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Knowledge, perceptions, and decision-making about human papillomavirus vaccination among Korean American women: A focus group study

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Abstract

Objective—As one of the fastest growing ethnic minority groups in the United States, Korean American (KA) women experience a heightened cervical cancer burden. The advent of the human papillomavirus (HPV) vaccine offers an unprecedented opportunity to eliminate cervical cancer disparities in KA women. Yet, the uptake of HPV vaccine among KA adolescents remains suboptimal. Hence, we set out to explore knowledge, perceptions, and decision-making about HPV vaccination among KA women.

Methods—We conducted four focus groups of 26 KA women who participated in a community-based randomized controlled trial to promote breast and cervical cancer screening. Focus group data were analyzed using qualitative content analysis.

Results—Four main themes emerged from the focus groups: (1) limited awareness and knowledge of HPV vaccine, (2) perceptions and beliefs about HPV vaccination (acceptance, negative perceptions, ambivalence), (3) patterns of decision-making about HPV vaccination (hierarchical, peer-influenced, autonomous, and collaborative), and (4) promoting HPV education and information-sharing in the Korean community.

Conclusion—KA women are generally favorable toward HPV vaccination but lack awareness and knowledge about HPV. Culturally tailored HPV education programs based on KA women's

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decision-making patterns and effective information-sharing by trustworthy sources in comfortable environments are suggested strategies to promote HPV vaccination in the KA community. The findings point to the need for a multi-level approach to addressing linguistic, cultural, and system barriers that the recent immigrant community faces in promoting HPV vaccinations. In the development of targeted interventions for KA women, educational strategies and patterns of decision-making need to be considered.

Introduction

Worldwide, cervical cancer is one of the most common cancers among women (Arbyn et al., 2011). More than half a million women are newly diagnosed with cervical cancer each year, with approximately 90% of cervical cancer-related deaths occurring in developing countries (Arbyn et al., 2011). In recent decades, progress has been made in cervical cancer control in developed countries due in large part to earlier detection through regular screenings (Arbyn, Raifu, Weiderpass, Bray, & Anttila, 2009; Vesco et al., 2011). Yet even in high-income countries, certain racial and ethnic minority groups—particularly recent Asian immigrant women—experience a higher cervical cancer incidence and mortality (McCracken et al., 2007; Miller, Chu, Hankey, & Ries, 2008; Wang, Carreon, Gomez, & Devesa, 2010). For example, Korean Americans (KAs) are the fourth fastest growing immigrant populations: they increased by 4.3-fold between 1980 and 2010, comprising about 10% of all Asian Americans (Hoeffel, Rastogi, Kim, & Shahid, 2012; Ryan, 2013). KA women experience a heightened cervical cancer burden: almost twice the risk of developing cervical cancer and one-and-a-half times the risk of dying from cervical cancer compared to non-Hispanic whites (Miller et al., 2008; Wang et al., 2010).

Human papillomavirus (HPV) infection is a necessary cause of cervical cancer with two types of HPV (16 and 18) accounting for more than 70% of cervical cancer cases (Centers for Disease Control and Prevention, 2012; Walboomers et al., 1999). The advent of the HPV vaccine offers an unprecedented opportunity to eliminate cervical cancer disparities in Asian immigrant women in the United States (US). One of the objectives of the Healthy People 2020 initiative includes improving the completion rate of HPV vaccine series to 80% for females aged 13 to 15 years (U.S. Department of Human and Health Services, 2013); however, the uptake of HPV vaccine among Asian immigrant girls has been suboptimal: a study based on data from the 2010 National Health Interview Study reported that Asian adolescent girls aged 11 to 17 years have the lowest initiation (13.4% vs. 29.6%) and completion (6.2% vs. 16.1%) rates of HPV vaccine compared to non-Hispanic white adolescent girls (Laz, Rahman, & Berenson, 2012; Wong et al., 2011). A recent systematic review found that suboptimal HPV vaccine uptake among US adolescents was associated with barriers experienced by healthcare professionals and parents/caregivers: lack of knowledge, financial concerns, concerns about discussing sexual matters, and concerns about potential sexual promiscuity following HPV vaccination (Holman et al., 2014). Studies of ethnic minorities in the US found that mothers are the primary decision makers regarding HPV vaccinations for their adolescent daughters and that among African, Alaska Native, and Hispanic Americans, cultural attitudes toward HPV vaccine are critical factors in decisions regarding HPV vaccination for their children (Allen et al., 2012; Joseph et al., 2012; Sanders Thompson, Arnold, & Notaro, 2012; Toffolon-Weiss et al., 2008).

To the best of our knowledge, only one study investigated HPV vaccination among KAs (Bastani et al., 2011). The authors found that KA mothers have lower HPV and HPV vaccine awareness (44% to 46% vs. 62% to 64%) and the initiation of HPV vaccine (24% vs. 33%) compared to Latina mothers (Bastani et al., 2011). Still unclear are culture-specific perceptions about HPV vaccination among KA women and their decision-making patterns because no research has explored the topic. Hence, the aim of this study was to explore knowledge, perceptions, and decision-making about HPV vaccination among KA women.

Methods

Parent Study

Data for this analysis were obtained from four focus groups of KA women who participated in a church-based randomized trial. The parent study was conducted between 2010 and 2012 on the effectiveness of a health literacy-focused intervention program to promote mammogram and Pap test use among non-adherent KA women in a northeastern metropolitan area (central Maryland and northern Virginia) of the US. The inclusion criteria were: (1) aged 21–65 years, (2) self-identified as Korean female, (3) no mammogram and/or Pap test within the last two years, (4) able to read and write either Korean or English, and (5) willing to offer written consent to allow researchers to audit medical records for mammogram and Pap tests use. The churches were chosen to be the study recruitment and intervention site because a large majority of KA women regularly attend church. Twenty-nine female community health workers (CHWs) from 23 Korean ethnic churches in the target area were trained to recruit KA women from their church and deliver the study intervention that consisted of health literacy education, monthly phone follow-up, and navigation assistance for 6 months. Each CHW recruited 7 to 36 eligible women totaling 560 KA women who completed the study survey at baseline. Study variables were measured at baseline, 3, and 6 months. All study procedures were approved by the Institutional Review Board. A written consent was obtained from every woman in the study prior to data collection.

Focus Group

The qualitative study using semi-structured focus groups was nested in the parent study. At the completion of final data collection at 6 months, CHWs and study participants were asked to participate in a focus group to share their experiences about breast and cervical cancer screening and HPV vaccination-related issues. The focus group is a useful method to identify social norms and to facilitate interactions among group members (Morgan, 1997), and can contribute to expanding our insights on developing or modifying interventions based on needs of the target population (Halcomb, Gholizadeh, DiGiacomo, Phillips, & Davidson, 2007).

Participants

Inclusion criteria for focus groups were: (1) either a CHW or KA participant in the control group of the parent study and (2) willing to participate in focus group. The parent study intervention included discussions about HPV vaccination as part of its educational program. Hence, the study team decided to include only women in the control group. We also

considered age, marital status, educational level, length of stay in the US, and English proficiency to create diverse focus group samples. Diversifying sample characteristics can help researchers capture variations and commonalities in relation to KA women's views on HPV vaccination (Patton, 2002). Based on our randomization scheme, all Korean ethnic churches in the control group from which the CHWs and KA participants were recruited for the focus groups belonged to northern Virginia, one of the states in the US where a school vaccine mandate for HPV had been enacted (Virginia Department of Health, 2013). The research team contacted control group participants and CHWs by phone to check whether they would be interested in participating in focus groups: 14 out of 15 CHWs and 12 out of 16 participants (totaling 26 women) agreed and were able to join focus group discussions.

Data Collection

Four semi-structured focus groups were conducted with 6 to 8 participants, consisting of two focus groups for 14 CHWs and two focus groups for 12 KA study participants. Each focus group was facilitated by a bilingual moderator and a note-taker who were familiar with the Korean culture. A focus group guide was developed based on concepts examined during the study period, previous literature, and the researcher team's experiences in working with the KA community. Our research team members included bilingual researchers, clinicians (a nurse practitioner and a physician), outreach coordinators, a director of a community-based organization, and study staff who had extensive experience in working with the KA community. After discussions among the research team, the guide questions were revised to increase understandability to lay persons (Table 1); team members reviewed all alterations. An understanding of the study purpose, potential risks and benefits of the study, and voluntary participation among participants was ensured prior to each focus group. All focus group interviews were conducted in Korean at a community center or Korean ethnic church that was most convenient for the participants. Each focus group interview lasted approximately two hours. Following questions about awareness of HPV and HPV vaccine, the moderator provided a brief explanation about HPV vaccine and recommended guidelines on HPV vaccination. Each participant received \$20 for their time. Field notes were taken. The focus group data were transcribed verbatim.

Data Analysis

Sample characteristic data were analyzed using descriptive statistics such as frequency, percent, and means. Qualitative data were analyzed using inductive coding and qualitative content analysis (Hsieh & Shannon, 2005). Two coders read each transcript and field notes multiple times to understand each focus group; initial coding was done by two coders independently. If there was a discrepancy between the two coders, the data were discussed among research team until a consensus was reached. The coders then sorted the initial codes into categories; emergent categories were grouped into themes (Hsieh & Shannon, 2005). The themes and subthemes were reviewed by other study team members for similarities and discrepancies. Preliminary results were revisited by all authors to embrace multiple perspectives on the focus group data. Final categories of subthemes and themes were determined after a series of team discussions.

Methodological Rigor

Methodological rigor was achieved by using the following methods. First, only the final results—themes, subthemes, and selected quotes—were translated and presented in English to minimize methodological problems with repeated translations. Bilingual researchers on the team worked closely with a professional editor to present the emic perspective of KA women in terms of their perceptions and decision-making about HPV vaccinations and ensured adequacy of translation of the data. Second, trustworthiness was achieved: (1) credibility was maximized through prolonged engagement of the research team's experience with the KA population; (2) transferability was ensured through the thick description of study findings using verbatim transcripts and relevant quotes, thus allowing the reader to judge the applicability of study findings beyond the present study; and (3) confirmability was enhanced through revisiting the focus group data by two initial coders and co-authors (Lincoln & Guba, 1985).

Results

Table 2 summarizes the characteristics of focus group participants (N=26). All participants were married and mostly middle-aged (mean [SD]=44.8[6.4] years); all but one had one or more children. A majority of the participants had some college education with more than 10 years of residency in the US (mean [SD]=16.0[7.1]). Nonetheless, about 70% of the participants had difficulty with English. In addition, two-thirds (66.7%) of the parent study participants (n=12) lacked health insurance at the time of the study (data not available for CHWs). There were no differences in demographic characteristics between CHWs and participants.

Emergent themes with subsequent subthemes from the focus group data are presented. Relevant quotes were selected to describe each theme. There was no salient difference between CHWs and study participants across themes. Below we describe each of the themes and subthemes in detail.

Limited Awareness and Knowledge of HPV Vaccine

Most focus group participants indicated that they had 'never heard of HPV or HPV vaccine'; the focus group was actually the first time they were exposed to information about HPV vaccine. Only a few participants—mainly those who had daughters around age 11–12 years—indicated that they heard of the vaccine from their friends, Internet or TV, pediatricians, or school brochures. Notably, even those who had heard of the vaccine were confused about HPV vaccine recommended guidelines, benefits, and side effects. Example quotes supporting the theme are presented in Table 3.

Perceptions and Beliefs about HPV Vaccination (largely acceptable, yet negative or ambivalent feelings about HPV vaccination)

Three subthemes relevant to perceptions and beliefs about HPV vaccination among KA women included acceptance, negative perceptions, and ambivalence (Table 4). Most KA women in the focus group were favorable towards HPV vaccination after learning about the benefits. The most commonly expressed view was that they wanted to protect their children

from any future harm such as cervical cancer as they became aware of the necessity of “prevention.” This was associated with an increasing risk of cervical cancer for their children resulting from early exposure to sexuality. As an example, one woman stated,

“Regardless of whether or not I trust my child [although I trust my child], I think protection should be the first priority. We really don’t know what will happen to our child in their life.”

Some KA women stated that they were reluctant to vaccinate their children against HPV. Recurring reasons for negative perceptions about HPV vaccination included concerns about safety, promiscuity, and costs. Several women worried that by vaccinating a child they could send the child a wrong, unintended signal that it is okay to have sex. One mother of an adolescent girl noted,

“Since my daughter doesn’t know about this [HPV vaccine] much, I am afraid that she might think that I give her permission to have it [sex] by even talking about the vaccine.”

Others were concerned about the safety of the vaccine, though they understood the benefits of HPV vaccine.

Patterns of Decision-Making about HPV Vaccination

The patterns of KA women’s decision-making about HPV vaccination varied in the focus groups: hierarchical, peer-influenced, autonomous, and collaborative types. Subthemes and example quotes are presented in Table 5. The women who had daughters aged around 11–12 years—and hence were recommended by pediatricians or their children’s school to have their daughters vaccinated—appeared to have followed the decision/recommendation made by the authorities (pediatrician or school). One mother whose daughter received HPV vaccine due to school entry policy stated,

“I would not have vaccinated my daughter, had there not had any vaccination policy implemented at her school...”

Yet, some women reported making a peer-influenced decision. Since child’s school is a place where KA women can exchange their ideas about parenting, focus group participants also stated that other parents’ opinions affected their decisions about HPV vaccination. One mother explained,

“I was thinking about getting my children vaccinated because they would leave me when they go to college. My friends said that I might as well get them vaccinated at that time [before they go to college].... So, I plan to get them vaccinated when they start living in a dorm.”

A few women expressed that their decision regarding HPV vaccination would mainly rely on their own conclusion, after searching for information from several sources (doctors, friends, and websites).

Meanwhile, those with older adolescent children or young adults tended to share thoughts on HPV vaccination with their children and invite them to a collaborative process of decision-making about HPV vaccine.

Promoting HPV Education and Information Sharing in the Korean Community

Several strategies of HPV education and information-sharing in the Korean community emerged as a salient theme (Table 6). The most desirable education sources were their pediatricians and nurse practitioners because the women perceived them to be trustworthy. Some women also stressed trust built between a pediatrician, their children, and themselves.

When discussing effective ways to share information about HPV in the Korean community, the women in the focus group emphasized school-based education because it offers an equal chance to access health information regardless of their health insurance status. One woman noted,

“We might not go see a doctor. It seems effective to provide the education in class for all students of a certain age in the school system. It could be in high school or middle school.”

They also acknowledged the importance of creating a comfortable environment for effective sharing of information on HPV. Education by family or church members (e.g., preachers) was also recommended because they can open up natural discussion in an already existing, comfortable and familiar environment.

Discussion

To the best of our knowledge, this is the first qualitative exploration of knowledge, perceptions, and decision-making regarding HPV vaccination among KA women. The findings suggest several implications for developing educational programs to promote HPV vaccination in the Korean community and for supporting legislation regarding HPV vaccine mandates among preadolescents.

It has been 8 years since HPV vaccine was first introduced to the market. Yet, most KA women in the focus groups were not aware of HPV vaccine. Even those with daughters attending schools with HPV vaccine requirements did not have a clear understanding of the eligible age, dosage, timeframe, or effects of HPV vaccine. One possible explanation is that—despite efforts to promote awareness of HPV vaccine—the information may not have been fully accessible to KA women in the focus group. A mismatch between common routes through which HPV information is distributed such as mainstream TV or radio advertisements and frequently used sources of information for these women may have led to the women not being able to access information about HPV vaccine. Interestingly, studies of HPV vaccination among ethnically diverse adults reported advertisements in media (TV and radio) as their primary information source (Allen et al., 2012; Almeida, Tiro, Rodriguez, & Diamant, 2012); however, in our study, KA women rarely used mainstream TV and radio as information sources. Future research needs to explore frequently used information sources for HPV vaccine among Korean immigrants and how the information sources can be effectively utilized to promote awareness and knowledge of HPV vaccine.

Mothers of 6th grade female students received a letter from school containing detailed information about HPV vaccine, yet their understanding of the information was limited, which might have been due in part to their limited English proficiency and health literacy. In

this study, more than two-thirds of participants had difficulty with English. Previous research also found that KA women experience difficulty understanding and utilizing health information needed for informed decision-making (Han, Kim, Kim, & Kim, 2011). The findings underscore that merely distributing written information to mothers with limited English proficiency may not be effective in promoting knowledge and discussion of HPV vaccine. This calls for more attention to help KA women who often have limited health literacy to understand and reconcile inquiries about HPV vaccination prior to HPV vaccine uptake among their children.

While most KA women in the study were generally favorable toward HPV vaccination, some expressed negative or ambivalent perceptions and beliefs about HPV vaccination. One salient concern had to do with costs. Through the federal Vaccines for Children Program (VFC), HPV vaccine is available nationwide for 9-to-18-year-old children who are Native Americans or Alaskan Natives, on Medicaid, or are uninsured or underinsured (National Conference of State Legislatures, 2014). The women in our study were unaware of the program. Free receipt of (or discounted) HPV vaccine might be hard to get for ethnic minorities experiencing difficulties in navigating the US healthcare system (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011). Nonetheless, women in the focus groups noted the advantage of receiving financial support in promoting HPV vaccination. A multifaceted approach may be needed to overcome linguistic and system barriers to HPV vaccination for low-income individuals with limited English proficiency.

While some KA women expressed concern regarding potential sexual promiscuity among their children after HPV vaccination, most believed that sexual behavior among their children would not change. Our finding is consistent with a recent cohort study of sexual activity-related outcomes after HPV vaccination among 11-to-12-year-old ethnically diverse girls (N=1,398; Black 46%, White 30%, unknown or others 24%). Adolescents who received HPV vaccine were no more likely to become pregnant, to have sexually transmitted diseases, or to find birth-control pills compared to those who were not vaccinated (Bednarczyk, Davis, Ault, Orenstein, & Omer, 2012).

Three prototypes of medical decision-making have been described in the literature: (1) a paternalistic model in which doctors dominate medical encounters and make decisions for their passive, dependent patients; (2) an informed model in which patients collect information from several sources including doctors, then come to their own decisions; and (3) a shared decision-making model in which both patients and doctors share available information and agree to a decision (Charles, Gafni, & Whelan, 1997). Qualitative studies on perspectives regarding decision-making about HPV vaccination among ethnic minorities reveal various types of decision-making depending on ethnicity (white, black, and Hispanic) (Allen et al., 2012; Toffolon-Weiss et al., 2008). All three types of decision-making were found in our study, although most KA women appeared to follow a paternalistic decision-making (hierarchical type) by letting authorities—pediatricians and school policies—decide whether to vaccinate their children or not. This may be because all but one of the participants were born and raised in South Korea, and hence were influenced by the Korean culture of showing utmost respect to someone of authority, such as a doctor. While the findings offer some useful insights into overall decision-making about HPV vaccination

among KA women, there is a need for deeper exploration about their decision-making processes, including what affects their decision-making and how satisfied and confident they are with their decision.

Focus group participants suggested possible strategies to promote HPV education and related information in the Korean community. According to our findings, healthcare professionals such as pediatricians or nurse practitioners seem to be appropriate to initiate a conversation about HPV infection and vaccine during regular check-ups because they are the most trusted sources of information about children's health. Effective information-sharing through school- and church-based education was also recommended. The women tended to have a positive view if school-based education and school HPV vaccination mandates. Efforts to create a comfortable environment to open up natural discussions about HPV infection and vaccine through family or church settings may be possible strategies to consider in developing educational interventions in the Korean community.

This study has limitations. First, our study sample was obtained from Korean ethnic churches. Recruitment from other sites such as other faith-based organizations (e.g., Buddhist temples) or Korean grocery stores might have minimized potential sampling bias. Nevertheless, 80% of today's KAs regularly attend church (Kim, Juon, Hill, Post, & Kim, 2001). Second, KA women in the focus groups resided in West Virginia where a vaccine mandate for HPV had been enacted. Thus, findings from this study may have limitations for transferability to other Korean women who live in an area where a school entry requirement for HPV has not been enacted. Third, part of the study sample included women whose children were not eligible for HPV vaccination based on age or gender (approximately 60% of focus group participants had at least one eligible child for HPV vaccination 9 to 26 years of age). Their discussing decision-making about HPV vaccination might have been limited and different from real-world decision-making.

Implications for Practice and/or Policy

As one of the rapidly growing ethnic minorities in the US with heightened cervical cancer incidence and mortality, KA women experience limited English proficiency and limited health literacy. Findings from our study and others indicate that multifaceted barriers exist for them to access health information and healthcare systems in vaccinating their children against HPV. To mitigate these barriers, we have several suggestions to promote HPV vaccination in KAs: (1) culturally tailored educational programs and information-sharing in the Korean community; (2) recommendations provided by pediatricians and schools; and (3) creating a non-threatening, supportive environment where KA women can freely share their thoughts on HPV and HPV vaccination. These strategies can be tailored to KA women's decision-making patterns. For example, for KA women who exhibit a hierarchical type decision making, pediatricians may start a discussion on HPV vaccination during a regular check-up. For those with autonomous decision type, HPV related information could be offered through educational programs. The findings from this study can contribute to development of a campaign to promote HPV vaccinations among ethnic minority women such as KA who experience cultural and linguistic barriers.

Conclusion

Cervical cancer is considered a preventable disease. Yet, racial/ethnic minority women experience cervical cancer disparity, which is mostly associated with low rates of cancer screening. HPV vaccine, as an unprecedented opportunity to eliminate gaps in cervical cancer disparity, was first introduced in the US in 2006. KA women in the focus groups were generally favorable toward HPV vaccination; however, they acknowledged lack of knowledge and limited information about HPV vaccine in the KA community. Patterns of decision-making models varied in terms of how much KA women wanted outside involvement in the decision-making process about HPV vaccination, although they tended to follow authorities' decisions. Strategies to promote HPV education in the Korean community and their decision-making patterns need to be considered when developing targeted interventions for underserved KA women.

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Table 1

Main topics and sample questions used in the semi-structured focus groups

Topic	Sample questions
Awareness of HPV and HPV vaccine	<ul style="list-style-type: none"> • Have you heard about HPV or HPV vaccine? • What were the sources of information about HPV or HPV vaccine? • What comes to mind when you hear about HPV vaccine (vaccination)?
Perceptions about HPV vaccination	<ul style="list-style-type: none"> • What are the reasons why a KA would vaccinate her child against HPV? • What are the reasons why a KA would not vaccinate her child against HPV?
Decision making about HPV vaccination	<ul style="list-style-type: none"> • How do you think KAs decide whether to vaccinate their child against HPV or not? • Why do you think so?
Ways to promote HPV preventive education	<ul style="list-style-type: none"> • Who would be the most appropriate person/organization to provide preventive education about HPV vaccination?

Table 2

Characteristics of focus group participants (N=26)

	Mean $\pm$ SD
Age (range= 36–59), years	44.8 $\pm$ 6.4
Married/Partnered, %	100.0
Have child/children, %	96.2
Some college+, %	88.5
Years in the US (range=3–32)	16.0 $\pm$ 7.1
English proficiency, %	
Poor	26.9
Fair	42.3
Fluent	30.8
Health insurance *, %	66.7

* Parent study participants only (n=12).

Table 3

Theme 1: Limited awareness or knowledge of HPV vaccine

Lack of awareness of HPV vaccine	
	“This is the first time I ever heard of HPV vaccine. I did not know about the vaccine before.”
	“I have never even heard of ‘Indoo’ (wrong terminology for human papillomavirus in Korean)...”
	“I do not have TV and do not use Internet that often... This is the first time I am exposed to HPV vaccine”
Limited knowledge about HPV vaccine	
	“Does this vaccine only apply to young girls regardless of their sexual exposure?”
	“Do they have to be vaccinated three times within a certain period of time? [Mother 1] <i>Yes, they need to complete a series of three vaccinations over 6 months.</i> [moderator] The vaccination requirement for 6 th graders was not this vaccine then? I remember it (vaccination) was required only one time [Mother 2]. I am confused... [Mother 1]”

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Table 4**Theme 2: Perceptions and beliefs about HPV vaccination**

Acceptance*Prevention from unexpected situations*

“Every parent wants their child to grow up well [without early exposure to sexual matters]. However, we may not be able to predict what will happen to them in the future, so I think it is good to get them vaccinated as a preventive measure.”

“We never know what will happen to the future of our child. So, I think I might as well get them [children] vaccinated... This is really for prevention because I want to protect my child from any unexpected situation as anything can happen.”

“Regardless of whether or not I trust my child [although I trust my child], I think protection should be the first priority. We really don’t know what will happen to our child in their life.”

Negative perception*Concerns about safety*

“I am actually worried [about the vaccine] because safety is not guaranteed yet, I think.”

“What I am most worried about the vaccine is safety.”

Concerns about promiscuity

“I feel like I am giving her [daughter] a chance to think that they are safe from it [HPV infection] by getting vaccinated”

“Since my daughter doesn’t know about this [HPV vaccine] much, I am afraid that she might think that I give her permission to have it [sex] by even talking about the vaccine.”

Concerns about costs:

“It is expensive! It will cost at least \$500 dollars for the three shots needed.”

“Well, I should think about the cost ... my insurance does not cover it [HPV vaccine] so....”

Ambivalence

“I understand the necessity of the vaccine... but what I am interested in is whether or not the vaccine is completely safe. I focus more on that part [more than anything] because it [the vaccine] has been on the market since only 2006, less than 10 years. We don’t have full knowledge as to what could happen when the history is so short... You see, when new vaccine comes out, people quickly learn what it is for but don’t necessarily know if it [the vaccine] is completely safe.”

Table 5**Theme 3: Patterns of decision-making about HPV vaccination**

Hierarchical*Doctor recommendation*

“Should get them vaccinated if healthcare professionals recommend. What else can I do?”

School policy

“My daughter needed to get this vaccine prior to the 6th grade entrance. Frankly speaking, that is why I got her vaccinated even if I wasn’t completely sure about the vaccine. [P1] I would feel the same way. Even if I believe it is a little bit early for my daughter, her school needs the document [proof of vaccination]... [P2] The school will not let her move forward... [P1]

“I would not have vaccinated my daughter, had there not had any vaccination policy implemented at her school... As it was required for my daughter [for 6th grade entrance], I got her vaccinated. Soon, I realized that that [mandatory school requirement] was one of the good methods [to have a child vaccinated against HPV].”

Peer-influenced

“I think other parents influence our decision because we can learn lessons from their experiences. So, I think there is room for us to think about it.”

“I was thinking about getting my children vaccinated because they would leave me when they go to college. My friends said that I might as well get them vaccinated at that time [before they go to college].... So, I plan to get them vaccinated when they start living in a dorm.”

Autonomous

“Although we [the participant and her spouse] will gather information from others, we would be the ones to make a decision regarding HPV vaccination.”

“In my case, I always search information through online. Doing so, I can be exposed to a variety of discussions including differences and similarities between two opinions. That is why I tend to make decisions on my own using information that I collect through online. *What if a doctor recommends you get your daughter vaccinated against HPV?* [Moderator] Well... I still need to think as I tend to be suspicious...”

Collaborative

“Yes, I got my daughter vaccinated. She also wanted to get it. She already knew about the vaccine... When this study just started I asked my daughter, ‘Have you heard about HPV vaccine?’ She said she knew about the vaccine. So, I said ‘why don’t you discuss with your doctor next time you go see her?’ That is how she started the vaccine.”

Table 6**Theme 4: Promoting HPV education and information sharing in the Korean community**

Education from trustworthy sources (doctors and nurses)

"I trust their expertise."

"As my child has seen the doctor when she was five, she trusts her doctor. My child was so frustrated when she experienced puberty. I let her meet the doctor and the doctor relieved her anxiety... so I think it must be her pediatrician [to provide education about HPV]."

Effective information sharing in the Korean community

A school as a place to offer an equal chance of being given HPV information

"We might not go see a doctor. It seems effective to provide the education in class for all students of a certain age in the school system. It could be in high school or middle school."

Promoting a comfortable environment to discuss HPV

"Response to the reason why family would be the desirable source of HPV education] I believe that we can discuss when we are in a comfortable environment [home]. That makes my children easy to receive it [HPV education]."

"Our preacher tries to incorporate religious aspects into the [health] knowledge given from the school system. She [the preacher] skillfully opens up a natural discussion and makes children keep asking questions. I happened to be there when children were asking questions [about sexual matters] to her."