											professional (56.5%) 2) Reason for rejecting HPV vaccine among non-vaccinated participants • Too expensive (16.4%) • Fear of side effects (1.7%) • Lack of knowledge of HPV and HPV vaccine (76.8%) • Mistrust of vaccine effect (1.1%) • Not having time for the vaccination (2.3%)
6	Taylor et al (2014)	Cross-sectional survey	USA	Cambodia	Mothers with daughters aged 9~17 (N=86)	<45 (44%) ≥45 (56%)	N/A	86	N/A	HPV vaccination uptake	• HPV vaccine uptake ↑ (Facilitators) : mothers having heard about the HPV vaccine from a health professional, having received a recent Pap test • HPV vaccine uptake ↓ (Barriers) : Lack of knowledge about the HPV v accine, not having received a physician recommendation

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
											for HPV vaccination, thinking the HPV vaccine is unnecessary in the absence of health problems
7	Forster et al (2015)	Cross-sectional survey	UK	Asian (with white, black, other)	Girls aged 15~16 (N=48)	Not reported	N/A	259	N/A	HPV vaccine status (N=259)	1) Unvaccinated girls • Lack of parental consent • Safety concerns • The vaccine isn't needed 2) Vaccinated girls • Administrative reasons (Related to missing doses) • Need for more information (About multiple doses of the vaccine) • Procedural issues (Fear of needles and dislike of injections) • Health reasons (Decide not to finish the course due to reaction after previous dose) • Other reasons
8	Kolar et al (2015)	Cross-sectional	USA	Asian (with Black, Hispanic, White,	College women (N=711)	Range: less than 18~more	N/A	711	N/A	HPV vaccination	• Asian and Black women who had not received the

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
		survey		Other women)		than 27				uptake	HPV vaccine had higher mistrust scores than vaccinated women • Medical mistrust mean and SD was 9.4(5.9) among those who were not vaccinated compared to 7.2(5.2) among vaccinated Asian women
9	Jones et al (2016)	Cross-sectional survey	Canada	East Asian, South Asian, West Asian (with Arab, Black, White, Other)	College males aged 18~26 (N=680)	19.45 ± 1.60	680	N/A	N/A	HPV vaccine decision making	• HPV related stigma is a barrier to HPV vaccine decision making • HPV related stigma : Caucasians scored lower than East Asians and South Asians • Being of Asian ethnicity was associated with higher HPV related stigma
10	Lee et al (2016)	Cross-sectional survey	USA	Cambodia	Mothers of child aged 12~17 year old girl	44.55 ± 7.59	N/A	130	N/A	HPV vaccine uptake	• Vaccination rate : Girls (29%), Boys (16%) • Awareness and knowledge of HPV was very low

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
					(N=130)						• Many believed that their daughter (who speak English and were educated in the US) had more knowledge about health than they did • Daughter's HPV vaccine uptake↑: Mothers who had higher level of English reading ability and had greater awareness and knowledge of HPV
11	Lee et al (2018)	Cross-sectional survey	USA	South Korea	Mother or father who have children or adolescents aged 11~18 (N=74)	47.16±4.07	23	47	4	HPV vaccination status	• HPV knowledge level was very low (3.14 out of 10) • Many participants had negative perception toward HPV vaccination • No vaccination group: lower perceived benefits and barriers
12	Kim et al (2019)	Cross-sectional survey	USA	South Korea	College women who have not been previously	21.7±2.3		N/A		104	N/A

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
					vaccinated against HPV (18~26 years old) (N=104)						
13	Tung et al (2019)	Cross-sectional survey	USA	China	College students (N=449)	23.3±3.4	186	263	N/A	HPV vaccination status	▪ HPV knowledge ↓ : men, non-health sciences majors ▪ Negative attitudes about HPV and vaccine : Older students, those without a primary care provider, those who completed the survey in English ▪ Better vaccination status : younger, female, higher level of knowledge, more positive attitudes, complete the survey online
14	Zhu et al (2019)	Cross-sectional survey	USA	China	Parents or legal guardians with at least 1 child aged 11	42.09±7.60	75	35	N/A	HPV vaccination intention	▪ Intention ↑ : higher level of knowledge on HPV and the vaccine, being influenced by doctors, having lived in the

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
					(N=110)						US for over 15 years ▪ Intention ↓: who involve children in the decision making process
15	Marlow, Wardle, & Waller (2009)	Qualitative interviews	UK	Asian (Indian, Pakistani, Bangladeshi, other) (with Black/black british)	Mothers (N=20)	Not reported	N/A	20	N/A	HPV vaccination attitudes	▪ Most mothers (including Black mothers) had not heard of HPV, and agreed the HPV vaccination had benefits ▪ Asian mothers worried about risk of side effects from HPV vaccination, and that the HPV vaccine had not been tested with women from all ethnic groups ▪ Asian mothers felt 12/13 was too young to give the HPV vaccination and wanted to know the reasons. Their lifestyle meant a low risk of HPV infection, making the vaccine unnecessary for

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
											daughters at age 12/13 ▪ Religious beliefs (ex. muslim) about abstaining from sex outside of marriage meant HPV would not be a worry ▪ Asian mother said they would discuss HPV vaccination with their husband and that he would have a big influence on decision to accept the vaccination ▪ Sex related discussion was considered 'taboo' - One Asian mother thought some young girls would be unable to talk about the vaccine with their parents - One Asian mother felt sex-related issues 'will never be discussed' in media

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
16	Burke et al (2015)	Qualitative interviews	USA	Cambodia	Mothers having at least one girl aged 9~17 (N=25)	30~39 (16%) 40~49 (60%) ≥50 (24%)	N/A	25	N/A	HPV vaccine decision making	• Intention ↑: Want to protect my child, Doctor recommendation • Intention ↓: Misunderstandings about the function of the vaccine, Lack of linguistically and literacy appropriate information, no necessity due to healthy condition, Uncertainty of the vaccine (it was still brand new when making a decision)
17	Kim et al (2015)	Qualitative focus groups	USA	South Korea	Women aged 21~65 year old (N=26)	44.8 ± 6.4	N/A	26	N/A	Decision -making about HPV vaccination	1) Lack of awareness and knowledge about HPV vaccine 2) Perceptions and beliefs about HPV vaccination • Acceptance (Prevention from unexpected situations) • Negative perception (Concerns about safety, Concerns about promiscuity,

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		Concerns about cost) • Ambivalence 3) Patterns of decision making about HPV vaccination • Hierarchical (Doctor recommendation, school policy) • Peer-influenced • Autonomous • Collaborative 4) Promoting HPV education and information sharing in the Korean community - The most desirable education sources were their pediatricians and nurse practitioners (due to trustworthy)
18	Forster et al (2017)	Qualitative interviews	UK	Asia (Bangladeshi, Indian, Pakistani, Sri Lanakan Tamil) (with White &	Parents of child aged 13~16 (N=33)	47	1	32	N/A	HPV vaccination refusal	1) Concerns about the vaccine • Concern about side effects • Concerns relating to percep

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
				Asian, White & Black, White British, Non-British White, African, African, Caribbean, Somali)							tions of risk (Some nonvaccinating parents perceived their daughters to be at low risk) • Concerns that vaccination will promote promiscuity 2) External and internal influences • Insufficient information of HPV vaccination → Information requirements 3) Preventing HPV related cancer using means other than vaccination • illness prevention informed by complementary and alternative medicine and idiosyncratic beliefs
19	Hopfer et al (2017)	Qualitative interviews	USA	Vietanamese (with Latina)	Adult women aged 18~26 (N=48)	22 ± 2.4	N/A	48	N/A	HPV vaccination uptake	• The majority of all Vietnamese women were unable to explain about HPV and HPV vaccine • HPV vaccine uptake ↑

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
											- Mother-daughter narratives (mother's vaccine attitudes influenced to their vaccination) - Practitioner recommendation of HPV vaccination - Independence narratives (making their own decision to vaccinate) • HPV vaccine uptake ↓ - Trust in partner HPV status - Family silence and stigma about sexual health (having Catholic, conservative family cultures that preclude family conversation about sexual health and HPV)
20	Chao et al (2009)	Secondary data analysis	USA	Asian/Pacific Islander, (with White, African American, Hispanic, Other or unknown)	Girls aged 9~17 year old and their mothers (N=148,350)	• Girl - HPV4 initiation : 13.8±2.1 - No HPV4	N/A	148,350	N/A	HPV vaccine uptake	• Mothers' pap test history was associated with HPV vaccine completion of daughters in all racial/ethnic groups

No	Authors(s), Publication Year	Study design	Country of Study	Countries of Orgin /Race	Population	Age (years) (Mean±SD or % or range)	Gender (N or %)			Outcome	Results
							Male	Female	Missing		
						initiation : 13.0±2.7 • Mother - HPV 4 initiation : 42.1±6.4 - No HPV4 initiation : 41.3±6.5					• Mother's history of STIs was strongly associated with increased of HPV vaccine completion of daughters in Asian/Pacific Islanders
21	Barnack-Tavlaris et al (2016)	Secondary data analysis	USA	Asian (with White, Latina)	2007 California Health Interview Survey data (Women & Mothers) (N=4,666)	Women (Range: 18~27) Mother (Range: 28~65)	N/A	4.666	N/A	HPV vaccine awareness and acceptability of the vaccine	• Asian and Latinas women were less likely to have heard and be aware of the vaccine than White women • Asian women were less likely to be interested in vaccinating their daughters
22	Otanez & Torr (2018)	Secondary data analysis	USA	Asian and Pacific Islander (with White, Hispanic, Black)	2007 Health Information National Trends Survey (HINTS) data for adults (N=5675)	18~34 yrs : 32% 35~54 yrs : 40% 55 and older : 28%	49%	51%	N/A	HPV vaccination intention	• Intention ↑ : higher level of HPV knowledge

Appendix 2. Result of IRB approval

연세의료원 연구심의위원회
Yonsei University Health System, Institutional Review Board
서울특별시 서대문구 연세로 50-1 (우) 03722
Tel. 02 2228 0454, Fax. 02 2227 7888 Email. irb@yuhs.ac

심 의 일 자	2021년 2 월 2 일
접 수 번 호	2020-3244-002
과제승인번호	Y-2020-0215

연세의료원 연구심의위원회의 심의 결과를 다음과 같이 알려 드립니다.

Protocol No.	
연 구 제 목	여성결혼이민자의 자녀 HPV 예방접종에 영향을 미치는 요인
연 구 책 임 자	이자인 / 연세대학교 일반대학원 간호학과
의 뢰 자	(학)연세대학교
연구예정기간	2021.02.02 ~ 2022.02.01
지속심의 빈도	12개월마다
과 제 승 인 일	2021.02.02
위 험 수 준	Level I 최소위험
심 의 방 법	신속
심 의 유 형	질의답변 + 계획변경
심 의 내 용	- 1) 설문지에 'HPV 예방접종에 대한 사회적 낙인 문항'을 3문항으로 수정함 2) '모르겠음'을 추가함 - 3년 이후에 폐기로 수정함 - 연구자 연락처를 구체적으로 제시함 - [변경후]임상 연구계획서(국문) : 전향적 연구계획서 ver 3_이자인.doc 삭제 - [변경후]증례기록서 : 증례기록서 ver 02_이자인.docx 삭제 - [변경후]대상자 모집 문건 : 대상자 모집 문건 삭제 - [변경후]대상자 설명문 및 동의서 : 대상자 설명문 및 동의서 version 01_이자인.pdf 삭제 - [변경후]기타 : 설문지 version 02_이자인 삭제 - [변경후]임상 연구계획서(국문) : 전향적 연구계획서 ver 5_이자인.doc 추가 - [변경후]증례기록서 : 증례기록서 ver 03_이자인 (0120).docx 추가 - [변경후]대상자 모집 문건 : 대상자 모집 문건 추가 - [변경후]대상자 설명문 및 동의서 : 3. 본조사 대상자 설명문 및 동의서 (한국어) ver 01.pdf 추가 - [변경후]기타 : 예비조사 대상자 설명문 및 동의서(한국어) 추가 - [변경후]기타 : 예비조사 설문지 (한국어) 추가

- [변경후]대상자 설명문 및 동의서 : 1. 예비조사 대상자 설명문 및 동의서 (베트남어) ver 02(1).pdf-예비조사(베트남어) 추가

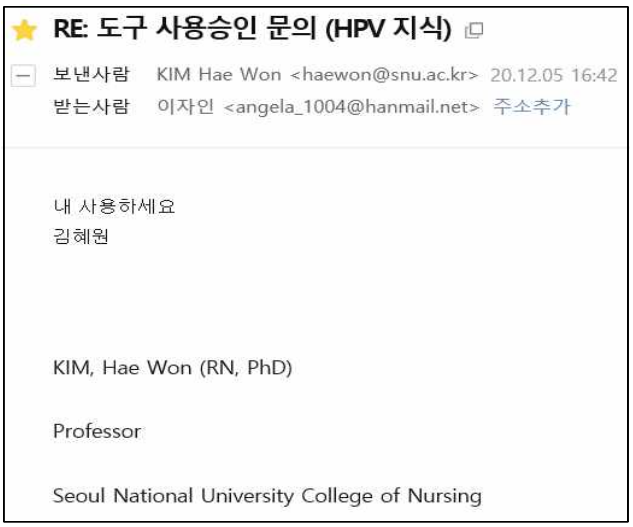
심 의 위 원 회	연세의료원 IRB
참 석 위 원	연세의료원 IRB 신속심의자
심 의 결 과	승인
심 의 의 견	-

※ 연세의료원 연구심의위원회는 생명윤리 및 안전에 관한 법률을 준수합니다.
연구책임자 및 연구담당자가 IRB 위원인 경우, 해당 위원은 위 연구의 심의과정에 참여하지 않았습니다.

연세의료원
연구심의위원회
위원장

Appendix 3. Permission to use survey instruments

1. HPV knowledge



RE: 도구 사용승인 문의 (HPV 지식)

보낸사람 KIM Hae Won <haewon@snu.ac.kr> 20.12.05 16:42
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

내 사용하세요
김혜원

KIM, Hae Won (RN, PhD)

Professor

Seoul National University College of Nursing

2. Health literacy

RE: 도구 사용승인 문의 (건강문해력)

보낸사람 안지숙 <jisookan@kyungnam.ac.kr> 20.10.06 14:11 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

네 안녕하세요.

도구 사용하십시오.

제 박사논문 검색 후 부록 부분 참고하시면 됩니다.

안지숙 드림.

3. Perceived discrimination in health care

1) Author of original version

Re: Request for your approval to use the scale (Everyday discrimination)

보낸사람 Williams, David <dwilliam@hsph.harvard.edu> 21.01.03 23:20 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

The Everyday Discrimination scale is publicly available, no permission is necessary.
More info about the scale is on website below

I cannot speak for the Bird and Bogart scale – you would need to contact them

David

2) Author of new version

RE: [EXT] Request for your approval to use the scale (Perceived discrimination

보낸사람 Bogart, Laura <lbogart@rand.org> 21.01.15 01:18 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

Hello,

Yes, I approve of you using the scale. Good luck with your dissertation!

Best,
Laura

3) Author of translated version

RE: RE: 홍혜정 교수님께 ('의료기관에서의 차별경험' 도구 사용승인 문의)

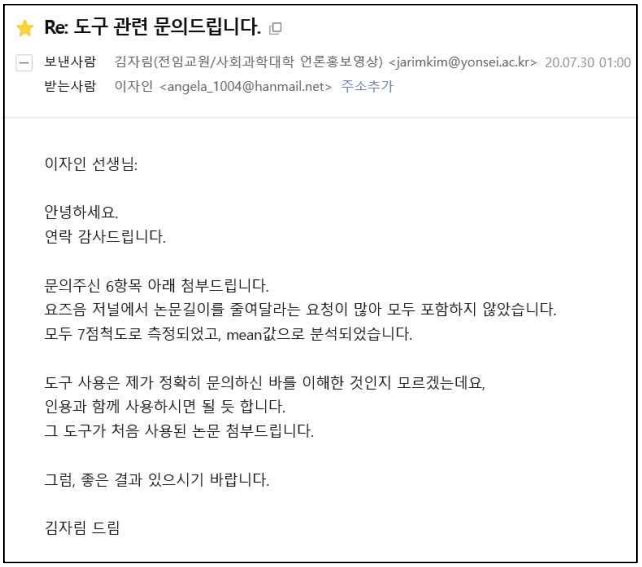
보낸사람 홍혜정 <julieh@cau.ac.kr> 20.12.05 18:52 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

아...어쩐지 이름을 알것 같았네요.
사용하셔도 좋습니다.

홍혜정 드림

Hye Julie Hong, PhD, RN
Assistant Professor
Department of Nursing, Chung-Ang University

4. Social stigma



Re: 도구 관련 문의드립니다.

보낸사람 김자림(전임교원/사회과학대학 언론홍보영상) <jarimkim@yonsei.ac.kr> 20.07.30 01:00
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

이자인 선생님:

안녕하세요.
연락 감사드립니다.

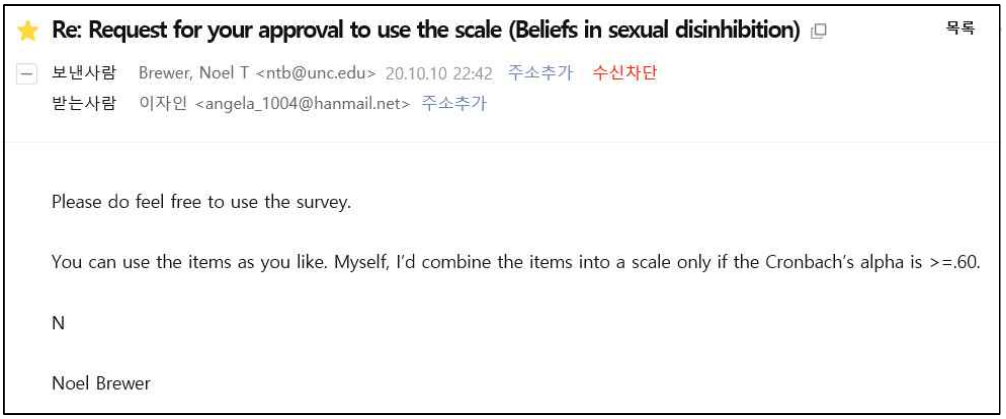
문의주신 6항목 아래 첨부드립니다.
요즈음 저널에서 논문길이를 줄여달라는 요청이 많아 모두 포함하지 않았습니다.
모두 7점척도로 측정되었고, mean값으로 분석되었습니다.

도구 사용은 제가 정확히 문의하신 바를 이해한 것인지 모르겠는데요,
인용과 함께 사용하시면 될 듯 합니다.
그 도구가 처음 사용된 논문 첨부드립니다.

그럼, 좋은 결과 있으시기 바랍니다.

김자림 드림

5. Sexual disinhibition beliefs



Re: Request for your approval to use the scale (Beliefs in sexual disinhibition) 목록

보낸사람 Brewer, Noel T <ntb@unc.edu> 20.10.10 22:42 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

Please do feel free to use the survey.

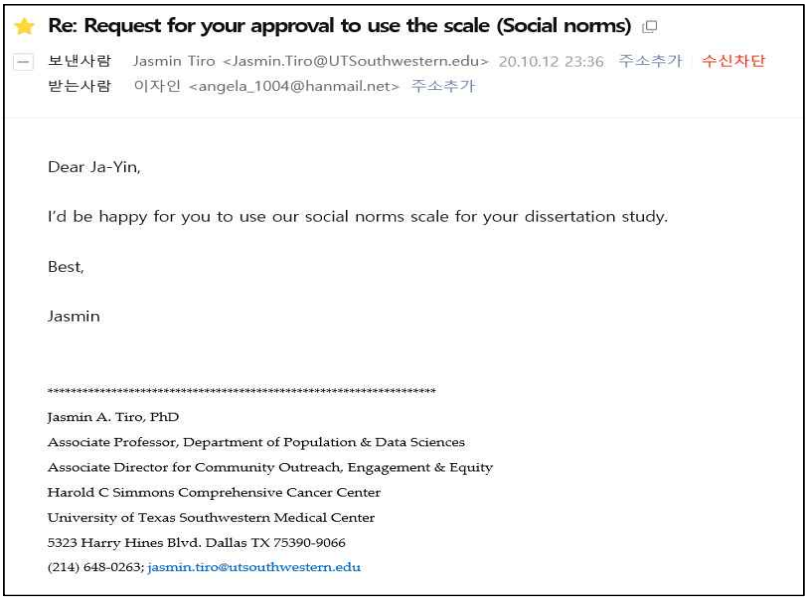
You can use the items as you like. Myself, I'd combine the items into a scale only if the Cronbach's alpha is >=.60.

N

Noel Brewer

6. Social norms

1) Author of original version



Re: Request for your approval to use the scale (Social norms)

보낸사람 Jasmin Tiro <Jasmin.Tiro@UTSouthwestern.edu> 20.10.12 23:36 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

Dear Ja-Yin,

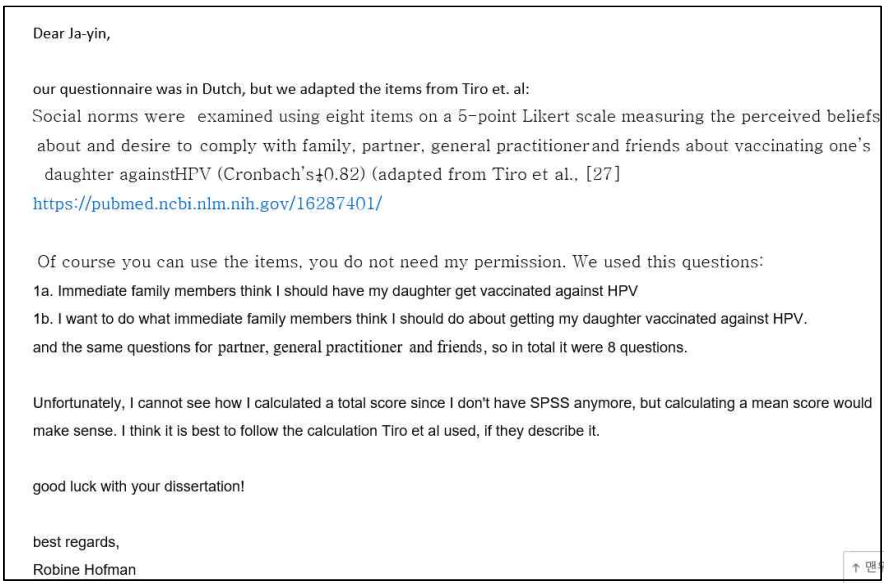
I'd be happy for you to use our social norms scale for your dissertation study.

Best,

Jasmin

****
Jasmin A. Tiro, PhD
Associate Professor, Department of Population & Data Sciences
Associate Director for Community Outreach, Engagement & Equity
Harold C Simmons Comprehensive Cancer Center
University of Texas Southwestern Medical Center
5323 Harry Hines Blvd. Dallas TX 75390-9066
(214) 648-0263; jasmin.tiro@utsouthwestern.edu

2) Author of new version



Dear Ja-yin,

our questionnaire was in Dutch, but we adapted the items from Tiro et. al:
Social norms were examined using eight items on a 5-point Likert scale measuring the perceived beliefs about and desire to comply with family, partner, general practitioner and friends about vaccinating one's daughter againstHPV (Cronbach's≠0.82) (adapted from Tiro et al., [27]
https://pubmed.ncbi.nlm.nih.gov/16287401/

Of course you can use the items, you do not need my permission. We used this questions:
1a. Immediate family members think I should have my daughter get vaccinated against HPV
1b. I want to do what immediate family members think I should do about getting my daughter vaccinated against HPV.
and the same questions for partner, general practitioner and friends, so in total it were 8 questions.

Unfortunately, I cannot see how I calculated a total score since I don't have SPSS anymore, but calculating a mean score would make sense. I think it is best to follow the calculation Tiro et al used, if they describe it.

good luck with your dissertation!

best regards,
Robine Hofman

7. Acculturation

1) Author of original version


Re: Request for your approval to use the scale (SASH)

목록 ▲위 | 아래▼

보낸사람 Perez-Stable, Eliseo (NIH/NIMHD) [E] <eliseo.perez-stable@nih.gov> 20.12.22 10:44 주소추가 수신차단

받는사람 이자인 <angela_1004@hanmail.net> 주소추가

Hello Ja-yin Lee, thanks for reaching out. I am happy to give you my approval. This scale is in the public domain. U hope your proj ect is a success. Best regards, Eliseo Perez-Stable

2) Author of new version


RE: 도구 사용승인 문의 (SAS-K)

보낸사람 Choi, Sarah <schoi@sonnet.ucla.edu> 20.10.13 01:03 주소추가 수신차단

받는사람 이자인 <angela_1004@hanmail.net> 주소추가

일반파일 1개 (22.11KB) 모두저장

SAS-K (Korean).docx 22.11KB | 미리보기

Hello,

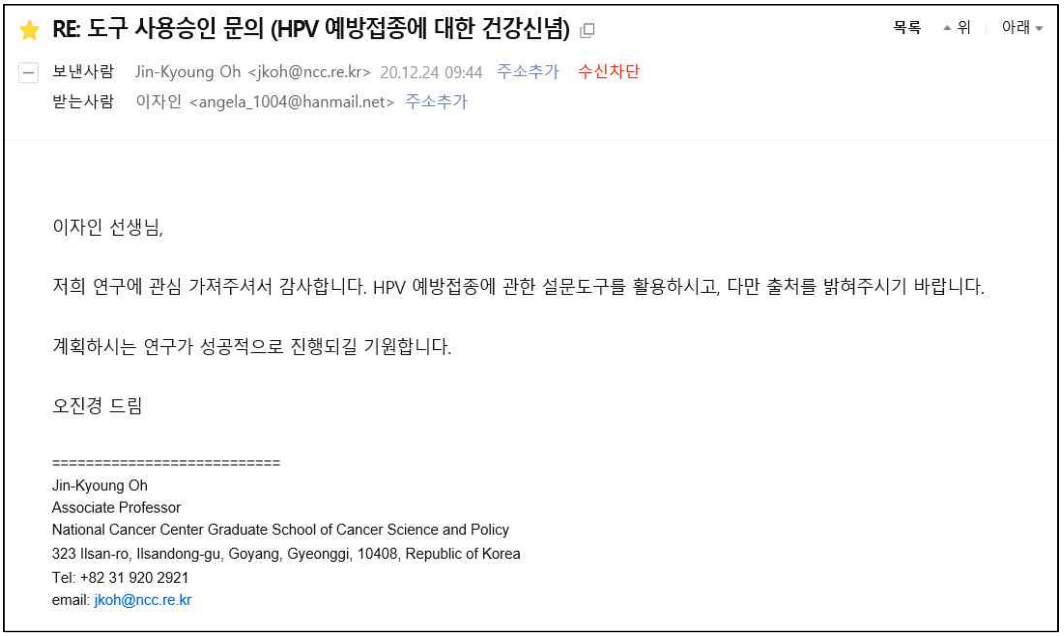
Yes you may use the SAS-K for your study. Korean version is attached. Thank you for your email and interest.

Best wishes,

Sarah Choi, PhD, RN, FNP
Associate Professor
UCLA School of Nursing
Phone: 310-794-5980
schoi@sonnet.ucla.edu

8. Health beliefs about HPV vaccination

1) Author of original version



RE: 도구 사용승인 문의 (HPV 예방접종에 대한 건강신념)

목록 위 아래

보낸사람 Jin-Kyoung Oh <jkoh@ncc.re.kr> 20.12.24 09:44 주소추가 수신차단

받는사람 이자인 <angela_1004@hanmail.net> 주소추가

이자인 선생님,

저희 연구에 관심 가져주셔서 감사합니다. HPV 예방접종에 관한 설문도구를 활용하시고, 다만 출처를 밝혀주시기 바랍니다.

계획하시는 연구가 성공적으로 진행되길 기원합니다.

오진경 드림

==========

Jin-Kyoung Oh
Associate Professor
National Cancer Center Graduate School of Cancer Science and Policy
323 Ilsan-ro, Ilsandong-gu, Goyang, Gyeonggi, 10408, Republic of Korea
Tel: +82 31 920 2921
email: jkoh@ncc.re.kr

2) Author of new version

회신: 도구 사용승인 문의 (HPV 예방접종에 대한 건강신념)

보낸사람 박정숙 <jsp544@kmu.ac.kr> 20.10.05 20:50 주소추가 수신차단

받는사람 이자인 <angela_1004@hanmail.net> 주소추가

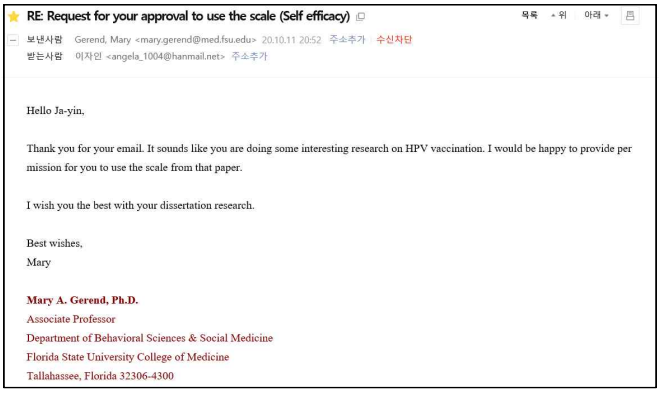
도구 사용을 승인합니다.

좋은 논문 쓰시기 바랍니다.

박정숙 드림

9. Self efficacy

1) Author of original version



RE: Request for your approval to use the scale (Self efficacy)

보낸사람 Gerend, Mary <mary.gerend@med.fsu.edu> 20.10.11 20:52 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

Hello Ja-yin,

Thank you for your email. It sounds like you are doing some interesting research on HPV vaccination. I would be happy to provide permission for you to use the scale from that paper.

I wish you the best with your dissertation research.

Best wishes,
Mary

Mary A. Gerend, Ph.D.
Associate Professor
Department of Behavioral Sciences & Social Medicine
Florida State University College of Medicine
Tallahassee, Florida 32306-4300

2) Author of translated version

도구사용승인

보낸사람 김선영 <gaamb02@naver.com> 20.10.05 10:03 주소추가 수신차단
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

From: 이자인 <angela_1004@hanmail.net>
Sent: Monday, October 5, 2020 7:15 AM
To: 류은정 <go2ryu@cau.ac.kr>
Subject: 도구 사용승인 문의 (HPV 예방접종에 대한 자기효능감)

교수님, 안녕하십니까.
저는 연세대학교 일반대학원 간호학과 박사과정 중에 재학 중인 이자인입니다.
저는 박사학위논문으로 '여성결혼이민자의 자녀 HPV 예방접종에 영향을 미치는 요인'을 계획하고 있습니다.

Gerend 교수님께서 개발하신 도구(HPV 예방접종에 대한 자기효능감)를
김선영 선생님께서 박사학위논문을 위해 한국어로 번역하고 수정, 보완한 도구에 대하여
도구의 사용 승인을 부탁드리고자 메일드립니다.
(김선영 (2018). 계획된 행위이론을 적용한 대학생의 인유두종 바이러스 예방접종 영향요인. 박사학위논문,
교수님께서 도구의 사용을 승인해주신다면, 저의 박사학위논문에 큰 도움이 될 것 같습니다.
설문도구의 사용 승인을 부탁드립니다.

회신을 부탁드립니다.
감사합니다.

이자인 올림

도구 승인에 대한 메일 확인하였습니다.

박사학위논문에 도구 사용을 승인합니다.

좋은 논문되시기 바랍니다!!

10. Cues to action

Re: Request for your approval to use the scale (Cues to action)

보낸사람 陳美芳 <meifang0302@gmail.com> 20.12.24 08:14 주소추가 수신차단

받는사람 이자인 <angela_1004@hanmail.net> 주소추가

Dear Ja-yin Lee

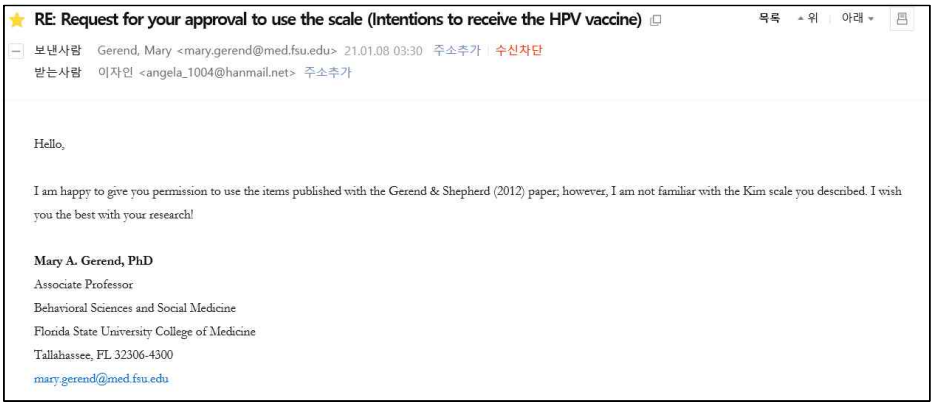
OK! You can use this scale.

Best Wishes!

^^MF

11. Intention of HPV vaccination

1) Author of original version



RE: Request for your approval to use the scale (Intentions to receive the HPV vaccine)

보낸사람 Gerend, Mary <mary.gerend@med.fsu.edu> 21.01.08 03:30 주소추가 수신차단

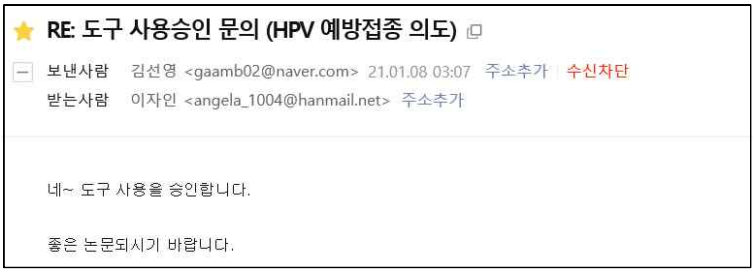
받는사람 이자인 <angela_1004@hanmail.net> 주소추가

Hello,

I am happy to give you permission to use the items published with the Gerend & Shepherd (2012) paper; however, I am not familiar with the Kim scale you described. I wish you the best with your research!

Mary A. Gerend, PhD
Associate Professor
Behavioral Sciences and Social Medicine
Florida State University College of Medicine
Tallahassee, FL 32306-4300
mary.gerend@med.fsu.edu

2) Author of translated version



RE: 도구 사용승인 문의 (HPV 예방접종 의도)

보낸사람 김선영 <gaamb02@naver.com> 21.01.08 03:07 주소추가 수신차단

받는사람 이자인 <angela_1004@hanmail.net> 주소추가

네~ 도구 사용을 승인합니다.

좋은 논문되시기 바랍니다.

Appendix 4. Questionnaires (Korean)

설 문 지

안녕하십니까? 본 연구는 여성결혼이민자 자녀의 인유두종바이러스(HPV) 예방접종에 영향을 미치는 요인을 확인하기 위한 것입니다. HPV 예방접종은 자궁경부암 예방접종으로 알려져 있습니다. 본 연구의 결과는 여성결혼이민자 자녀의 HPV 예방접종과 관련된 영향요인들을 확인함으로써 다문화 가족 자녀의 HPV 예방접종을 향상시키기 위한 중재 프로그램 개발의 기초자료로 활용될 것으로 기대됩니다.

본 설문 응답은 약 30분 정도 소요될 예정입니다. 설문지 작성 중 언제든지 연구 참여를 중단할 수 있으며, 설문에 응답한 내용에 대해서는 익명성과 비밀 유지가 보장되오니 모든 문항에 대하여 솔직하게 응답해 주시기를 바랍니다. 또한 응답해주신 내용은 본 연구의 결과를 도출함에 있어 소중한 자료로 이용될 예정이오니 한 문항도 빠짐없이 응답해주시기를 부탁드립니다.

본 연구에 대하여 궁금하신 점이 있으실 경우, 언제든지 아래의 연구자에게 연락주시기 바랍니다. 바쁘신 가운데 귀한 시간을 내시어 본 설문 응답에 응해주셔서 진심으로 감사드립니다.

❖ 연구자 성명 : 이자인
❖ 연구자 연락처 : XXX-XXXX-XXXX

※ 다음은 인유두종바이러스(HPV) 지식에 대한 질문입니다. 귀하께서 옳다고 생각하는 곳에 'V'표를 해주시기 바랍니다.

문항	그렇다	아니다	모른다
1. 인유두종바이러스는 증상이 없을 수 있다.	①	②	③
2. 인유두종바이러스 감염은 저절로 없어지기도 한다.	①	②	③
3. 백신은 인유두종바이러스를 예방한다.	①	②	③
4. 콘돔은 인유두종바이러스를 예방한다.	①	②	③
5. 인유두종바이러스는 여성에게만 감염된다.	①	②	③
6. 인유두종바이러스를 성병이라고 생각한다.	①	②	③
7. 생식기 사마귀는 자궁경부암의 일차적 원인이다.	①	②	③
8. 인유두종바이러스는 내과적 또는 외과적으로 완치될 수 있다.	①	②	③

※ 다음은 건강문해력에 대한 질문입니다. 귀하에게 가장 해당되는 곳에 'V'표를 해주시기 바랍니다.

문항	매우 그렇다	대체로 그렇다	보통이다	별로 그렇지 않다	전혀 그렇지 않다
1. 의사에게 증상을 직접 설명할 수 있다.	①	②	③	④	⑤
2. 약 봉투를 보고 약 복용방법을 이해할 수 있다.	①	②	③	④	⑤
3. 병원에 갔을 때 안내표지판을 보고 원하는 곳을 찾아갈 수 있다.	①	②	③	④	⑤
4. 나 또는 가족의 건강상태에 대해 궁금한 점을 의사에게 물어볼 수 있다.	①	②	③	④	⑤
5. 다음 진료일자를 예약하려면 다른 사람의	①	②	③	④	⑤

도움이 필요하다.					
6. 병원의 각종 서류(수술 동의서, 검사 동의서, 예방접종 예진표 등)를 작성하려면 다른 사람의 도움이 필요하다.	①	②	③	④	⑤
7. 의사의 설명을 듣고 이해하기 어렵다.	①	②	③	④	⑤
8. 병원에서 받은 건강자료에 모르는 의학용어가 있다.	①	②	③	④	⑤
9. 건강한 생활습관(운동, 금연, 절주, 식이 등)을 꾸준히 실천하고 있다.	①	②	③	④	⑤
10. 식품 구입 시 겉포장의 성분 구성표를 확인한다.	①	②	③	④	⑤

※ 다음은 인유두종바이러스(HPV) 예방접종에 대한 건강신념에 관한 질문입니다. 귀하께서 옳다고 생각하는 곳에 'V'표를 해주시기 바랍니다.

문항	매우 그렇다	대체로 그렇다	대체로 그렇지 않다	매우 그렇지 않다
1. 나는 나의 자녀가 다른 사람에 비해 쉽게 인유두종바이러스에 감염될 것 같다.	①	②	③	④
2. 나는 나의 자녀가 인유두종바이러스에 감염될까봐 두렵다.	①	②	③	④
3. 나는 인유두종바이러스 감염이 심각한 질병이라고 생각한다.	①	②	③	④
4. 나는 나의 자녀가 인유두종바이러스에 감염되면 앞으로 자녀의 미래에 지장이 클 것이라 생각한다.	①	②	③	④
5. 인유두종바이러스 예방접종은 자궁경부암을 예방하는데 꼭 필요하다고 생각한다.	①	②	③	④
6. 인유두종바이러스 예방접종은 생식기 사마귀를 예방하는데 효과적이라고 생각한다.	①	②	③	④
7. 인유두종바이러스 백신 접종비용이 너무 비싸다.	①	②	③	④

8. 인유두종바이러스 백신의 부작용이 염려스러워 백신을 접종하기가 두렵다.	①	②	③	④
9. 인유두종바이러스 백신을 3회 접종하는 것이 번거롭다.	①	②	③	④
10. 인유두종바이러스 백신 주사가 아플 것 같다.	①	②	③	④

※ 다음은 인유두종바이러스(HPV) 예방접종에 대한 자기효능감에 관한 질문입니다. 귀하께서 생각하는 곳에 'V'표를 해주시기 바랍니다.

문항	전혀 동의하지 않는다	거의 동의하지 않는다	약간 동의하지 않는다	그저 그렇다	약간 동의한다	꽤 그렇다	매우 동의한다
1. 비용이 많이 들지라도, 나는 나의 자녀에게 인유두종바이러스(HPV) 예방접종을 할 것이라고 확신한다.	①	②	③	④	⑤	⑥	⑦
2. 주사가 약간 아플지라도, 나는 나의 자녀에게 인유두종바이러스(HPV) 예방접종을 할 것이라고 확신한다.	①	②	③	④	⑤	⑥	⑦
3. 예방접종 주사를 3번 맞아야 해도, 나는 나의 자녀에게 인유두종바이러스(HPV) 예방접종을 할 것이라고 확신한다.	①	②	③	④	⑤	⑥	⑦

※ 다음은 인유두종바이러스(HPV) 예방접종에 대한 사회적 낙인에 대한 질문입니다. 귀하에게 가장 해당되는 곳에 'V'표를 해주시기 바랍니다.

문항	전혀 동의하지 않음	동의하지 않음	약간 동의하지 않음	동의하지도 동의하지 않는 것도 아님	약간 동의함	동의함	매우 동의함
1. 내가 HPV 백신을 맞는다	①	②	③	④	⑤	⑥	⑦

고 하면 다른 사람들은 나를 이상하게 볼 것이다.							
2. 우리 사회는 일반적으로 정숙한 사람은 HPV 백신을 맞을 필요가 없다고 생각한다.	①	②	③	④	⑤	⑥	⑦
3. 우리 사회는 일반적으로 미혼인 사람은 HPV 백신을 맞을 필요가 없다고 생각한다.	①	②	③	④	⑤	⑥	⑦

※ 다음은 인유두종바이러스(HPV) 예방접종에 대한 성적 탈억제 신념에 대한 질문입니다. 귀하께서 옳다고 생각하는 곳에 'V'표를 해주시기 바랍니다.

문항	전혀 동의하지 않음	동의하지 않음	보통임	동의함	매우 동의함
1. 나의 자녀가 HPV 예방접종을 받는다면, 내 자녀의 이성친구는 성적으로 더욱 위험한 행위(예: 다수의 성 파트너, 피임기구 미사용 등)를 해도 안전하다고 생각할 것이다.	①	②	③	④	⑤
2. 나의 자녀가 HPV 예방접종을 받는다면, 내 자녀는 성적으로 더욱 위험한 행위(예: 다수의 성 파트너, 피임기구 미사용 등)를 해도 안전하다고 생각할 것이다.	①	②	③	④	⑤
3. 나의 자녀가 HPV 예방접종을 받는다면, 내 자녀는 성행위를 할 가능성이 높다.	①	②	③	④	⑤

※ 다음은 인유두종바이러스(HPV) 예방접종에 대한 사회적 규범에 대한 질문입니다. 귀하께서 옳다고 생각하는 곳에 'V'표를 해주시기 바랍니다.

문항	매우 동의하지 않음	동의하지 않음	보통임	동의함	매우 동의함
1. 나의 직계가족들은 내 자녀들이 HPV 예방접종을 받아야 한다고 생각한다.	①	②	③	④	⑤
2. 나는 직계가족들의 생각에 따라 자녀들이 HPV 예방접종을 받기 바란다.	①	②	③	④	⑤
3. 나의 배우자는 내 자녀들이 HPV 예방접종을 받아야 한다고 생각한다.	①	②	③	④	⑤
4. 나는 배우자의 생각에 따라 자녀들이 HPV 예방접종을 받기 바란다.	①	②	③	④	⑤
5. 나의 의사는 내 자녀들이 HPV 예방접종을 받아야 한다고 생각한다.	①	②	③	④	⑤
6. 나는 의사의 생각에 따라 자녀들이 HPV 예방접종을 받기 바란다.	①	②	③	④	⑤
7. 나의 친구들은 내 자녀들이 HPV 예방접종을 받아야 한다고 생각한다.	①	②	③	④	⑤
8. 나는 친구들의 생각에 따라 자녀들이 HPV 예방접종을 받기 바란다.	①	②	③	④	⑤

※ 다음은 문화적응에 대한 질문입니다. 귀하에게 가장 해당되는 곳에 'V'표를 해주시기 바랍니다.

문항	오직 모국어만 사용	모국어를 한국어 보다 더 잘한다	모국어, 한국어 둘 다 골고루	한국어를 모국어 보다 더 잘한다	오직 한국어만 사용
1. 귀하께서 주로 읽고, 말하는 언어는?	①	②	③	④	⑤
2. 어렸을 때 귀하께서 사용하	①	②	③	④	⑤

신 언어는?					
3. 집에서 보통 쓰시는 (말하는) 언어는?	①	②	③	④	⑤
4. 주로 머릿속으로 생각하는 언어는?	①	②	③	④	⑤
5. 친구들과 주로 말하는 언어는?	①	②	③	④	⑤
6. 주로 시청하시는 텔레비전 프로그램의 언어는?	①	②	③	④	⑤
7. 주로 청취하시는 라디오 프로그램의 언어는?	①	②	③	④	⑤
문항	**오직 모국어만 사용**	**모국어를 한국어 보다 더 잘한다**	**모국어, 한국어 둘 다 골고루**	**한국어를 모국어 보다 더 잘한다**	**오직 한국어만 사용**
8. 영화, 텔레비전, 혹은 라디오 프로그램을 시청하거나 들으실 때, 선호하시는 언어는?	①	②	③	④	⑤
문항	**전부 자국인들**	**자국인이 한국인들 보다 더 많다**	**자국인, 한국인 반반**	**한국인이 자국인들 보다 더 많다**	**전부 한국인들**
9. 귀하의 친한 친구들은	①	②	③	④	⑤
10. 사교모임이나 파티를 갈 때 선호하는 사람들은	①	②	③	④	⑤
11. 귀하께서 방문하시거나, 혹은 귀하의 집으로 방문하는 사람들은	①	②	③	④	⑤
12. 만약 귀하의 자녀의 친구들을 선택할 수 있다고 할 때, 원하시는 사람들은	①	②	③	④	⑤

※ 다음은 의료기관에서의 차별 경험에 대한 질문입니다. 귀하께서 경험한 정도에 가장 해당되는 곳에 'V'표를 해주시기 바랍니다.

문항	절대 없음	드물게 있음	가끔 있음	대부분 있음	항상 있음
1. 나는 정중하게 대우받지 못했다.	①	②	③	④	⑤
2. 나는 존중받지 못했다.	①	②	③	④	⑤
3. 나는 다른 인종에 비해 의료서비스를 제대로 받지 못했다.	①	②	③	④	⑤
4. 의사, 간호사, 또는 의료 종사자들은 나를 똑똑하지 않은 사람으로 취급했다.	①	②	③	④	⑤
5. 의사, 간호사, 또는 의료 종사자들은 나를 싫어하는 것처럼 행동했다.	①	②	③	④	⑤
6. 의사, 간호사, 또는 의료 종사자들은 나보다 우월한 것처럼 행동했다.	①	②	③	④	⑤
7. 의사, 간호사, 또는 의료 종사자들은 내가 하는 말을 경청하고 있지 않다고 느낀다.	①	②	③	④	⑤

※ 다음은 인유두종바이러스(HPV) 예방접종에 대한 행동의 계기에 관한 질문입니다. 귀하께서 생각하는 곳에 'V'표를 해주시기 바랍니다.

문항	매우 동의하지 않음	동의하지 않음	보통임	동의함	매우 동의함
1. 대중매체는 내가 자녀에게 HPV 예방접종을 하는데 영향을 미친다.	①	②	③	④	⑤
2. 의사는 내가 자녀에게 HPV 예방접종을 하는데 영향을 미친다	①	②	③	④	⑤
3. 간호사는 내가 자녀에게 HPV 예방접종을 하는데 영향을 미친다.	①	②	③	④	⑤

※ 다음은 자녀의 인유두종바이러스(HPV) 예방접종 현황에 관한 질문입니다. 귀하께서 생각하는 곳에 'V'표를 해주시기 바랍니다. (만 9세 이상 만 19세 미만의 자녀가 2명 이상인 경우, 자녀의 나이가 가장 많은 자녀를 대상으로 응답해주시기 바랍니다.)

① HPV 예방접종을 한 적이 없고, 추후에 접종할 의도도 없다.
② HPV 예방접종을 한 적은 없으나, 추후에 접종할 의도가 있다.
③ HPV 예방접종을 한 적이 있으나, 남은 접종을 완료할 의도가 없다.
④ HPV 예방접종을 한 적이 있고, 남은 접종도 완료할 의도가 있다.
⑤ HPV 예방접종을 모두 완료하였다.

* ①~②번에 해당하시는 분은 2)번을 제외한 모든 문제를 응답하고, ③~⑤번에 해당하시는 분은 1)번을 제외한 모든 문제를 응답해주시기 바랍니다.

1) 귀하의 자녀가 HPV 예방접종을 하지 않은 이유는 무엇입니까?

① HPV 예방접종에 대한 정보 부족
② HPV 예방접종 부작용에 대한 걱정
③ 모국의 사회 통념, 관습 등 문화적 이유
④ 비용 부담
⑤ 아직 접종하기에 이르다고 생각함
⑥ 기타 (　　) (직접 기입해주세요)

2) 귀하의 자녀는 HPV 예방접종을 몇 회 접종하였습니까?

① 2회 접종 중 1회 접종　② 2회 접종 중 2회 접종　③ 3회 접종 중 1회 접종
④ 3회 접종 중 2회 접종　⑤ 3회 접종 중 3회 접종

3) 다음은 자녀의 HPV 예방접종에 대한 귀하의 접종의도에 관한 질문이며, 귀하께서 생각하는 곳에 'V'표를 해주시기 바랍니다. (자녀가 HPV 예방접종을 완료한 경우는 제외)

문항	전혀 가능성이 없다	거의 가능성이 없다	약간 가능성이 없다	그저 그렇다	약간 가능성이 있다	꽤 가능성이 있다	매우 가능성이 높다
1. 자녀의 인유두종바이러스(HPV) 예방접종에 대해 더 많은 정보를 얻으려고 얼마나 노력할 것 같습니까?	①	②	③	④	⑤	⑥	⑦
2. 자녀의 인유두종바이러스(HPV) 예방접종을 고려할 가능성은 얼마나 됩니까?	①	②	③	④	⑤	⑥	⑦
3. 자녀의 인유두종바이러스(HPV) 예방접종을 받으려는 노력을 얼마나 할 것 같습니까?	①	②	③	④	⑤	⑥	⑦
4. 실제로, 자녀의 인유두종바이러스(HPV) 예방접종을 받을 가능성은 얼마나 됩니까?	①	②	③	④	⑤	⑥	⑦
5. 만약 주위의 의사나 간호사가 인유두종바이러스(HPV) 예방접종을 권한다면, 맞을 가능성은 얼마나 됩니까?	①	②	③	④	⑤	⑥	⑦

4) 귀하 자녀의 예방접종과 같은 사항에 대해서는 주로 누가 결정합니까?

① 본인 ② 배우자 ③ 배우자와 상의하여 결정함

④ 기타 (　　) (직접 기입해주세요)

5) 귀하의 배우자는 자녀에게 HPV 예방접종할 의도가 있습니까?

① 예 ② 아니오 ③ 모르겠음

6) 귀하께서는 HPV 예방접종을 하셨습니까? ① 예 ② 아니오

7) 남자도 HPV 예방접종을 맞아야 된다고 생각하십니까?

① 예 ② 아니오

※ 다음은 일반적 사항에 관한 질문입니다.

출신국 및 출신민족	① 베트남 ② 한족 ③ 조선족
종교	① 기독교 ② 천주교 ③ 불교 ④ 이슬람교 ⑤ 무교 ⑥ 기타
최종학력	① 무학 ② 초등학교 졸업 ③ 중학교 졸업 ④ 고등학교 졸업 ⑤ 대학교 졸업 ⑥ 대학원 졸업
월평균 수입	① 100만원 미만 ② 100만원 이상 ~ 200만원 미만 ③ 200만원 이상 ~ 300만원 미만 ④ 300만원 이상 ~ 400만원 미만 ⑤ 400만원 이상 ⑥ 모름
국내 거주기간	년 개월 (직접 기입해주세요)
자녀 출생년도	년 월생 (직접 기입해주세요)
자녀 성별	① 남아 ② 여아
중도입국자녀 여부	외국에서 태어나고 성장하던 중에 어머니를 따라 국내에 입국하게 된 자녀인가요? ① 예 ② 아니오

※ 자녀의 HPV 예방접종과 관련하여 제안하고 싶은 의견이 있으시면 자유롭게 써주시길 바랍니다.

Appendix 4. Questionnaires (Chinese)

问卷

您好！本研究是为了确认影响对女性结婚移民者子女的人类乳头瘤病毒（HPV）预防接种的因素。HPV预防接种被认为是子宫颈癌预防接种。本研究结果将通过确认女性结婚移民者子女的HPV预防接种相关的影响因素，来由此提高改进多文化家庭子女HPV预防接种的项目开发。

本次问卷调查的回答大概需要30分钟左右。在填写问卷中，随时都可以中断研究参与，对于回答问卷的内容，可以保证匿名性和保密性，请诚实地回答所有问题。另外，回答的内容将作为本研究的重要资料使用，请认真回答所有问题。

如果您对本研究有疑问，请随时联系研究人员。感谢您在百忙中抽出宝贵的时间来回答问卷。

❖ 研究者姓名： 李孜芒
❖ 研究者手机号码： 010-XXXX-XXXX

※ 关于人乳头瘤病毒(HPV)认知情况的调查问卷。请您在合适的选项上打'V'。

问题	是	否	不知道
1. 感染人乳头瘤病毒(HPV)没有症状。	①	②	③
2. 人乳头瘤病毒(HPV)感染不用治自然会好。	①	②	③
3. 疫苗可以预防人乳头瘤病毒(HPV)。	①	②	③
4. 避孕套可以预防人乳头瘤病毒(HPV)。	①	②	③
5. 人乳头瘤病毒(HPV)只感染女性。	①	②	③
6. 认为人乳头瘤病毒(HPV)是性病。	①	②	③
7. 生殖器疣是子宫颈癌的首要原因。	①	②	③
8. 人乳头瘤病毒(HPV)可以在内科或外科痊愈。	①	②	③

※ 关于健康相关的理解力调查问卷。请您在合适的选项上打'V'。

问题	非常是	大体是	一般	不太是	完全不是
1. 自己可以向医生说明症状。	①	②	③	④	⑤
2. 可以参考内服药袋上的说明服药。	①	②	③	④	⑤
3. 可以根据医院里的指示牌找到自己想要去的地方。	①	②	③	④	⑤
4. 可以向医生询问我或家人的健康状况。	①	②	③	④	⑤
5. 预约挂号需要别人帮助。	①	②	③	④	⑤
6. 填写医院的各种资料（手术同意书、检查同意书、预防接种预诊记录表等），需要别人帮助。	①	②	③	④	⑤
7. 听了医生的说明很难理解。	①	②	③	④	⑤
8. 医院给的健康指南资料里有不认识的医学术	①	②	③	④	⑤

语。					
9. 坚持实践健康的生活习惯（运动、戒烟、适当饮酒、饮食等）。	①	②	③	④	⑤
10. 购买食品时确认外面包装的成分表。	①	②	③	④	⑤

※ 关于预防接种人乳头瘤病毒（HPV）的健康信念的调查问卷。请您在合适的选项上打‘V’。

问题	非常是	大体是	不太是	非常不是
1. 我觉得我的孩子比别人更容易感染HPV。	①	②	③	④
2. 我怕我的孩子感染HPV。	①	②	③	④
3. 我认为感染HPV是一种严重的疾病。	①	②	③	④
4. 我认为HPV感染会影响孩子的将来。	①	②	③	④
5. 我认为接种HPV疫苗可以有效预防宫颈癌。	①	②	③	④
6. 我认为接种HPV疫苗可以有效预防生殖器疣。	①	②	③	④
7. 接种HPV疫苗费用很贵。	①	②	③	④
8. 因担心人乳头瘤病毒疫苗的副作用，害怕接种疫苗。	①	②	③	④
9. HPV疫苗需要接种三次，觉得很麻烦。	①	②	③	④
10. 接种HPV疫苗应该很疼。	①	②	③	④

※ 关于接种HPV疫苗的自我效能感调查问卷。请您在最合适的选项上打'V'。

问题	完全不同意	比较不同意	稍不同意	一般	稍同意	比较同意	非常同意
1. 即使费用很高，我一定会让我的孩子接种HPV疫苗。	①	②	③	④	⑤	⑥	⑦
2. 即使接种时很疼，我一定会让我的孩子接种HPV疫苗。	①	②	③	④	⑤	⑥	⑦
3. 即使要接种三次疫苗，我一定会让我的孩子接种HPV疫苗。	①	②	③	④	⑤	⑥	⑦

※ 关于接种HPV疫苗的负面情绪调查问卷。请您在最合适的选项上打'V'。

问题	完全不同意	不同意	稍不同意	不清楚	稍同意	同意	非常同意
1. 接种HPV疫苗，我担心别人用异样的眼光看我。	①	②	③	④	⑤	⑥	⑦
2. 在韩国一般认为贞淑的人不用接种HPV疫苗。	①	②	③	④	⑤	⑥	⑦
问题	**完全不同意**	**不同意**	**稍不同意**	**不清楚**	**稍同意**	**同意**	**非常同意**
3. 在韩国一般认为未婚的人不用接种HPV疫苗。	①	②	③	④	⑤	⑥	⑦

※ 关于接种HPV疫苗的性的脱抑制的信念调查问卷。请您在最合适的选项上打'V'。

问题	完全不同意	不同意	一般	同意	非常同意
1. 如果我的孩子接种HPV疫苗，那么即使我孩子的异性朋友做有风险的性行为(例如:多个性伴侣,不使用避孕工具等)，也会很安全。	①	②	③	④	⑤
2. 如果我的孩子接种HPV疫苗，那么我孩子做有风险的性行为(例如:多个性伴侣,不使用避孕工具等)，也会很安全。	①	②	③	④	⑤
3. 如果我孩子接种HPV疫苗，那么我孩子有可能做性行为。	①	②	③	④	⑤

※ 关于HPV疫苗接种的社会规范的调查问卷。请您在最合适的选项上打'V'.

问题	非常不同意	不同意	一般	同意	非常同意
1. 我的直系亲属认为我的孩子应该接种HPV疫苗。	①	②	③	④	⑤
2. 我会因直系亲属的建议而让我的孩子接种HPV疫苗。	①	②	③	④	⑤
3. 我的伴侣认为我的孩子应该接种HPV疫苗。	①	②	③	④	⑤
4. 我会因伴侣的建议而让我的孩子接种HPV疫苗。	①	②	③	④	⑤
5. 我的主治医生认为我的孩子们应该接种HPV疫苗。	①	②	③	④	⑤
6. 我会因医生的建议而让我的孩子接种HPV疫苗。	①	②	③	④	⑤
7. 我的朋友认为我的孩子应该接种HPV疫苗。	①	②	③	④	⑤
8. 我会因朋友的推荐而让我的孩子接种HPV疫苗。	①	②	③	④	⑤

※ 下面是关于文化(方面)适应的问卷。请您在最合适的选项上打'V'。

问题	只用汉语	汉语比韩语好	汉语，韩语一样好	韩语比汉语好	只用韩语
1. 您主要用的语言是？	①	②	③	④	⑤
2. 小时候您使用的语言是？	①	②	③	④	⑤
3. 在家里常用的语言是？	①	②	③	④	⑤
4. 哪种语言更易用?	①	②	③	④	⑤
5. 以哪种语言跟朋友交流？	①	②	③	④	⑤
6. 看电视节目时，用哪种语言看?	①	②	③	④	⑤
7. 听广播时用哪种语言听？	①	②	③	④	⑤
8. 你更喜欢用哪种语言看电影、看电视或者收听广播节目?	①	②	③	④	⑤
问题	全部中国人	中国人比韩国人还多	中国人和韩国人各一半	韩国人比中国人还多	全部韩国人
9. 您的好朋友们	①	②	③	④	⑤
10. 参加聚会或者派对的时候，喜欢的人	①	②	③	④	⑤
11. 您访问或访问您家的人	①	②	③	④	⑤
12. 如果您可以选择您子女的朋友，您想的人	①	②	③	④	⑤

※ 下面是关于医疗机关差别待遇的提问。请在您所经历的最适合的选项上打"V".

问题	绝对没有	稀有	偶尔有	大部分有	常有
1. 我没有受到郑重的待遇。	①	②	③	④	⑤
2. 我没有受到尊重。	①	②	③	④	⑤
3. 比起其他人种，我没有得到应有的医疗服务。	①	②	③	④	⑤
4. 医生、护士或医务工作者把我看成愚蠢的人.	①	②	③	④	⑤
问题	绝对没有	**稀有**	**偶尔有**	**大部分有**	**常有**
5. 医生、护士或医务工作者都表现得好像讨厌我.	①	②	③	④	⑤
6. 医生、护士或医务工作者们都表现得比我优越。	①	②	③	④	⑤
7. 我觉得医生、护士或医务工作者们没有倾听我的话。	①	②	③	④	⑤

※ 关于对人乳头瘤病毒（HPV）预防接种的行动契机的提问。请在您想的选项上打"V".

问题	非常不同意	不同意	一般	同意	非常同意
1. 大众媒体影响我给子女接种HPV疫苗。	①	②	③	④	⑤
2. 医生影响我给子女接种HPV疫苗。	①	②	③	④	⑤
3. 护士影响我给子女接种HPV疫苗。	①	②	③	④	⑤

※ 关于子女接种人乳头瘤病毒（HPV）预防疫苗现状的问题。请您在最合适的选项上打'V'。

（如果您有2名以上子女，子女年龄是满9岁~满19岁，请以年龄最大的子女为对象进行回答.）

① 未接种过HPV疫苗，以后也不愿意接种。

② 未接种过HPV疫苗，以后有意接种。

③ 接种过一次HPV疫苗，剩下的就不接种了。

④ 接种过一次HPV疫苗，有意把剩下的疫苗都接种完。

⑤ 接种完HPV疫苗的全过程。

* 答了①~②题的人在下面除了'2).您的子女接种了几次HPV疫苗？'选项之外，所有的题都要答，

答了③~⑤题的人在下面除了'1).您的子女不接种HPV预防疫苗的理由是？'选项之外，所有的题

都要答。

1）您的子女不接种HPV预防疫苗的理由是？

① 对HPV预防疫苗的信息不足

② 担心HPV预防疫苗的副作用

③ 因为母国的文化习俗与社会规范

④ 费用太贵

⑤ 觉得还为时过早

⑥ 其他（　　）（手写）

2）您的子女接种了几次HPV疫苗？

① 2次接种中接种1次　② 2次接种中接种2次　③ 3次接种中接种1次

④ 3次接种中2次　⑤ 3次接种中3次接种

3）关于您对子女人乳头瘤病毒(HPV)预防接种意向的问题，请在您所想的选项上打'V'。(您的子女接种了HPV疫苗，不用回应.)

问题	完全没有可能性	几乎没有可能性	略微地没有可能性	一般	稍有可能性	颇有可能性	很有可能性
1. 为了获得更多的有关子女的人乳头瘤病毒（HPV）预防接种信息，您觉得您会付出多少努力？	①	②	③	④	⑤	⑥	⑦
2. 您考虑您的子女接种HPV疫苗的可能性有多少？	①	②	③	④	⑤	⑥	⑦
3. 有关子女接种人乳头瘤病毒（HPV）预防疫苗，您觉得您会付出多少努力？	①	②	③	④	⑤	⑥	⑦
4. 实际上，您的子女接种人乳头瘤病毒（HPV）预防疫苗的可能性有多少？	①	②	③	④	⑤	⑥	⑦
5. 周围医生或护士建议子女接种人乳头瘤病毒（HPV）预防疫苗，那么您的子女接种疫苗的可能性有多少？	①	②	③	④	⑤	⑥	⑦

4）对于您子女的预防接种等事项，主要由谁来决定？

① 本人　　② 配偶　　③ 与配偶商议后决定

④ 其他（　　）（手写）

5）您的配偶有意给子女接种HPV疫苗吗？ ① 是　　② 否　　③ 不知道

6）您接种过HPV疫苗吗？ ① 是　　② 否

7）你认为男性也应该接种HPV疫苗吗？ ① 是　　② 否

※ 关于一般事项的提问。

出身国家及出身民族	①越南　②汉族　③ 朝鲜族
宗教	① 基督教 ② 天主教 ③ 佛教 ④ 伊斯兰教 ⑤ 无信仰 ⑥ 其他
最高学历	① 没上过学　② 小学毕业　③ 中学毕业 ④ 高中毕业　⑤ 大学毕业　⑥ 硕士毕业
月平均收入	① 不到100万韩元　② 100万韩元以上～200万韩元以下 ③ 200万韩元以上～300万韩元以下 ④ 300万韩元以上～400万韩元以下 ⑤ 400万韩元以上　⑥ 不知道
在韩国居住期间	年　个月（手写）
子女出生年度	年　月（手写）
子女性别	① 男　② 女
是否中途入境	是在国外出生成长中跟随母亲进入韩国的吗？ ① 是　② 否

※ 若您对子女接种HPV预防疫苗有建议和意见，请您自由填写。

Appendix 4. Questionnaires (Vietnamese)

Bản khảo sát

Xin chào! Nghiên cứu này là để xác định nguyên nhân cơ bản ảnh hưởng đến tiêm phòng vi rút gây u nhú ở người (HPV) ở con cái của phụ nữ kết hôn nhập cư. Tiêm phòng HPV được biết đến là tiêm phòng ung thư cổ tử cung.
Kết quả của nghiên cứu này được kỳ vọng sẽ được sử dụng làm dữ liệu cơ bản cho việc xây dựng chương trình can thiệp nhằm cải thiện việc tiêm phòng HPV của con cái các gia đình đa văn hóa bằng cách xác định các yếu tố ảnh hưởng liên quan đến việc tiêm phòng HPV cho con cái của phụ nữ kết hôn nhập cư.

Trả lời bản khảo sát này sẽ mất khoảng 30 phút. Bạn có thể ngừng tham gia nghiên cứu bất kỳ lúc nào trong khi làm bản khảo sát, nội dung trả lời khảo sát được đảm bảo duy trì ẩn danh và bí mật nên chúng tôi mong muốn bạn hãy trả lời trung thực tất cả các câu hỏi. Ngoài ra, nội dung bạn trả lời sẽ được sử dụng làm dữ liệu có giá trị để thu được kết quả của nghiên cứu này, vì vậy mong bạn vui lòng trả lời đầy đủ tất cả các câu hỏi.

Nếu bạn có bất kỳ câu hỏi nào về nghiên cứu này, xin vui lòng liên hệ với nhà nghiên cứu bên dưới bất cứ lúc nào. Chúng tôi xin chân thành cảm ơn bạn trong lúc bận rộn đã dành thời gian quý báu để trả lời khảo sát này.

❖ Họ tên nhà nghiên cứu : Lee Ja-yin

❖ Số điện thoại của nhà nghiên cứu :
010-XXXX-XXXX

※ Sau đây là những câu hỏi về kiến thức vi rút gây u nhú ở người (HPV). Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng

Câu hỏi	Đúng vậy	Không phải	Không biết
1. Vi rút gây u nhú ở người có thể không có triệu chứng.	①	②	③
2. Nhiễm trùng vi rút gây u nhú ở người có thể tự khỏi.	①	②	③
3. Vắc xin thì phòng ngừa được vi rút gây u nhú ở người.	①	②	③
4. Bao cao su bảo vệ khỏi vi rút gây u nhú ở người.	①	②	③
5. Vi rút gây u nhú ở người chỉ lây nhiễm cho phụ nữ	①	②	③
6. Vi rút gây u nhú ở người được coi là một bệnh về đường tình dục.	①	②	③
7. Mụn cóc sinh dục là nguyên nhân chính gây ra ung thư cổ tử cung.	①	②	③
8. Vi rút gây u nhú ở người có thể được chữa khỏi bằng nội khoa hoặc ngoại khoa.	①	②	③

※ Sau đây là những câu hỏi về kiến thức sức khỏe. Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng.

Câu hỏi	Hoàn toàn như vậy	Nói chung là như vậy	Bình thường	Không nhiều lắm	Hoàn toàn không như vậy
1. Bạn có thể trực tiếp giải thích các triệu chứng với bác sĩ.	①	②	③	④	⑤
2. Nhìn vào túi thuốc bạn có thể hiểu cách uống thuốc.	①	②	③	④	⑤
3. Khi đến bệnh viện, bạn có thể tìm đến nơi mình muốn bằng cách xem các bảng chỉ dẫn.	①	②	③	④	⑤
4. Bạn có thể hỏi bác sĩ nếu có bất kỳ	①	②	③	④	⑤

thắc mắc nào về sức khỏe của bạn và gia đình.					
5. Bạn cần sự giúp đỡ của người khác để đặt trước ngày điều trị tiếp theo.	①	②	③	④	⑤
6. Bạn cần sự giúp đỡ của người khác để điền vào các loại tài liệu của bệnh viện (bản đồng ý phẫu thuật, bản đồng ý xét nghiệm, bảng kiểm trước tiêm phòng v.v...).	①	②	③	④	⑤
7. Bạn thấy thật khó hiểu sau khi nghe bác sĩ giải thích.	①	②	③	④	⑤
Câu hỏi	Hoàn toàn như vậy	Nói chung là như vậy	Bình thường	Không nhiều lắm	Hoàn toàn không như vậy
8. Trong các tài liệu y tế nhận được từ bệnh viện có những từ chuyên ngành y mà bạn không biết.	①	②	③	④	⑤
9. Bạn thường xuyên thực hiện các thói quen sống lành mạnh (tập thể dục, cai thuốc lá, giảm uống rượu, ăn kiêng v.v...).	①	②	③	④	⑤
10. Bạn kiểm tra bảng thành phần của bao bì bên ngoài khi mua thực phẩm.	①	②	③	④	⑤

※ Sau đây là những câu hỏi về niềm tin sức khỏe của bạn về việc tiêm phòng vi rút gây u nhú ở người (HPV). Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng.

Câu hỏi	Rất đúng như vậy	Nói chung là như vậy	Không nhiều lắm	Hoàn toàn không như vậy
1. Tôi nghĩ rằng các con tôi có nhiều khả năng bị nhiễm vi rút gây u nhú ở người hơn những người khác.	①	②	③	④
2. Tôi lo lắng rằng các con tôi sẽ bị nhiễm vi rút gây u nhú ở người.	①	②	③	④
3. Tôi nghĩ rằng nhiễm trùng vi rút gây u nhú ở người là một bệnh nghiêm trọng.	①	②	③	④
4. Tôi nghĩ rằng nếu các con tôi bị nhiễm vi rút gây u nhú ở người sẽ ảnh hưởng lớn đến tương lai của chúng.	①	②	③	④
5. Tôi nghĩ rằng việc tiêm phòng vi rút gây u nhú ở người là thật cần thiết để ngăn ngừa ung thư cổ tử cung.	①	②	③	④
6. Tôi nghĩ rằng việc tiêm phòng vi rút gây u nhú ở người là có hiệu quả trong việc ngăn ngừa mụn cóc sinh dục.	①	②	③	④
7. Phí tiêm phòng vắc xin vi rút gây u nhú ở người quá đắt.	①	②	③	④
8. Tôi sợ tiêm vắc xin vì lo ngại về tác dụng phụ của vắc xin vi rút gây u nhú ở người.	①	②	③	④
9. Việc tiêm 3 mũi vắc xin vi rút gây u nhú ở người sẽ rất phiền phức.	①	②	③	④
10. Mũi tiêm vắc xin vi rút gây u nhú ở người có vẻ đau.	①	②	③	④

※ Sau đây là những câu hỏi về tính hiệu quả của việc tiêm phòng vi rút gây u nhú ở người (HPV). Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng.

Câu hỏi	Hoàn toàn không đồng ý	Hầu như không đồng ý	Hơi phản đối	Bình thường	Hơi đồng ý	Đồng ý	Hoàn toàn đồng ý
1. Mặc dù tốn kém, nhưng tôi chắc chắn rằng các con tôi sẽ được tiêm phòng vi rút gây u nhú ở người (HPV).	①	②	③	④	⑤	⑥	⑦
2. Mặc dù mũi tiêm hơi đau, nhưng tôi chắc chắn rằng các con tôi sẽ được tiêm phòng vi rút gây u nhú ở người (HPV).	①	②	③	④	⑤	⑥	⑦
3. Kể cả cần phải tiêm đủ 3 mũi, nhưng tôi chắc chắn rằng các con tôi sẽ được tiêm phòng vi rút gây u nhú ở người (HPV).	①	②	③	④	⑤	⑥	⑦

※ Sau đây là những câu hỏi về sự kỳ thị của xã hội đối với việc tiêm phòng vi rút gây u nhú ở người (HPV). Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng.

Câu hỏi	Hoàn toàn không đồng ý	Không đồng ý	Hơi phản đối	Không đồng ý cũng không phản đối	Hơi đồng ý	Đồng ý	Hoàn toàn đồng ý
1. Nếu tôi nói rằng tôi tiêm phòng vắc xin HPV, những người khác sẽ nhìn tôi một cách kỳ dị.	①	②	③	④	⑤	⑥	⑦
2. Nói chung xã hội của chúng ta cho là những	①	②	③	④	⑤	⑥	⑦

người đứng đắn không cần phải tiêm phòng vắc xin HPV.							
3. Nói chung xã hội của chúng ta cho là những người chưa lập gia đình không cần phải tiêm phòng vắc xin HPV.	①	②	③	④	⑤	⑥	⑦

※ Sau đây là những câu hỏi về niềm tin giải tỏa ức chế tình dục về việc tiêm phòng vi rút gây u nhú ở người (HPV). Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng.

Câu hỏi	Hoàn toàn không đồng ý	Không đồng ý	Bình thường	Đồng ý	Hoàn toàn đồng ý
1. Nếu con tôi được tiêm phòng HPV, bạn khác giới của con tôi sẽ nghĩ rằng việc thực hiện những hành vi nguy hiểm hơn về tình dục (có nhiều bạn tình, không sử dụng dụng cụ tránh thai v.v...) cũng an toàn.	①	②	③	④	⑤
2. Nếu con tôi được tiêm phòng HPV, con tôi sẽ nghĩ rằng việc thực hiện những hành vi nguy hiểm hơn về tình dục (có nhiều bạn tình, không sử dụng dụng cụ tránh thai v.v...) cũng an toàn.	①	②	③	④	⑤
3. Nếu con tôi được tiêm phòng HPV thì có nhiều khả năng con tôi sẽ quan hệ tình dục.	①	②	③	④	⑤

※ Sau đây là những câu hỏi về chuẩn mực xã hội đối với việc tiêm phòng vi rút gây u nhú ở người (HPV). Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng.

Câu hỏi	Hoàn toàn không đồng ý	Không đồng ý	Bình thường	Đồng ý	Hoàn toàn đồng ý
1. Những người thân trong gia đình tôi nghĩ rằng các con tôi nên được tiêm phòng HPV.	①	②	③	④	⑤
2. Tôi muốn các con tôi được tiêm phòng HPV theo ý kiến của người thân trong gia đình tôi.	①	②	③	④	⑤
3. Chồng (vợ) tôi nghĩ rằng các con tôi nên được tiêm phòng HPV.	①	②	③	④	⑤
4. Tôi muốn các con tôi được tiêm phòng HPV theo ý kiến của chồng (vợ) tôi.	①	②	③	④	⑤
5. Bác sĩ cho rằng các con tôi nên được tiêm phòng HPV.	①	②	③	④	⑤
6. Tôi muốn các con tôi được tiêm phòng HPV theo ý kiến của bác sĩ.	①	②	③	④	⑤
7. Bạn bè tôi nghĩ rằng các con tôi nên được tiêm phòng HPV.	①	②	③	④	⑤
Câu hỏi	**Hoàn toàn không đồng ý**	**Không đồng ý**	**Bình thường**	**Đồng ý**	**Hoàn toàn đồng ý**
8. Tôi muốn các con tôi được tiêm phòng HPV theo ý kiến của bạn bè.	①	②	③	④	⑤

※ Sau đây là những câu hỏi về sự thích ứng văn hóa. Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng

Câu hỏi	Chỉ sử dụng tiếng mẹ đẻ	Nói tiếng mẹ đẻ tốt hơn tiếng Hàn quốc	Cả tiếng mẹ đẻ và tiếng Hàn quốc	Nói tiếng Hàn quốc tốt hơn tiếng mẹ đẻ	Chỉ sử dụng tiếng Hàn quốc
1. Bạn thường đọc và nói ngôn ngữ nào?	①	②	③	④	⑤
2. Bạn đã sử dụng ngôn ngữ nào khi còn nhỏ?	①	②	③	④	⑤
3. Ở nhà bạn thường dùng (nói) ngôn ngữ nào?	①	②	③	④	⑤
4. Bạn thường nghĩ bằng ngôn ngữ nào trong đầu?	①	②	③	④	⑤
5. Bạn thường nói bằng ngôn ngữ nào với bạn bè của mình?	①	②	③	④	⑤
6. Ngôn ngữ của các chương trình truyền hình mà bạn thường xem là gì?	①	②	③	④	⑤
7. Ngôn ngữ của chương trình phát thanh mà bạn thường nghe là gì?	①	②	③	④	⑤
8. Khi xem hoặc nghe các chương trình phim, truyền hình hoặc phát thanh, bạn ưa thích ngôn ngữ nào hơn?	①	②	③	④	⑤
Câu hỏi	**Tất cả người nước mình**	**Người nước mình nhiều hơn người Hàn quốc**	**Một nửa người nước mình, một nửa người Hàn quốc**	**Người Hàn quốc nhiều hơn người nước mình**	**Tất cả người Hàn quốc**
9. Những người bạn thân của	①	②	③	④	⑤

bạn					
10. Những người mà bạn ưa thích khi đi dự một bữa tiệc hoặc hội họp xã hội	①	②	③	④	⑤
11. Những người bạn đến thăm, hoặc những người đến nhà bạn	①	②	③	④	⑤
Câu hỏi	Tất cả người nước mình	Người nước mình nhiều hơn người Hàn quốc	Một nửa người nước mình, một nửa người Hàn quốc	Người Hàn quốc nhiều hơn người nước mình	Tất cả người Hàn quốc
12. Nếu bạn có thể chọn bạn bè của con bạn, những người bạn muốn	①	②	③	④	⑤

※ Sau đây là những câu hỏi về sự phân biệt đối xử trong các cơ sở y tế mà bạn đã trải qua. Vui lòng đánh dấu 'V' vào vị trí phù hợp nhất với mức độ trải nghiệm của bạn.

Câu hỏi	Hoàn toàn không	Ít khi	Thỉnh thoảng	Phần lớn	Luôn luôn
1. Tôi đã không được đối xử lịch sự.	①	②	③	④	⑤
2. Tôi đã không được tôn trọng.	①	②	③	④	⑤
3. So với các sắc tộc khác, tôi đã không nhận được sự chăm sóc y tế đầy đủ.	①	②	③	④	⑤
4. Các bác sĩ, y tá hoặc nhân viên y tế coi tôi là người không thông minh.	①	②	③	④	⑤
5. Các bác sĩ, y tá hoặc nhân viên y tế đã cư xử như thể họ ghét tôi.	①	②	③	④	⑤
6. Các bác sĩ, y tá hoặc nhân viên y tế đã cư xử như thể họ hơn hẳn tôi.	①	②	③	④	⑤
7. Tôi cảm thấy các bác sĩ, y tá hoặc	①	②	③	④	⑤

nhân viên y tế đã không chú ý lắng nghe những lời tôi nói.					

※ Sau đây là những câu hỏi về các yếu tố đưa đến hành động của việc tiêm phòng vi rút gây u nhú ở người (HPV). Vui lòng đánh dấu 'V' vào vị trí bạn cho là đúng.

Câu hỏi	Hoàn toàn không đồng ý	Không đồng ý	Bình thường	Đồng ý	Hoàn toàn đồng ý
1. Các phương tiện truyền thông đại chúng gây ảnh hưởng đến việc tiêm phòng HPV cho con tôi.	①	②	③	④	⑤
2. Các bác sĩ gây ảnh hưởng đến việc tiêm phòng HPV cho con tôi.	①	②	③	④	⑤
3. Các y tá gây ảnh hưởng đến việc tiêm phòng HPV cho con tôi.	①	②	③	④	⑤

※ Sau đây là những câu hỏi về tình hình tiêm phòng vi rút gây u nhú ở người (HPV) của các con bạn. Vui lòng đánh dấu 'V' vào vị trí mà bạn nghĩ. (trường hợp có từ 2 con trở lên trong độ tuổi từ tròn 9 tuổi trở lên đến dưới tròn 19 tuổi, xin vui lòng trả lời với đối tượng là con có tuổi lớn nhất).

① Chưa bao giờ được tiêm phòng HPV, và cũng không có ý định tiêm phòng sau này.

② Chưa bao giờ được tiêm phòng HPV, nhưng dự định sẽ tiêm phòng sau.

③ Đã có lần được tiêm phòng HPV, nhưng không có ý định hoàn thành các mũi tiêm phòng còn lại.

④ Đã có lần được tiêm phòng HPV, và dự định sẽ hoàn thành các mũi tiêm phòng còn lại.

⑤ Đã hoàn thành tất cả các mũi tiêm phòng HPV.

* Câu trả lời của bạn thuộc vào số ①~② thì trả lời tất cả các câu hỏi trừ câu số 2), câu trả lời của bạn thuộc vào số ③~⑤ thì trả lời tất cả các câu hỏi trừ câu số 1).

1) Lý do mà con bạn chưa được tiêm phòng HPV là gì?

① Thiếu thông tin về tiêm phòng HPV
② Lo lắng về tác dụng phụ của tiêm phòng HPV
③ Lý do văn hóa như tập quán và quan niệm chung của xã hội của đất nước quê hương
④ Gánh nặng chi phí
⑤ Bạn nghĩ rằng vẫn còn quá sớm để tiêm phòng
⑥ Lý do khác ( ) (Xin vui lòng điền trực tiếp)

2) Con bạn đã tiêm phòng HPV mấy mũi?

① Tiêm 1 mũi trong 2 mũi tiêm chủng
② Tiêm 2 mũi trong 2 mũi tiêm chủng
③ Tiêm 1 mũi trong 3 mũi tiêm chủng
④ Tiêm 2 mũi trong 3 mũi tiêm chủng
⑤ Tiêm 3 mũi trong 3 mũi tiêm chủng

3) Sau đây là những câu hỏi về ý định tiêm phòng của bạn đối với việc tiêm chủng HPV của con bạn, vui lòng đánh dấu 'V 'vào vị trí bạn nghĩ.
(Trừ trường hợp con bạn đã hoàn thành việc tiêm phòng HPV)

Câu hỏi	Hoàn toàn không có khả năng	Hầu như không có khả năng	Hơi không có khả năng	Bình thường	Hơi có khả năng	Rất có khả năng	Có khả năng rất cao
1. Bạn có khả năng cố gắng lấy thêm nhiều thông tin hơn về việc tiêm phòng vi rút gây u nhú ở người (HPV) của con bạn không?	①	②	③	④	⑤	⑥	⑦
2. Bạn có thể cân nhắc việc tiêm phòng vi rút gây u nhú ở người (HPV) của con bạn như thế nào?	①	②	③	④	⑤	⑥	⑦
3. Bạn sẽ cố gắng để con bạn được tiêm phòng vi rút gây u nhú ở người (HPV) như thế nào?	①	②	③	④	⑤	⑥	⑦
4. Trên thực tế, con bạn có bao nhiêu khả năng sẽ được tiêm phòng vi rút gây u nhú ở người (HPV)?	①	②	③	④	⑤	⑥	⑦
5. Nếu bác sĩ hoặc y tá xung quanh bạn khuyên nên tiêm phòng vi rút gây u nhú ở người	①	②	③	④	⑤	⑥	⑦

(HPV), thì khả năng được tiêm phòng sẽ như thế nào?							

4) Ai là người chủ yếu quyết định về những việc như tiêm phòng cho các con của bạn?

① Tôi ② Chồng (vợ) tôi ③ Bàn bạc với chồng (vợ) rồi mới quyết định
④ Người khác ( ) (Vui lòng điền trực tiếp)

5) Chồng (vợ) bạn có ý định tiêm phòng HPV cho các con bạn không?

① Có ② Không ③ Không biết

6) Bạn đã tiêm phòng HPV chưa? ① Rồi ② Chưa

7) Bạn có nghĩ rằng nam giới cũng nên tiêm phòng HPV không?

① Có ② Không

※ Sau đây là một số câu hỏi về thông tin chung.

Nước xuất thân và dân tộc xuất thân	① Việt nam ② Dân tộc Hán ③ Dân tộc Joseon (조선족)
Tôn giáo	① Cơ Đốc giáo ② Thiên Chúa giáo ③ Phật giáo ④ Hồi giáo ⑤ Không tôn giáo ⑥ Tôn giáo khác
Học vấn cao nhất	① Không đi học ② Tốt nghiệp tiểu học ③ Tốt nghiệp Trung học Cơ sở ④ Tốt nghiệp Trung học Phổ thông ⑤ Tốt nghiệp Đại học ⑥ Tốt nghiệp Cao học

Thu nhập trung bình hàng tháng	① Dưới 1 triệu won ② Từ 1 triệu won ~ dưới 2 triệu won ③ Từ 2 triệu won ~ dưới 3 triệu won ④ Từ 3 triệu won ~ dưới 4 triệu won ⑤ Từ 4 triệu won trở lên ⑥ Không biết
Thời gian cư trú tại Hàn Quốc	năm tháng (vui lòng điền trực tiếp)
Năm sinh của trẻ	năm tháng sinh (vui lòng điền trực tiếp)
Giới tính của trẻ	① Bé trai ② Bé gái
Con cái nhập cảnh giữa chừng	Con của bạn có phải là đứa trẻ sinh ra và lớn lên ở nước ngoài và theo mẹ nhập cảnh vào Hàn quốc không? ① Đúng ② Không phải

※ Mong bạn viết ra một cách thoải mái nếu bạn có bất kỳ đề xuất nào liên quan đến việc tiêm phòng HPV cho con bạn.

국문초록

여성결혼이민자의 자녀 HPV 예방접종에 영향을 미치는 요인

인유두종 바이러스는 성적 접촉을 통해 전염이 되는 바이러스로 자궁경부암, 사마귀 등 다양한 질환을 유발한다. 이를 예방하기 위하여 HPV 예방접종이 개발되었고 우리나라는 2007년부터 도입되어 사용되고 있다. 현재 우리나라는 만 12세 이상 여아에게 HPV 무료접종 지원 사업을 시행하고 있으나, 다문화 가정 자녀의 HPV 예방접종 실행수준에 대해서는 파악된 바가 없다. 이에 본 연구에서는 여성결혼이민자 자녀의 HPV 예방접종 실행 수준을 파악하고, 여성결혼이민자의 특성 중 관련 요인들을 확인하고자 하였다.

본 연구는 건강신념모델을 이론적 기틀로 적용하여 문헌고찰을 통해 확인된 관련 요인들로 개념적 기틀을 구성하였다. 본 연구에서 건강행동은 자녀의 HPV 예방접종 실행수준이며, '자녀의 HPV 예방접종 횟수와 어머니의 접종의도'에 따라 다섯 그룹(접종거부군, 접종의도군, 접종중단군, 접종지속의도군, 접종완료군)으로 구분하였다.

본 연구는 국내에 거주하는 여성결혼이민자 중 가장 많은 비율을 차지하는 베트남, 중국(한족), 조선족을 대상으로 시행되었다. 연구 대상자의 선정기준은 남녀 자녀의 연령이 만 9세 이상 만 19세 미만이고, 서울, 경기도 및 부산, 경상남도에 거주는 자를 포함하였다. 본 연구는 서면조사와 온라인 조사를 병행하였고, 최종 분석에 사용한 표본수는 262명이었다. 여성결혼이민자의 자녀 HPV 예방접종 실행수준은 접종의도군이 약 57%로 가장 많은 비율을 차지하였고, 접종거부군, 접종완료군, 접종지속의도군, 접종중단군 순으로 나타났다. 자녀의 HPV 예방접종 실행수준에 영향을 미치는 요인을 확인하기 위하여 다항로지스틱 (Multinomial logistic regression)을 분석한 결과, '건강문해력, 의료기관에서의 차별경험, HPV 예방접종에 대한 성적 탈억제 신념, HPV 백신에 대한 지각된 장애성'이 자녀의 HPV 예방접종에 부정적인 영향을 미쳤고, 'HPV 예방접종에 대한 사회적 규범, HPV 백신에 대한 지각된 유익성, HPV 감염에 대한 지각된 심각성'은 자녀의 HPV 예방접종에 긍정적인 영향을 미쳤다.

자녀의 HPV 예방접종 실행수준 전이에 영향을 미치는 요인을 확인하기 위하여 순차로짓회귀분석(Sequential logistic regression)으로 분석한 결과, '건강문해력'은 1단계 전이에서 부정적인 영향을 미쳤고, 'HPV 백신에 대한 지각된 장애성'은 1단계와 2단계 전이에서 부정적인 영향을 미쳤다. 반면에, 'HPV 백신에 대한 지각된 심각성, HPV 감염에 대한 지각된 민감성, HPV 예방접종에 대한 성적 탈억제 신념'은 자녀의 HPV 예방접종 실행수준 전이에 있어 긍정적인 영향을 미치는 것으로 나타났다. 구체적으로 'HPV 백신에 대한 지각된 심각성'은 1단계 전이에서, 다른 두 요인은 2단계 전이에서 영향을 미쳤다. 마지막으로 'HPV 예방접종에 대한 사회적 규범'은 1단계 전이에서는 긍정적인 영향을, 2단계 전이에서는 부정적인 영향을 미치는 것으로 나타났다. 본 연구결과를 통해 각 단계의 전이에 있어 다양한 요인들이 영향을 미친다는 점을 확인할 수 있었다.

이에 여성결혼이민자 자녀의 HPV 예방접종을 높이기 위해서는 대상자가 어떤 그룹 또는 단계에 속하는지 확인하고 그룹별, 단계별로 적절하고 효과적인 중재를 제공할 필요가 있다.

핵심어 : 여성결혼이민자, HPV 예방접종, 건강신념모델