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Social Networks Influence Hispanic College Women's HPV Vaccine Uptake Decision-making Processes

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Abstract

This qualitative study was designed to assess current and preferred social networks that influence human papillomavirus (HPV) vaccine decision making in a sample of Hispanic college women. Individual, semi-structured interviews were conducted with 41 Hispanic college women attending a large southeastern Hispanic-serving institution. Television commercials and discussions with mothers were found to be the most influential social networks for current HPV vaccination beliefs. Internet sites, close family members, and healthcare providers' communications were preferred social networks for HPV vaccine information. Perceived accessibility and sense of comfort influenced the order in which these social networks' communications would be accepted. Findings suggest that Hispanic college women utilize specific social networks to gather information and make decisions about HPV vaccination. Continued efforts are needed to promote further understanding of the purpose of the HPV vaccine via these preferred sources of information.

Keywords

HPV vaccine; Hispanic women; health seeking behaviors

The vaccination of college-age women against human papillomavirus (HPV) infection is a critical public health goal given that 50% of college women are estimated to be infected (Lopez & McMahan, 2007; Sandfort & Pleasant, 2009; Winer et al., 2003). It is important to consider the sources of information about vaccination used by college women as research has identified specific post-secondary school sexual contexts and values that often increase women's risk for HPV transmission. High-risk sexual behaviors, inconsistent contraceptive usage, and coercion/violence, which are often normalized in college settings, are associated with higher rates of HPV acquisition (Prinstein, Meade, & Cohen, 2003; Sandfort & Pleasant, 2009). Even with the availability of an HPV vaccine, uptake and vaccine series retention among college women remains below 40% (Centers for Disease Control [CDC], 2010).

Prior research has shown that a blanket approach to health communications regarding HPV vaccine is ineffective, as subgroups of college women utilized different social networks for information depending on their cultural values, sexual orientation, or socio-economic identity (Eisenberg, 2001; Pruitt & Schootman, 2010; Watts, 2008). Still, HPV and HPV vaccination studies of college women's experiences continue to draw primarily from European American and African American samples. In fact, no studies we can find have specifically examined Hispanic college women's health literacy or communication about HPV issues, although these women represent the largest group of racial/ethnic minorities on 4-year college campuses in the United States (Fry & Lopez, 2012). This omission in research is of particular concern given that the highest burden of HPV-related cervical cancers occur in young adult Hispanic female populations (Vanslyke et al., 2008; Scarinci, Garcés-Palacio, & Partridge, 2007; Watts et al., 2009). Thus, there is a need to identify whom Hispanic college women trust and rely upon to provide information that will protect them against HPV. To address this void in the literature, we utilized Social Network Theory (SNT) to identify Hispanic college women's communication networks when they are seeking HPV and HPV vaccine information (Berkman, 2000). A social network is defined as the social structure of relationships around a person, group, or organization that affects beliefs or behaviors (Berkman, 2002; Simons-Morton et al., 2009). SNT asserts that the relationships and ties that an individual has with various social networks play a significant role in informing behavior.

HPV vaccination

HPV vaccines have been proposed as an important tool in the primary prevention of cervical cancer. In 2006 the FDA approved for women and girls aged 9 to 26 years an HPV vaccine that protects against the strains responsible for over 90% of all genital warts and 70% of all cervical cancers (Munoz et al., 2010). It consists of a series of three vaccines given over a course of 6 months (Allen et al., 2012). The vaccine has been shown to be effective, safe, and well-tolerated among adolescent and young adult women (Munoz et al., 2010).

Despite the availability of the vaccine and evidence that college students have unique access to sexual health education and higher levels of knowledge about sexually transmitted diseases (STDs) than their peers do, several studies have shown that their HPV and HPV vaccination knowledge are inadequate (D'Urso, Thompson-Robinson & Chandler, 2007; Sandfort & Pleasant, 2009). A lack of HPV vaccination knowledge has implications for sexual health outcomes. For example, studies of college and community-based Hispanic female samples indicate that, although they were willing to be vaccinated, they had low levels of retention over the required three courses of injections (Brewer & Fazekas, 2007; Hopfer & Clippard, 2011; Pruitt & Schootman, 2010; Vanslyke et al. 2008; Watts et al., 2009). In fact, vaccine uptake among women at this age is below 28% (CDC, 2008), and rate of retention through the remaining required two rounds of vaccination is even lower (Pruitt & Schootman, 2010). Researchers have pointed to lack of knowledge as an important contributing factor in college women's HPV vaccination uptake decision making processes.

Social Network Theory

One step toward addressing Hispanic college women's low HPV vaccine knowledge and vaccine series completion is the identification of sources of information that influence their decision making processes. In designing the present study we were guided by Social Network Theory or SNT (Berkman, 2002; Berkman & Glass, 2002; Simons-Morton, Haynie, & Noelcke, 2009), which focuses on how relationships between people influence health communications. SNT also defines how these relationships may comprise the feelings people have for each other, the exchange of information, and/or more tangible exchanges of resources (e.g. money for medicine, health insurance). In the context of the present study, SNT was used to help identify what social networks, and who within them, influence Hispanic college women's HPV vaccine decision-making processes.

Although social networks have different levels of influence for different issues, they each require the utilization of three key processes: socialization, selection, and social norms. Socialization refers to the ways in which social networks teach individuals to think, feel, and behave (Simons-Morton et al., 2009). Whether direct or indirect, socialization processes communicate behaviors that reinforce uniformity according to each social network's value system. The ways in which an individual chooses to accept or reject information communicated through socialization is evidenced through the selection process. People tend to associate or accept information from those who share common interests, views, or behaviors, particularly when these associations support those behaviors in which they wish to engage or are engaging (Simons-Morton et al., 2009). Finally, social norms are implicit in the development and outcomes of socialization and selection processes. As the customary rules of behavior that coordinate interactions with one another, social norms vary and evolve through time and also vary between social networks. This continuous change requires an individual to communicate, incorporate, and negotiate values given to social networks' socialization and selection processes (Simons-Morton et al., 2009). Through this triadic process, appropriate health-related behaviors are communicated to people based upon their sense of attachment to particular social networks (Berkman, 2002; Berkman & Glass, 2002). Thus, knowledge about people's attachments could contribute to our understanding of the influence of social networks' communications about appropriate health behaviors, an important goal of those seeking to increase HPV vaccine uptake in Hispanic college student populations.

Although few studies have exclusively focused on social networks' role in HPV vaccine decision-making processes, several researchers have explored the role of healthcare providers, family, and media outlets in the communication of information. These studies provide important insights, but they focused primarily on European American and African-American college samples; none have drawn exclusively from Hispanic college samples (Lopez & McMahan, 2007; Munoz et al., 2010; Sandfort & Pleasant, 2009; Winer et al., 2003). Similarly, Hispanic community-based samples do not capture the unique college contextual experiences that put these women at risk. This is problematic given that the number of Hispanic women attending post-secondary institutions has increased to the point they are now the largest ethnic minority group attending college in the United States (Fry & Lopez, 2012). The shift in college campus populations' diversity and Hispanic women's

high risk for HPV infection challenge researchers to increase knowledge about this population's sexual health needs, particularly their HPV vaccination beliefs.

Method

As our goal was to identify Hispanic college women's subjective perceptions and experiences with HPV vaccine messaging, social networks' influence, and decision-making processes, a qualitative approach was used. Qualitative approaches are appropriate for exploring this topic because of their ability to identify meaningful conceptual distinctions tied to individual identify factors, including gender, race, and sexuality (Few, Stephens, & Rouse, 2003).

Participants

Participants were recruited from a Hispanic-serving institution's psychology research pool. Individuals were screened for eligibility prior to scheduling their interviews; criteria included self-identifying as Hispanic, female, and between 18 and 24 years of age. A total of 41 women with a mean age of 19.8 participated in the study. All participants self-identified as ethnically Hispanic and racially White. Participants identified their familial national origins as Cuban (N= 22), Colombian (N= 12), Argentinean (N= 2), and other nationalities (N = 5) including Brazilian, Dominican, Mexican, Nicaraguan, Puerto Rican, and Venezuelan. Although six were born abroad, only two women had lived outside the United States for more than 5 years. The participants self-identified as heterosexual (N= 39) or bisexual (N= 2), and the majority (N= 36) were single at the time of the interviews. The participants' average number of sexual partners in a lifetime was 1.7; 18 participants had not yet had sexual intercourse. A total of 14 women, or 32% had already started or completed the HPV vaccination series.

Interview Procedure

Three female research assistants who self-identified as Hispanic conducted the individual interviews at a time selected by the participants. After they had read the letter of consent approved by the university's Institutional Review Board, the participants completed a demographic questionnaire and a HPV vaccine knowledge survey. Anonymous surveys given to each participant included demographic questions (age, residence, class standing, income, and race/ethnicity), sexual activities (numbers of partners, types of sexual activity including oral sex, anal sex, and masturbation) and HPV specific items adapted from the previously validated Parental Human Papillomavirus Survey (PHPVS) (Thomas, Strickland, Diclemente, Higgins, Williams & Hickey, 2013). The PHPVS was developed in English and Spanish to evaluate parental knowledge, beliefs, and correlates of HPV vaccination. The PHPVS contained 28 Likert scaled items and maintained high internal consistency across all subscales (perceived severity and perceived vulnerability of HPV; perceived benefits and perceived barriers to vaccination), with a high total Cronbach's alpha ($r = 0.96$) that was not increased by item deletion (Thomas et al., 2013). For this study, the instrument was modified for college-aged young adults and only had 27 items. The modifications included the removal of 5 previous items and addition of 4 new items. The Cronbach's alpha for the modified PHPVS for these participants was only 0.214. However, for the analyses herein,

subjects' responses to the modified HPV instrument were considered separately as potential predictors of intent to vaccinate, so the low reliability did not impact our conclusions.

Interviews were conducted in a private conference room; each session was audio-taped, and lasted between 15 and 65 minutes. Each participant provided a pseudonym to be used in the interview and to label their transcripts. A questioning route, for these interviews was developed using SNT constructs, provided a framework for developing and sequencing a series of semi-structured, yet flexible questions. Each interview began with focused questions to establish HPV vaccination knowledge and beliefs. Some questions included: Have you heard about the HPV vaccine? What do you know about the HPV vaccine? Would/Did you get the HPV vaccine? Where would you go to find out more about the HPV vaccine when making your decision?

Data Analysis

A modified version of constant comparative methods of data analysis was used to identify patterns of healthcare decision-making process in the context of HPV vaccination (Strauss & Corbin, 2007). Three research assistants transcribed the interviews; the principal investigator (PI) and two additional research assistants verified the completeness of the transcripts, accuracy of the discussion content, and a high quality of transcription.

Data collection and analysis proceeded simultaneously, using a modified version of the constant comparative method. (Glaser & Strauss, 1967) We formed categories, established the boundaries of each category, assigned segments to categories, summarized the content of each category and then sought to find negative evidence, so we could discern conceptual similarities and refine the discriminative power of the categories and thereby discover true patterns in the data (Strauss & Corbin, 1990). The Principal PI and Co- investigators (CI) constructed a preliminary coding framework after in-depth reading of the transcripts. SNT constructs – including social context, levels of influence, and social influence – guided this processes. The PI and CI did not label these SNT themes identified at this stage of the data analysis but rather derived them from the data. Lower level codes (segments) were categorized according to their similarities or differences, these categories were refined and the content was summarized and developed into highest level categories. Then categories were collapsed to develop constructs. To do this we first coded sections of the text by issue or theme, and additional codes were added as new themes emerged. The PI and CI separately read all the transcripts in their entirety, then coded and organized the data to identify key themes related to HPV vaccination knowledge and attitudes and sources of HPV vaccination information. One graduate research assistant also independently coded the data and created a comprehensive list of themes that she identified in the data. Later, the PI, CI, and graduate research assistant met as a group to discuss and further refine each set of themes, resolve differences, and reach consensus on a coding scheme. Theoretical insights that emerged during data collection and analysis or participant feedback were recorded into written logs.

Discrepancies were resolved by first revisiting and reviewing the data, and then through group discussion. In our analysis, several strategies to increase trustworthiness and validity were implemented. We had regular discussions that focused on current research in the areas

of a) Hispanic women's sexual identity development, b) HPV and HPV vaccination, and c) healthcare decision-making processes in order to question analyses critically and to consider rival explanations throughout the research process (Marshall & Rossman, 2006). To ensure validity, all the study team members summarized, reviewed, and agreed on the key themes.

Results

Current HPV Vaccination Knowledge and Attitudes

More than one-third of the participants had not yet had sexual intercourse, which made them eligible for vaccination. However, their self-perceptions about their own HPV and HPV vaccine knowledge were mixed. The majority of the women reported on their demographic survey that they were "very" to "somewhat" knowledgeable about HPV (see Table 1). The degree of knowledge decreased when they were asked specifically about the HPV vaccine; most women reported that they were "somewhat" knowledgeable or had "no knowledge" (see Table 1). However, when asked to detail what they knew about the HPV vaccine in the interviews, all but one of the women made statements that indicated they were unsure about the vaccine's purpose and how it worked. During the interviews, the majority of women "guessed" that it prevented HPV and protected them against cervical cancer.

Only one of the 14 women who had already started or completed the vaccine series selected the "very knowledgeable" option and was able to provide accurate information about the HPV vaccine during the interview. Eleven reported that they had somewhat of no knowledge about the HPV. Their lack of information was further made evident when asked to share what they knew about the HPV vaccine during their interviews.

Maylin: And I know I got the vaccine. Um, there were 3 shots? It doesn't protect you from cervical cancer but it protects you from HPV? I guess that's all I know.

Sabrina: I know it's only for women – they told me that when I got it. It's mainly for people who have sex – right? I don't know.

Cantera: It hurts– is that the one that's in three doses? I got it when I was in high school.

Current Social Networks that Provide HPV Vaccination Information

Although social networks such as peers and healthcare providers were noted by some women, television and conversations with their mothers emerged as the most mentioned social networks that provided these women with initial information about the vaccine (see Table 1).

Television—The majority reported hearing about the vaccine via television programs and commercials. All of these women remembered the Gardasil commercials; the "One Less" slogan was particularly memorable.

Maricel: It was, like, a TV show – I don't remember. But it was, like, students and they were being treated at a high school. I saw the Gardasil commercial – but I don't remember and don't know how it works and what it does.

Woo: I've seen the commercial. You know "one less," they keep saying it – "one less," with those girls skipping and the mother saying she was going to take her daughter to get it. And it's for women to stop cervical cancer. "One less woman with cervical cancer."

In addition, four women stated that news coverage about the HPV vaccine shaped their perceptions of it. The information they recalled was brief and primarily focused on vaccine availability. The reports' linking of HPV to cervical cancer prevention was most salient; they perceived this link as important because it was being covered in the news. However, these women were unable to recall further details about the news item or the HPV-specific content.

Mothers—Although the women named television, and particularly Gardasil commercials, as providing their initial awareness about the HPV vaccine, mothers' messages about the HPV vaccine were also viewed as important. Mothers were specifically identified as playing a key role in these women's HPV vaccination uptake decision-making process. In fact, nine of the 14 vaccinated women reported that they did so because it was approved of or encouraged by their mothers.

Rose: I'm not completely sure what it was. I know that it was to prevent, like, cervical cancer. My mom's the one that, like, knows about that, because she's the one that was, like, "I know that it just came out like it was new." And so, like, the doctor said that they had [the vaccine] available so she told him to, like, for me to receive it.

Kim: I got the vaccine – but wouldn't have gotten it if my mother wasn't involved, telling me about it.

Joanna: I just went to the doctor one day and the doctor mentioned it to me and my mom. And my mom said, "you should get it" – that was it.

Preferred Sources of HPV Vaccine Information

Although participants reported their mothers as influential social networks for HPV vaccine information, the information mothers provided was viewed as inadequate. The women in the study reported that they did not discuss details about the vaccine, or gain what they felt was comprehensive HPV vaccination knowledge, from their mothers. Nor did they think that television messages provided them with the information they wanted to know about the vaccine's impact, potential risks, processes, and overall health impact. The majority agreed that they needed more information about HPV and the HPV vaccine. To find out this information, these women reported, in the following order, that they would turn the Internet, family members, and healthcare providers (see Table 2).

Internet—The Internet was the first social network these women would turn to if they wanted more information about the HPV vaccine due to its convenience and easy accessibility. Participants reported it as the easiest and quickest way to find out answers to questions about their health. Accessing the Internet was a part of their lifestyle and daily

activities, so it was viewed as a normal space through which to seek more HPV vaccination knowledge.

Dyanna: Since I'm kinda like busy and hectic, I would probably – like tonight – go online and like search up [HPV vaccine information] Wikipedia. Because like if I actually had time I would go to the health center because I know that they do all that stuff and that they can actually tell me everything that I need to know [about the vaccine]. But since I really don't have time I'll use the Internet.

Kim: Actually, I'm going to check [HPV vaccine information] to find out everything on my [cell] phone when I leave here! I guess I can just Google it or something.

Victoria: I would only check Gardasil's website [for HPV vaccine information] just because I know anybody can post anything. I mean, everything else I would take in as opinion because I know that... but I think if other people were looking, they should only look at Gardasil's website.

Internet search engines, health-related websites, and the Gardasil website were most often cited as their preferred online social network setting. Search engines, such as Google, were stated as useful for their ability to provide a broad set of information. However, the women expressed concerns about the accuracy and quality of the website information, and pointed out that “anyone can post information.” As such, established health-related websites, including the one produced by Merck Pharmaceutical company advertising the Gardasil vaccine and the Centers for Disease Control and Prevention (CDC) were viewed as the most likely to provide accurate information.

Family members—Family members were the second HPV information social network choice of participants. As individuals who would be concerned about these women's well-being, family members were viewed as important, supportive sources of HPV vaccination information. The choice in a particular family member was based on the closeness the women had to the person and how they felt this individual would respond to sexual health-related questions. The women also noted that certain family members would be avoided for fear of negative reactions due to the sensitive and sexual nature of HPV.

Wendy: I would ask my family. The thing is my family is very bias [sic] toward premarital sex and not having it. So why would you need [the HPV vaccine]? The majority of my family is like that. But my mother was like “you should do it” – but my mother is different from the rest of my family [giggles].

Louisa: My family's opinion would be important. Well my mom has an uncle that's a gynecologist and he wasn't really sure about [HPV vaccination] because it's really new. So he said to wait, so my family was like wait.

La Bella: I would ask [family] for information. There's a history [of cervical cancer] in my family so they've been wanting me to get the vaccine.

Sophy: My sister got it before I did, my younger sister. So then I just went to the doctor and I did it as well.

Healthcare providers—Finally, healthcare providers were the third preferred social network for HPV information. It is important to note that healthcare providers were perceived as the most reliable sources of accurate information, despite being the third choice for information. The majority of the participants explained that the medical proficiency and up-to-date knowledge these providers are assumed to have made them the most appropriate informants about the HPV vaccine.

Abella: I would go straight to [campus health clinic] or if my general doctor can give me the information I would go to him. I would just go to somebody that actually knew exactly what it is, the effect, the symptoms and everything that comes along with it.

Maria: My doctor just told me. I mean she said, “Why not, it’s not going to hurt you in any way.” So I figured why not – she knows what’s best.

Woo: My gynecologist – she told me about it. I don’t remember what she said. But if I want to know more I would ask her. She deals with this stuff everyday so she’ll know all the current updates.

Although the participants attached importance to healthcare providers’ HPV vaccination knowledge and expertise, they viewed the time that it took to schedule an appointment, travel to the office, and wait for the provider as a significant barrier to seeking information. The women noted that they have to balance part-time jobs, familial duties, and other responsibilities with their school demands, so going to a healthcare provider to find out information about the HPV vaccine is an inconvenience. Instead, the women reported that they would be more likely to wait to find out more about the vaccine when they had another, more pressing, reason to make an appointment with their healthcare provider.

Joseina: Because like if I actually had time I would go to the [campus] health center because I know that they do all that stuff, but since I really don’t have time...

Maylin: Well, I have so much to do. I have a hard time getting a good appointment time and then having to wait. So, I would probably not go until some serious [health issue] came up. I’d ask [about the HPV vaccine] then.

Discussion

Understanding women’s perceptions and knowledge about the HPV vaccine provides a starting point from which we can identify their informational processes, according to SNT (Berkman, 2002; Simons-Morton et al., 2009; Vanslyke et al. 2008). These women’s initial self-reports of HPV and HPV vaccine knowledge indicated that 80.9% “disagreed,” “somewhat disagreed,” or were “unsure” when asked if they understood exactly what the purpose of the HPV vaccine is. These reports were supported in their interview responses. Even among women who had received the HPV vaccine, low levels of HPV vaccine knowledge were reported. Only one of the HPV vaccine recipients said she was very knowledgeable about the vaccine; the remaining vaccinated women reported that they had low knowledge about what the vaccine did or how to continue to protect themselves. Only when probed were the women able to report that the vaccine prevented HPV and protected

them again cervical cancer. But the majority of these women admitted that they were guessing, or gave this information in the form of a question. These findings support prior research that has shown Hispanic women and women attending college to have low levels of knowledge about HPV and HPV vaccination despite the availability of resources and information on campuses (D'Urso et al., 2007; Sandfort & Pleasant, 2009; Vanslyke et al. 2008). Low levels of knowledge found during our study illustrates that these young Hispanic women's current social networks provided inadequate levels of credible, reliable, and accurate HPV vaccine information. Further, it provides a reference point from which SNT can be used to assist in the identification of specific behavioral interventions for Hispanic college women as these young women gauge perceptions of their own risk and knowledge based on their specific cultural social networks.

Current Social Networks that Providing HPV Vaccination Information

After reflecting on their current HPV vaccine knowledge and the social networks through which they acquired this information, participants reported that television programming was the most important source of information, followed by communication from their mothers.

Television—Clearly, television messaging did raise these women's awareness about the HPV vaccine. The Gardasil commercials provided the most recognized television message about HPV vaccine, as 18 stated that they had seen it. Most of these participants specifically remembered the "One Less" slogan, that it prevented cervical cancer, and that it involved getting a shot. However, no other information from the commercial was retained. The women thought the commercial's content did not provide enough information to significantly influence their HPV vaccine decision-making process.

Participants also reported that television news programming provided them with HPV information; however, they thought that the information they had received was inadequate. The lack of adequate HPV information from television programming was also reported by Wallace and Ache (2009), who examined the content of HPV-related vaccination information presented during nightly national television news broadcasts in the United States. They found that 66.7% of the coverage presented information pertaining to HPV and cervical cancer focused on information about vaccine labeling, the impact of the vaccine, and concerns about the vaccine – not information detailing the vaccine's purpose or how to access the vaccine for personal use (Wallace & Ache, 2009).

Despite the superficial content, it is important to consider the impact of HPV vaccination messages via television programming over time. The HPV vaccine was approved for use in June 2006, and Merck started airing their Gardasil "One Less" commercials shortly afterward. Similarly, HPV vaccination gained worldwide attention in both academic and popular culture circles when Texas Governor Rick Perry's attempt to require that girls in Texas be vaccinated became a point of contention in the election debates (Gann, 2010). Opponent Michele Bachmann said he was "flat out wrong" to require that "innocent little 12-year-old girls be forced to have a government injection through an executive order" and suggested it was "a very dangerous drug" and could cause "mental retardation" (Gann, 2010). As the media continue to cover news about the HPV vaccine, the impact of this social

network's messages on Hispanic college women should increase, according to SNT. In fact, results from studies of the relationship between exposure to television news messages about cervical cancer and women's vulnerability perceptions show that viewing multiple television reports significantly increased women's fears about getting HPV (Lemal & Van den Bulck, 2010; Wallace & Ache, 2009). For example, Lemal and Van den Bulck (2010) found that women who had been occasionally exposed to cervical cancer messages on television were twice as likely as those who had not seen the messages to be very afraid of getting cervical cancer (Lemal & Van den Bulck, 2010). Those frequently exposed were three times more likely to be very afraid or extremely afraid and seven times more likely to perceive a large risk of being diagnosed with cervical cancer (Lemal & Van den Bulck, 2010). Increased levels of fear were associated with greater awareness and likelihood that women would seek out more information about HPV vaccines.

Mothers—Another social network that increased awareness about the HPV vaccination was mothers. As asserted by SNT, mothers are proximal social networks and, thus, play pivotal roles in healthcare decision-making processes due to their physical and emotional closeness to daughters. Further, researchers have noted that mothers often serve as a source of inspiration and motivation for their daughters, even in conflictual relationships (Miranda et al., 2006; O'Sullivan, Meyer-Bahlburg, & Watkins, 2001).

Even when they found out about the vaccine from another source, the women would ask for or follow their mothers' advice about HPV and the HPV vaccine. In fact, over one-half of the women who had had at least one HPV vaccine injection did so in part because of their mothers' endorsement. This supports prior research on sexual health that shows Hispanic mothers' messages about HPV significantly influence adolescent women's HPV vaccine uptake decision-making processes (Sanderson et al., 2009). Researchers have found that mothers who support the HPV vaccine have a direct influence on whether or not their adolescent and young adult daughters get vaccinated; this is particularly true among those mothers who are routinely tested for HPV and among those who have or have had HPV (Moraros et al., 2006; Perkins et al., 2011). For example, Sanderson et al. (2009) found that Hispanic mothers who were HPV-positive reported that they would have their late adolescent daughters vaccinated even if they had to pay for the vaccine themselves, and they were in favor of laws that require girls to receive the HPV vaccine before entry into the sixth grade.

However, these mother-daughter conversations failed to communicate comprehensive information about the HPV vaccine. The participants felt that their mothers positively influenced their decision-making processes, but their mothers did not provide information that increased their HPV vaccine knowledge. McRee, Reiter, Gottlieb, and Brewer (2011) also found that mothers primarily discuss the benefits of the HPV vaccine as protection against cervical cancer, but are less likely to share their beliefs about the perceived disadvantages of, or provide details about, the HPV vaccine. The women in the current study similarly explained that their mothers told them it was "okay" to get or that they have to get it because their mother felt strongly about it. None had conversations with their mothers that outlined facts about the vaccine, including its purpose, potential risks/outcomes, or health implications.

These results may reflect mothers' own lack of knowledge about the HPV vaccine rather than their decision to provide selective information. Studies have shown that HPV knowledge among Hispanic women in general (Scarinci, Garcés-Palacio, & Partridge 2009; Watts et al., 2007), and among Hispanic mothers specifically (Moraros et al., 2006; Sanderson et al., 2009), is typically low. Clearly, future efforts to address Hispanic college women's HPV vaccination uptake must seek to increase their mothers' knowledge and validate their roles in providing health information to their daughters. This new knowledge could, in turn, influence Hispanic mothers' endorsement, according to prior research (Moraros et al., 2006; Perkins et al., 2011)

Preferred Social Networks for HPV Vaccination

The participants' preferred social networks included the Internet, family members, and health care providers (see Table 2). SNT's selection processes pointed to several reasons why these networks were selected, and in this particular order.

Internet—The primary reasons that these women choose to use the Internet were the desire to maintain confidentiality while seeking sexual health-related information and the convenience of quick access. Studies have shown that emerging adults often turn to the Internet before consulting other sources – including health professionals – because they can easily access it in their daily lives (Boyar, Levine, & Zensius, 2011; Eysenbach, 2008; Rideout, 2001). Today's college students have immediate access to new media technologies through laptops, campus computer labs, cell phones, and other devices. Given their constant access to the Internet, it is not surprising that more than 70% of late adolescents and emerging adults report using it to look up health information (Boyar et al., 2011; Hansen et al., 2003). Further, the fact that the Internet allowed these women a degree of privacy and confidentiality when searching for HPV vaccination information supports prior research that has shown that the nature of the topic influences whether health information is sought on the Internet. Media psychology researchers have asserted that many people, including young adults are more likely to use the Internet when seeking information about sensitive or potentially embarrassing health topics that are not perceived as “severe diseases” – such as HPV and HPV vaccination uptake (Boyar et al., 2011; Eysenbach, 2008; Rideout, 2001; Skinner et al., 2003)

These women's use of search engines over commercial health portals, such as Gardasil's website, and noncommercial, government sponsored health portals, such as the CDC or Planned Parenthood, corroborates prior research findings. Researchers have found that, when emerging adults have specific health problems or questions, they commonly enter a health-related search term directly into a search engine (Eysenbach & Kohler, 2002; Hansen et al., 2003; Rideout, 2001). In a study that traced adolescents' Internet health searches, Hansen, Derry, Resnick, and Richardson (2003) found that the majority of sites that students attempted to access were retrieved directly from search engine results (77%) or a search engine's recommended links (10%). This is an issue of concern, as search engines often send consumers directly to a particular webpage on a site, bypassing the home page, thereby making it difficult to discern who is behind a certain webpage and what the authors' motives and qualifications are (Eysenbach, 2008; Eysenbach & Kohler, 2002). Further, Internet-

based information often provides no verification of validity of the information presented. This suggests that there is an urgent need for HPV researchers and educators to check public-oriented healthcare information on the Internet for accuracy, completeness, and consistency as Pharmaceutical sites are developed to sell a product versus CDC sites who are filled with public health information for the lay person as well as the healthcare provider.

Family members—The women in this study also reported that they would seek out HPV vaccination information from their family members, which supports prior researchers' assertions that the role and influence of family members must be prioritized when addressing Hispanic college women's health knowledge concerns (Miranda et al., 2006; Santiago-Rivera, Arredondo, & Gallardo-Cooper, 2002). The participants believed that family members are deeply invested in their health and thought that family members would ensure that they received information that would improve their health. As proximal social networks, it is understandable that familial messages about HPV vaccine directly affect Hispanic college women's health decision-making processes. Familial closeness, according to SNT, would provide Hispanic college women information about appropriate familial and cultural norms about health behaviors, including HPV vaccination. Further, this closeness and investment in their health increases the level of credibility Hispanic college women give to familial HPV vaccine messages, a central construct in SNT (Berkman & Glass, 2002).

However, efforts to integrate family members' HPV vaccine uptake information and values should be done with caution. These women expressed concern about whom in their family they would turn to for information about the HPV vaccine. The construct of selection in SNT explains that this is tied to the ways individuals embrace and share information about health beliefs. For example, in the present study, HPV's association with sexual intercourse raised concerns about how vaccination may challenge familial and cultural gendered sexuality norms. Specifically, discussions with family members about HPV vaccination focused on cervical cancer risk and not sexual health concerns, which could reflect a concern about the perception that approval of HPV vaccination means approval of sexual intercourse. Traditional Hispanic values about female sexuality stress conservative gender-role beliefs, including the celebration of virginity and denouncement of premarital sex (O'Sullivan, Meyer-Bahlburg, & Watkins, 2001; Raffaelli & Ontai, 2001). Tied to this is a trend to delay discussions about sexuality issues with daughters until they are married (O'Sullivan et al., 2001; Raffaelli & Ontai, 2001). Thus, it could be inferred that both parents and daughters are reluctant to share general and detailed information about sexuality-related issues with each other, including the HPV vaccine (Berkman, 2002; Berkman & Glass, 2002; Simons-Morton et al., 2009).

Further, as 23 of the women lived with their parents, there is potentially an additional pressure for these women to maintain and follow familial expectations about their sexuality and sexual health. However, it is important that those disseminating HPV vaccination information allow college women to determine how much familial interference is appropriate. Despite the physical and emotional closeness they have with their parents, some women may prefer not to embrace traditional values and customs, particularly as they relate to sexual health issues, such as HPV. This is illustrative of the negotiation that SNT argues occurs between the selection and socialization processes. There is the closeness and value

given to parental messaging, but the various generational and cultural sexuality values require careful consideration of the ways in which social networks' influence differs according to the context, individual experience, and the particular sexual health issue.

Healthcare providers

The women in this study also perceived healthcare providers as important future sources of HPV vaccine information. As was found in prior research, healthcare providers, by virtue of their skills, education, and training, were respected as health authority figures by these women, who valued their health directives and services (Guendelman & Wagner, 2000; Hopfer & Clippard, 2011). The women in this study said that healthcare providers' expertise and access to the most up-to-date HPV vaccine information increased their trust in and desire to get more information during future visits. We cannot, however, ignore concerns that seeking information from healthcare providers was often inconvenient. These women reported the time it takes to book an appointment, travel to the office, and wait to see a doctor is a deterrent; this supports prior research findings that those with higher valuation of time are more likely to cancel appointments or seek alternatives, such as Internet information (Guendelman & Wagner, 2000). Unfortunately, this research has traditionally focused on men, working adults, and those in hospital settings, which differ greatly from college women. Thus, this finding introduces an important area of focus for future research on this population's health-seeking behaviors. Integrating an SNT approach would allow for the identification of the ways in which healthcare providers, as a social network, can strengthen their influence on Hispanic women's positive health outcomes. Further, it will help researchers to understand what barriers exist (e.g., inconvenience, time constraints) in the development of a strong relationship between these two network members.

This kind of information is particularly important to Hispanic college populations. Although researchers have also frequently reported that Hispanics are less likely to seek and receive health-care services (Guendelman & Wagner, 2000; Miranda et al., 2006), we suggest that those attitudes are not applicable to this specific population. As registered students, these women have access to a campus-based health facility that includes full-time physicians, a fully-staffed women's clinic, sexual health services, and psychological services. In addition, the institution requires all students to purchase a subsidized health insurance plan; students can only opt out if they have other health insurance coverage. Thus, efforts to address the healthcare needs of Hispanic women attending college must take into consideration their unique contextual experiences. Further research on the socialization, selection, and social norm processes is clearly needed if the goal is to develop culturally appropriate HPV vaccine education and implementation tools for healthcare providers to share with this population (Hopfer & Clippard, 2011).

These women's narratives underscore the importance of ensuring that healthcare providers are firmly integrated into Hispanic college women's HPV vaccination information efforts. Women who are immunized with Gardasil still require yearly Pap smears, as the vaccine does not protect against all HPV strains associated with cervical cancer, nor does it protect against other causes, including genetic defects and exposure to carcinogenic compounds in cigarette smoke (Munoz et al., 2010). Clearly, it would be foolish to completely overlook

healthcare providers as important social networks players, even when research – including the present study – shows that other sources appear to be more influential in shaping Hispanic college women's HPV vaccination uptake decision-making processes.

The Internet, family members, and healthcare providers should be approached as complimentary sources of HPV vaccination information for Hispanic college women. Although the participants' responses ranked them in order of preference, the rankings were based upon perceptions of convenience (e.g., lack of time for other options, ease of access, accessibility privacy), trust (i.e., sense of personal investment in their health), and expertise (i.e., knowledge and training), rather than about the source itself or mode of communication. For example, when asked if their primary healthcare provider encouraged them to get the HPV vaccine, the majority of the women said they would consider vaccination after both seeking further information online and getting feedback from family. Researchers must recognize the importance of this knowledge, as Hispanic college women's perceptions of their social connectedness to and means of communication with these social networks will have significant positive association with health status (Berkman, 2002; Hopfer & Clippard, 2011; Simons-Morton et al., 2009; Vanslyke et al. 2008).

Limitations

The present study, like any study, has limitations that should be addressed. This was a small, nonrandom group of women attending a Hispanic-serving institution in an urban center that is over 70% Hispanic. The majority of the participants had resided in the United States the majority of their lives, and they self-identified as White- Hispanic and heterosexual. Thus, there was little intracultural variation in acculturation/ immigration experiences, racial identity, sexual orientation, community of residence composition, and socioeconomic status. This study also required participants to report levels of knowledge and relate personal experiences tied to sexual health. When they were sitting in front of the interviewers, participants may have chosen to limit the truthfulness of their responses or omit relevant information. Further, close attention must be paid to the influence of university resources' accessibility. All the women in the present study had access to a variety of campus-based health services with the capacity to provide HPV-related services and education. Similarly, online informational tools, including computer labs and Internet service, are readily available at no additional cost to students. Whether women attending post-secondary institutions with fewer health or technology resources would have the same perceptions about HPV vaccination sources of information is an important issue to explore in follow-up studies.

Conclusion

Although we recognize these limitations, the findings represent an important step toward adding to what is currently a small body of research about Hispanic college women's engagement in identifiable and distinctive health information social networks. Specifically, Internet resources, family members, and healthcare providers play a significant role in providing health information that influence their decision-making processes. Given that over one-third of the women in the study had not yet become sexually active, it is clear that there is still a need to target this population's specific HPV vaccination uptake information

processes to identify their HPV and HPV vaccine concerns. This is particularly urgent as rates HPV-related cervical cancers continue to remain high among Hispanic women. Future research on the specific influences of the Internet, familial units, and healthcare providers could provide additional insights into the importance of validating and identifying Hispanic women's sexual health concerns and social networks' influences and improving the quality of the information they receive from those networks.

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Table 1

Hispanic College Women's Perceptions of HPV and HPV Vaccine Knowledge

Perception of HPV Knowledge	N	%
Very knowledgeable	5	12.1%
Fairly knowledgeable	7	17.0%
Somewhat knowledgeable	16	39.0%
No knowledge	13	31.7%
Perception of HPV Vaccine Knowledge		
Very knowledgeable	2	4.8%
Fairly knowledgeable	3	7.3%
Somewhat knowledgeable	23	56.0%
No knowledge	13	31.7%

Table 2

Hispanic College Women's Perceptions of HPV Vaccine Social Networks

Current HPV Vaccine Information Social Networks	N	%
Television	21	51.2%
Mothers	18	43.9%
Healthcare providers	2	4.8%
Preferred HPV Vaccine Information Social Networks		
Internet websites	19	46.3%
Family members	13	31.7%
Healthcare providers	9	21.9%