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African-American Parents' and Daughters' Beliefs about HPV Infection and the HPV Vaccine

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Abstract

Objective: To increase our understanding about the health beliefs of African-American parents and their daughters towards HPV infection and HPV vaccine acceptance.

Methods: The Health Belief Model was used as a guiding framework. Principles of grounded theory, theoretical sampling and constant comparison analysis were used to qualitatively analyze data generated from personal interviews of African-American parents ($n=30$) and their 12–17-year-old daughters ($n=34$).

Results: Mothers and daughters perceived low susceptibility to HPV infection and perceived the HPV vaccine as beneficial in protecting against genital warts and cervical cancer. Compared to daughters, parents placed particular emphasis on the vaccine's protection against genital warts. A major HPV vaccine acceptance barrier among parents and daughters was the politicization of the HPV vaccine by government figures. In addition, concerns about unknown side effects, safety, and effectiveness of HPV vaccination emerged. Cues to action varied among parents and daughters, and self-efficacy was higher among parents than daughters.

Conclusion: Understanding the health beliefs that promote HPV vaccine acceptance, while identifying and addressing beliefs that are barriers among parents and daughters, will assist in the development of appropriate HPV vaccine promotion initiatives for African-American parents and daughters.

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Keywords

human papillomavirus; HPV vaccination; cervical cancer; African American; parents; females; adolescents; health belief

The human papilloma virus (HPV) vaccine is a primary cancer prevention measure approved for use in the United States (US) (NCI (2015a). Since FDA approval approximately 10 years ago, much contention still surrounds its acceptance among parents, religious conservatives, and public health officials in the US (Wailoo, Livingston, Epstein, & Aronowitz, 2010). HPV is the most common sexually transmitted infection (STI) in the world, and is responsible for virtually all cases of cervical cancer and associated with oro-pharyngeal, vaginal, vulvar, anal, and penile cancers (CDC, 2013, 2016a). African-American women, in particular, are disproportionately burdened by cervical cancer, as they have the highest cervical cancer mortality rate and the second highest cervical cancer incidence rate compared to non-Hispanic whites (NCI, 2015b). Recent estimates of cervical cancer mortality rates in the US, eliminating women with a previous hysterectomy from analysis, indicates a far greater disparity between African-American and non-Hispanic white women. The corrected mortality rate for African-American women is 10.1 per 100,000 and 4.7 per 100,000 for white women compared to previous estimates of 5.7 per 100,000 for African-American women and 3.2 per 100,000 for non-Hispanic white women (Beavis, Gravitt, & Rositch, 2017). These disparate rates are largely due to socioeconomic disparities and lack of access to care resulting in African-American women being diagnosed at later stages compared to white women, despite similar cervical cancer screening rates (Koh et al., 2015).

The HPV vaccine (HPV-9) is a safe and effective prevention strategy against persistent infection with high-risk HPV strains and high-grade cervical lesions that lead to cancer (Pils & Joura, 2015). In the US, the HPV vaccine is recommended for routine administration to females and males ages 11 to 12 years. Catch-up vaccination is recommended for females ages 13 to 26, males ages 13 to 21 years, and up to age 26 years for men who have sex with men (CDC, 2015). Most recently, the FDA expanded vaccination coverage to include women and men aged 27 through 45 years (FDA, 2018). A two-dose vaccination series is recommended for 9–14-year-olds with doses separated by 6–12 months, and a 3-dose series for 15–26-year-olds at 0 month, 1–2 months and 6 months. The HPV-9 vaccine protects against strains 6, 11, 16, 18, 31, 33, 45, 52 and 58, responsible for over 90% of cervical cancer cases (Petrosky et al., 2015). Currently, HPV vaccine initiation rates for adolescents are 70.0% for African-Americans, 74.5% for Hispanics, and 60.0% for non-Hispanic whites. Up to date completion rates for adolescents are 50.2% for African-Americans, 56.4% for Hispanics and 44.7% for non-Hispanic whites (Walker et al., 2017). Although vaccination rates have steadily increased since licensure of the HPV vaccine, rates are still below the Healthy People 2020 coverage goal of 80% for 3 HPV doses (HealthyPeople.gov, 2015). In comparison, vaccination rates for 1 tetanus and 1 meningitis are 87.5% and 83.5%, well above the Healthy People 2020 coverage goal of 80% for adolescent recommended vaccinations (Walker et al., 2017).

Compared to the rest of the world, immunization policies in the US are liberal and crafted to prevent infringement on individual liberties. Therefore, parents are the primary decision makers of whether to accept, delay, or reject the HPV vaccine for their child (Baldwin, Bruce, & Tiro, 2013). Research suggests that parental HPV vaccine acceptance is heavily influenced by beliefs about HPV and the HPV vaccine. For example, among African-Americans, HPV vaccine acceptance is influenced by religious beliefs and by concerns that HPV vaccination may suggest to children that parents condone pre-marital sex (Galbraith et al., 2016). Beliefs that vaccination is medical experimentation and mistrust of the medical profession are other factors that influence HPV vaccine acceptance among African-American parents (Joseph et al., 2014). Further, research suggests that compared to parents of other ethnicities, African-American parents consistently report a lower perceived risk that daughters will be infected with HPV (Gilkey, Malo, Shah, Hall, & Brewer, 2015).

The Health Belief Model (HBM) (Rosenstock, 1990) is a value expectancy model used to predict peoples' decision to use preventive health behaviors (Janz and Becker, 1984). The major concepts of the model include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action (Hochbaum, 1958; Mattson, 1999) and self-efficacy (Bandura, 1977). In this study, perceived susceptibility is the perception of vulnerability to HPV infection, genital warts, or cervical cancer; perceived severity is perceiving HPV infection, genital warts, or cervical cancer as serious and having negative health consequences; perceived benefits are perceptions that HPV vaccination will reduce the likelihood of HPV infection, genital warts or cervical cancer; perceived barriers are perceptions of factors that prevent HPV vaccination; cues to action are internal (i.e. symptoms, motivations for cancer /HPV/STI prevention) or external (i.e. interpersonal communication, healthcare provider (HCP) recommendation, sexual activity, mass communication) triggers for HPV vaccination. Self-efficacy is one's belief in their ability to be HPV vaccinated.

The HBM has been widely used to explain engagement in preventive health behaviors such as cancer screening, medication compliance, and vaccinations, including HPV vaccination. Studies guided by the HBM have examined factors associated with parental HPV vaccine acceptance for adolescent girls and boys (Grandahl et al., 2018; Mortensen, Adam, & Idtaleb, 2015), predictors of HPV vaccine initiation and completion among parents and college students (Bowyer, Forster, Marlow, & Waller, 2014; Rodriguez et al., 2018), instrument development to assess HPV vaccine knowledge, attitudes and vaccination intent (Cunningham-Erves, Talbott, O'Neal, Ivankova, & Wallston, 2016; Gilkey et al., 2014; Thomas et al., 2013), HPV vaccine intentions among sexual and gender minorities (Apaydin et al., 2018; Reiter et al., 2018), and racial, ethnic and cultural differences in HPV vaccine uptake (Garcés et al., 2006; Vamos et al., 2015). Missing from this literature, however, are the ways in which the perspectives of adolescent females influence HPV vaccination rates. Since adolescent females are the recipients of this vaccine, it is important to understand their perceptions and these influences on HPV vaccine acceptance. Thus, the purpose of this qualitative study is to describe the health beliefs of African-American parents' and their 12–17-year-old daughters about HPV and HPV vaccine acceptance using the HBM as a guiding framework.

Methods

This study drew from the principles of grounded theory to analyze data generated from personal interviews of a sample of African-American parents and their 12–17-year-old daughters on factors that influence their health beliefs about HPV infection and HPV vaccine acceptance. Techniques of theoretical sampling and constant comparison analysis were used to analyze interview data. Theoretical sampling is the process of comparing incidents and events in the data on the basis of their potential representation of important theoretical constructs (HBM constructs in this case) to uncover variations and identify relationships between constructs (Corbin & Strauss, 2014). Constant comparison analysis refers to the comparison of incidents in the data for similarities and differences (Corbin & Strauss, 2014). The study incorporated the concepts of the HBM as a sensitizing framework for guiding interview questions and for making sense of the data, which allowed for the identification of factors that may otherwise be overlooked (Maxwell, 2013). Ethical approval for this study was received from the appropriate Institutional Review Board of the University of North Carolina at Chapel Hill.

Participants and settings

Researchers partnered with community stakeholders (nurses, pastors, and public health workers) in Guilford County, NC and New York City (NYC) to identify and recruit eligible participants. Parents and daughters were recruited from two health departments (HD) located in Guilford County, NC, and from public libraries, churches, hair salons and cafés in NYC. Both settings were selected due the high rates of STIs experienced by residents of these communities (CDC, 2016b; NC HIV/STD Surveillance, 2016). Recruitment strategies involved distributing flyers, receiving referrals from community stakeholders, publishing advertisements in HD newsletters, and through word of mouth. Inclusion criteria included identifying as African-American or Black and being a parent/guardian of a 12–17-year-old girl. Participation from at least one parent and daughter was required for inclusion. Consent forms were signed by the parent/guardian and assent was requested from daughters.

Procedure

The first author conducted face-to-face semi-structured interviews in private offices at HDs, participants' homes or other private settings in both Greensboro and NYC. Interviews with parents lasted 1–2 hours and interviews with daughters lasted 30–60 minutes. Each participant received a \$20 gift card after their interview. All interviews were conducted between June 2014 and October 2015. Parents and daughters were interviewed separately. Participants completed a socio-demographic form that collected information on their race and ethnicity, age, marital status, health insurance, household income, education, religious denomination, daughters' HPV vaccination status, zip code, and county of residence. Zip-codes were used to determine participants' urban or rural classification according to the 2010 census (US Census, 2016).

The interview guide consisted of open-ended questions informed by the constructs of the HBM. Examples of interview questions used to explore parents' and daughters' beliefs towards HPV and HPV vaccine acceptance included: (1) "How susceptible do you think

your daughter is to get an HPV infection,” (question was rephrased when directed to daughters) and, (2) “What are some factors that prevent you from accepting the HPV vaccine?” As interviews continued, probing questions were asked to contextualize responses and to follow analytic lines. Parents and daughters were also asked about their knowledge of HPV infection and the HPV vaccine to assess how their knowledge level may have influenced their perception of risk.

Data Analysis

First, interview data were de-identified, transcribed verbatim and checked for accuracy. Summaries were written which described each participants’ experiences with familial and community factors that influenced their health beliefs towards the HPV vaccine and included exemplar quotes of those experiences. The constructs of the HBM were used as a lens to approach data analysis. Theoretical sampling consisted of the first author reading each transcript to sample theoretical constructs that influenced parents’ and daughters’ beliefs about HPV infection and HPV vaccine acceptance. Once constructs emerged in one transcript, remaining transcripts were examined with the goal of extracting and comparing incidents and events for similarities and variation in cases. Theoretical constructs were then organized into six categories informed by the HBM (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy). We then examined these categories within and across parent and daughter groups, and with existing literature on African-American health beliefs towards HPV vaccination. This process continued until no new theoretical constructs were identified, and theoretical saturation was achieved (Corbin & Strauss, 2014). To enhance validity, the first and last authors reviewed the developed categories and examined their relevance to constructs in the HBM and refined coding until agreement was reached. After coding, the first and last author engaged in data accuracy checking by selecting a subsample of the interviews to check for consistency in interpretation.

Results

Thirty parents and thirty-four daughters participated in this study. Parents had a mean age of 42.9 years ($SD = 6.2$) and were mostly female (93.3%) (Table 1). Daughters had a mean age of 14.9 years ($SD = 1.5$), were in high school and 64.7% had not initiated the HPV vaccination series. Few daughters reported sexual activity (5.9%).

Perceived Susceptibility

Few parents perceived daughters to be at risk for HPV infection. Parents’ belief that daughters were not at risk for HPV infection stemmed from the belief that daughters were not sexually active. No daughters perceived themselves at risk for HPV infection. A 44-year-old, single mother of a 16-year-old, unvaccinated daughter described her belief concerning daughter’s risk for HPV. For this mother, the perception of initiation of sexual activity was tied to engagement in certain parenting practices like closely monitoring a child’s activities.

I am believing that she is not engaging in any kind of activity that I don’t want her to. I know you can’t be with them every moment, but from the age of 13 to when

they can start driving, I know where she's at and can monitor things. So, I guess I just didn't really feel there was a big concern for me.

Among daughters, the following quote from a 17-year-old, unvaccinated daughter illustrates factors underlying low perceived risk of contracting HPV. For this daughter, sexual activity is being used to infer susceptibility. It appears that once sexual activity is initiated perceived susceptibility would ensue.

I'm not sexually active so... No... If I started having sex, I would jump to it. But right now, I'm just like, I don't want to get a shot. I'm not doing anything. I don't like needles. But it's definitely something I would think about being sexually active.

Perceived Severity

All parents and most daughters perceived HPV infection as severe. Parents' and daughters' perceived severity was informed by two realizations: (1) an HPV infection would signal to parents that daughters were sexually active, and, (2) an HPV infection would put daughters at risk for developing genital warts and cancers. One 30-year old, married mother of a 13-year-old, unvaccinated daughter described the perceived severity of an HPV infection for her daughter:

It would be super serious because it would mean that she's sexually active and that would rock our world completely... I guess we would have to deal with that shock and then deal with the fact that she's sick you know; there's this illness now.

A 14-year-old, unvaccinated daughter described what an HPV infection would mean to her:

Basically, getting it [HPV] would mean you have done something you shouldn't have done in the first place. For my household that's how it goes. So that wouldn't be good for me to get it cause then it would show that I did something that I wasn't supposed to do. And, I guess if I got cancer from the disease, I would have to pay to get treatment... and yeah...financial problems might come if I had to keep getting treatments over and over.

Another 13-year-old, vaccinated daughter spoke briefly of her beliefs related to the seriousness of HPV and the way in which it might affect her social life:

I think it [HPV] might be real serious. If it's important that I have my shots, it must be serious or important because I might get sick and I don't want to get sick. [if she contracted HPV] ... I would be very devastated ... sad because I have a disease... I wouldn't come out of my house. I would be in my house all the time.

These findings underscore the potential negative consequences of acquiring HPV that may extend health-related consequences for some African-American parents and daughters to include social consequences; such as violating cultural norms and expectations around sexuality, potential financial burden from cancer if unvaccinated, and potential effects on their emotional and psychological well-being.

Perceived Benefits

Many parents and daughters perceived a benefit of getting vaccinated was the protection against HPV, genital warts, and cancer. For example, a 32-year-old, divorced mother described the benefit of vaccination as protection from genital warts, a more prevalent and difficult to treat STI :

Just for the benefit of it, knowing people that had the genital ... I completely identify HPV with the genital warts because that's what I know of it. I don't know anybody that's had cervical cancer, but in my mind, just thinking she needs to get this because that will be one thing that she can't catch when she does become sexually active.

One 16-year-old, HPV vaccinated daughter described her view on the benefit of HPV vaccination as protection for cancer:

I think this vaccine is more effective than the flu shot. I mean you can get the flu shot and you can still get sick, so I just assumed that because it [the HPV vaccine] was [protection against] something as serious as cancer, that it should be more effective.

Perceived Barriers

Parents and daughters reported at least one barrier to HPV vaccine acceptance. These barriers included fear of side effects, lack of knowledge about HPV and the HPV vaccine, concerns about safety, and the newness of the vaccine. While both parents and daughters were concerned about side effects, such as infertility and developing cervical cancer from HPV vaccination, daughters more frequently reported concerns about short-term consequences such as pain at the injection site and fear of needles. For example, one single, 51-year-old mother of a 14-year-old unvaccinated daughter described her fear of infertility as a side effect of HPV vaccination:

... because I just don't... I mean what next? ... I mean some of it is probably my age. ... when we were in high school, we had the fast girls... and these girls are still alive and don't have cancer. So, it's just not registering to me why you should subject yourself to a vaccine, especially when you're talking about your reproductive organs, which could, *you know*, maybe [make] a girl has a bad reaction and then she can't have children.

This quote implies that HPV vaccine experiences may result in negative attitudes towards the HPV vaccine, considering parents knew peers who engaged in risky behaviors yet experienced no apparent consequences. For this mother, enduring a long-term consequence of infertility did not seem worth the risk.

Among daughters, parents were a barrier to HPV vaccination. While some daughters desired the HPV vaccine, parents were not supportive. One unvaccinated, 17-year-old daughter described her parents lack of support for the HPV vaccine and subsequent influence on whether she is vaccinated as a teenager and even into adulthood.

I wanted to get the vaccine, but it still doesn't make a difference because it's up to my parents ultimately. Even after the age of twenty-one, I'll still listen to them.

Other barriers reported by parents included having limited information to determine the value of HPV vaccination, mistrust of political figures advocating and mandating HPV vaccination, a lack of access to HPV vaccination, negative experiences with HCPs, the young age at which HPV vaccination should occur, concerns with over-medicating children, the implications for vaccinating children against a STI, and not being included in conversations regarding daughters' health after a certain age. For example, one mother of a 16-year-old, unvaccinated daughter reported the following:

She's sixteen now. When they do the regular routine checkup they put me out the room. You want me to give parental consent, but you put me out the room. If you can't tell me and I'm paying this exorbitant insurance premium, I need to know what's being discussed. That's just how I feel.

A 42-year-old, married mother of a 14-year-old unvaccinated daughter described her mistrust towards the HPV vaccine as a reaction to a politician mandating the HPV vaccine:

You had a certain person trying to make it mandatory. That was negative because the person was associated with different perspectives than I had. So, when he became the person that came to mind, it didn't seem like a good thing. If it had come from someone less polarizing or someone from health and human services, it probably wouldn't have been negative.

Cues to Action

Parents frequently reported cues to action as an HCP recommendation, obtaining sufficient information on HPV and the HPV vaccine, and desiring to protect daughters against HPV/STIs and cervical cancer, which motivated their HPV vaccine acceptance (Table 2). For example, one 32-year-old, mother of an HPV vaccinated 13-year-old girl described her cue to action as the desire to protect her daughter from HPV infection:

She's not having sex yet but when she does, I don't want her to have to encounter that [HPV] and be stuck. I was telling her that she needed to get the shot.

Among daughters, the most frequently reported cues to action were parental decision to accept the HPV vaccine, the desire to prevent HPV/STI and cervical cancer and obtain protection in anticipation of sexual activity. One unvaccinated 15-year-old daughter expressed her belief that girls should be HPV vaccinated if engaging in sexual activity regardless of their age:

I feel like if you are sexually active, you should get it but if your parents know that you are a little risky, you should get it at nine because you need to just be safe and careful.

Self-Efficacy

Many parents believed in their ability to get their daughters HPV vaccinated if they opted for vaccination. However, many daughters described having little to no say in the HPV vaccination decision. The decision for HPV vaccination was made solely by mothers and

without consultation of daughters. When asked whose decision it was to get the HPV vaccine, one 13-year-old, HPV vaccinated daughter said it was her mother's decision. When probed further on whether she had input on getting the HPV vaccine, she said:

No. I never do. I knew I had to get them, so I just went ahead and got them. They would tell me to take them [vaccinations]. I always feel like I don't want to do it, but I have to do it because they tell me to.

Discussion

The purpose of this study was to shed light on the health beliefs of a sample of African-American parents and daughters regarding HPV infection and HPV vaccine acceptance. Our findings indicate low perceived susceptibility to HPV infection among parents and daughters. Perceptions of low susceptibility to contracting HPV among African-Americans has been documented in prior research (Gilkey et al., 2014a; Rand et al., 2011). However, research elucidating potential precursors of low perceived susceptibility among African-Americans has been scant. Our findings add to this body of literature by suggesting that low perceived susceptibility among African-American parents may stem from their beliefs that their daughters are not sexually active and therefore not at risk. In addition, it appears that employing certain parenting practices, such as closely monitoring a child's activities and whereabouts, may also be used to estimate a child's initiation of sexual activity, and hence, perceived risk of acquiring HPV. HPV vaccine recommendations were developed to increase the probability that children will be vaccinated before they engage in sexual activity. However, if parents are using other heuristics to determine initiation of sexual activity, vaccination may be initiated at a less than optimal time and minimize immunological protection. Importantly, our findings also illustrate that cultural norms and expectations about sexuality and sexual activity may also play a role. For example, the perceived negative social consequence of having to acknowledge that daughters were definitely sexually active if diagnosed with HPV, may suggest that African-American parents' concern with violation of sociocultural normative expectations regarding appropriate timing of sexual initiation may occlude parents' estimation of future risk. Interestingly, while the average age of daughters was 14-years-old, they were not too young to realize the financial, emotional and psychological implications of an HPV diagnosis.

Interesting similarities and differences between mothers and daughters emerged regarding perceived vaccination barriers. Our study indicates that across mothers and daughters, fear of unknown side effects, mistrust, concern about safety, and newness of the vaccine continue to play a role in vaccination decisions. A considerable amount of clinical research has been conducted since the FDA licensed the HPV vaccine in 2007 indicating that the vaccine is safe and effective (Markowitz et al., 2013). Mistrust continues and concerns about safety linger and is corroborated in prior research (Blackman et al., 2013; Dorell et al., 2014). However, our study adds to the literature by indicating that daughters are also concerned with these issues. Prior research has largely focused on parents' perceptions at the expense of adolescents' beliefs and concerns, which is an important limitation as adolescents will grow into adults who will ultimately be responsible for their health care decisions.

A barrier that emerged for parents but not daughters was skepticism about certain sources of information and the role of politicians in enacting policy to promote HPV vaccination. Parental mistrust may be the result of negative media coverage about the HPV vaccine and the politicization of vaccines which have been prevalent in the US since the HPV vaccine was approved by the FDA (Blasi, King, & Henrikson, 2015). Our findings suggest that when political figures disseminate information about the HPV vaccine, mistrust is likely to ensue. Findings from a recent study suggests that receiving information from the right source is just as important as the message conveyed (Cartmell et al., 2018). According to our findings and Cartmell's (2018) study, trusted sources of information are authoritative national and state health organizations, community-based organizations and peers.

Implications for Promotion of HPV Vaccination

Our findings have implications for the development of culturally and developmentally appropriate interventions to promote HPV vaccination among African-American parents and their daughters. First, it is important to increase awareness among parents about the imprecise nature of estimating initiation of sexual activity in children. Research shows that parental judgments of initiation of children's sexual relations are correct about 50% of the time (Liddon, Michael, Dittus, & Markowitz, 2013). Furthermore, research indicates that within one year of becoming sexually active, more than 25% of females may acquire HPV infection from their first partner indicating that even if sexual activity begins after marriage women are still at risk of acquiring HPV (Winer et al., 2005).

While our findings indicate that parents' and daughters' perceived risk of contracting HPV is low, both parents and daughters do perceive that HPV infection increases cervical cancer incidence and perceived the HPV vaccine to have cancer and HPV/STI prevention benefits. Thus, disseminating this information to motivate vaccination is important. The CDC recommends a multi-faceted approach to increase access to HPV vaccination. One such strategy may be to make the vaccine available at school-based health centers. Availability of other childhood recommended vaccines at school-based health centers has been effective in increasing knowledge and vaccination rates and they are an accepted vaccination site among parents and providers (Gargano et al., 2015; Kelminson et al., 2012). School based health centers may be the appropriate setting to disseminate information about the risks of acquiring HPV and the benefits of vaccination among African-American parents and children.

Potential actions to counteract mistrust may be to disseminate information about the HPV vaccine in other settings trusted by the African-American community such as churches. Involving faith-based organizations in the dissemination of information may be particularly effective as the Black church is viewed as a trusted and familiar institution among African-Americans (DeHaven, Hunter, Wilder, Walton, & Berry, 2004). Historically, the Black Church have conducted important and effective prevention work surrounding sensitive and stigmatized health topics, such as human immunodeficiency virus (HIV/AIDS) (Fulton, 2011), and may be a critical yet underutilized partner in disseminating HPV and HPV-associated cancer information.

The cues to action relevant to African-American parents and daughters discussed by our sample offer healthcare setting strategies to reduce experienced barriers. For example, HCPs may consider providing opportunities for parents and children to discuss sexual health during regular healthcare visits. Healthcare providers such as nurses may be particularly suitable to disseminate information in a culturally sensitive way as nurses are usually the ones who spend more time providing services to patients. Nurses may provide more opportunities for families to discuss the vaccination decision by sharing literature, discussing sexual health, troubleshooting barriers, and preparing them for the vaccine administration appointment by coaching parents and children about how to deal with fear of pain (Lechuga, 2012b). Nurses may also target sexuality-related concerns by highlighting the necessity of vaccination prior to sexual debut for optimum immunogenicity. Engaging parents in the decision before vaccination occurs may provide an opportunity for parents to align their beliefs with clinical evidence and to think about important questions they would like answered by providers involved in the vaccine administration process.

Future Research

Our findings highlighted areas for future research. A key finding of our study was the perception among parents and daughters that HPV infection was severe due to health and social consequences. Research demonstrates that cultural norms and beliefs, often the product of religious doctrine, influence African-Americans' perception toward sexuality, medical decisions, and STIs, including HPV infection and HIV/AIDS. As HPV vaccination is stigmatized due to its link to sexual activity, our findings suggest the need for studies to address the role of cultural normative beliefs on African-Americans' decisions to adopt sexual health preventative behaviors, such as HPV vaccination. Understanding the role of contextual factors will assist in the development of culturally appropriate interventions that can take place in culturally appropriate settings.

Prior research have shown that parents' perception on the onset of sexual debut is used to estimate the readiness of children to adopt sexual health preventive behaviors, such as HPV vaccination (Lechuga, 2012a). An ironic and interesting finding of our study is that a motivation for daughters to obtain the HPV vaccine is to be protected before the onset of sexual relations. Future research could explore the differential effects of temporally framing messages on HPV infection and cervical cancer as distal versus proximal health outcomes of sexual activity among adolescents and pre-adolescents.

Lastly, self-efficacy presented as a barrier among daughters' HPV vaccination acceptance in that daughters conveyed low self-efficacy to obtain the HPV vaccine and the need for more information about the vaccine. Furthermore, daughters reported mothers as the ultimate decision-makers even after gaining autonomy for their own health decisions. As the catch-up HPV vaccination rate for 19–26-year-old African-American females is 38%, interventions aimed at increasing self-efficacy among emergent adults, and changing the attitudes of mothers, specifically older mothers who may have more negative attitudes about the HPV vaccine, could improve these rates (Williams et al., 2017). Researching precursors of negative attitudes and mistrust may be another fruitful research avenue to pursue to inform

the design of HPV vaccine promotion interventions targeting African-Americans in particular.

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Table 1. Demographic Characteristics of Study Participants ($N = 64$)

Variable	Parent, $n=30$	Girls, $n=34$
Age in years, M (SD)	42.9 (6.2)	14.9 (1.5)
Gender, n (%)		
Female	28 (93.3)	-
Male	2 (6.7)	-
Marital status, n (%)		
Married/Living with Partner	20 (66.7)	-
Single, Divorced	10 (33.4)	-
Urban or Rural n (%)		
Rural	8 (26.7)	-
Urban	24 (73.3)	-
Household Income, n (%)		
\$20,000	4 (13.3)	-
\$20,001– \$30,000	5 (16.7)	-
\$30,001– \$40,000	5 (16.7)	-
\$40,001– \$50,000	5 (16.7)	-
\$50,001– \$60,000	1 (3.3)	-
\$60,001– \$80,000	10 (33.3)	-
Educational status, n (%)		
<High school/Middle School	-	6 (17.6)
Some High School/High School Diploma	7 (23.3)	27 (79.4)
Some college or college degree	12 (40.0)	1 (2.9)
Graduate degree	9 (30.0)	-
Other	2 (6.7)	-
Health insurance status, n (%)		
Insured	30 (100.0)	34 (100)
Uninsured	-	-
Religious or Spiritual, n (%)		
Yes	29 (96.7)	30 (88.2)
No	1 (3.3)	4 (11.8)
Total HPV dosage received		
0-Dose	-	22 (64.7)
1-Dose	-	1 (2.9)
2-Doses	-	2 (5.9)
3-Doses	-	9 (26.5)

Table 2.

Cues to Action Reported among Parents and Daughters

	Parents <i>n</i> =30		Daughters <i>n</i> =31	
	<i>n</i>	%	<i>n</i>	%
HCP recommendation	10	33.3	4	12.9
Cancer prevention	10	33.3	10	32.2
STI / HPV prevention	8	26.7	9	29.0
Having more information on HPV and the HPV vaccine	8	26.7	-	-
Parents making the decision to accept HPV vaccination	-	-	9	29.0
If the HPV vaccine was given to females regardless of age	1	3.3	1	3.3
Having a personal or family history of cancer or HPV diagnosis	5	16.7	1	3.2
If daughters were sexually active / in anticipation of sexual activity	2	6.7	4	12.9
A trusted friend or family recommended HPV vaccination	2	6.7	1	3.2
HCP providing advanced notice of HPV vaccination prior to appointment	2	6.7	-	-
Knowing others who have HPV vaccinated their daughters	1	3.3	-	-
HCP including parents in discussions on child medical history	1	3.3	-	-
Child being old enough to make HPV vaccine decision	2	6.7	-	-
Gardasil commercial	1	3.3	-	-

Note. Participants could have had more than one cue to action. HCP= Healthcare provider; HPV= Human papillomavirus; STI= Sexually transmitted infections.