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African American Parents' Attitudes toward HPV Vaccination

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Abstract

Objective—The current study sought to determine knowledge about HPV, HPV vaccination and their relationship to cancer; assess acceptability of and intent to vaccinate; and describe the individual characteristics, cultural attitudes, social and environmental factors that affect African American parents' intent to vaccinate.

Method—Two hundred African Americans completed self-administered surveys that assessed factors that may influence HPV vaccination behavior: HPV, cervical cancer, Pap and HPV vaccination knowledge; HPV and cervical cancer risk perception; cultural attitudes and beliefs, such as medical mistrust, spirituality/religiosity, and attitudes about adolescent sexuality and sexual risk behaviors. Eligibility criteria included men and women who: self-identified as African American and had a daughter nine to 17 years of age who had not been told that she had an HPV infection.

Results—Among these African American parents, approximately two-thirds were aware of HPV and HPV vaccination. These individuals were likely to be female, younger, employed, to have social resources, and to have contact with family or friends previously diagnosed with cervical cancer. They were also knowledgeable about HPV, but knowledge did not necessarily lead to vaccination. Among the subgroup of aware individuals who reported having daughters that were and were not vaccinated, vaccination status was significantly affected by whether a pediatrician had recommended the vaccine ($p < 0.001$). A greater percentage of parents with vaccinated daughters were worried that their child would one day contract an STI. There were no significant differences between the vaccinated and non-vaccinated groups with respect to demographic characteristics or socio-cultural attitudes.

Conclusion—There is a need for continued HPV promotion and education efforts in the African American community. Discussions with pediatric and family practitioners are key to HPV education and promotion activities.

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Conflict of Interest Statement

The second author owns Merck stock.

Human papillomaviruses (HPV) are a group of more than 100 virus types [1], over 30 of which can be transmitted through sexual contact [2]. Estimates of HPV prevalence indicate that it is the most common sexually transmitted infection in the United States [3]. Although most infections are asymptomatic and clear on their own, persistent genital HPV infection is associated with several sequelae, including cervical cancer in women [2]. HPV types 16 and 18 are responsible for approximately 70% of cervical cancers worldwide [4].

There are significant racial disparities in HPV infection rates and cervical cancer prevalence, incidence, and mortality. According to 2003–2004 National Health and Nutrition Examination Survey (NHANES) data, the prevalence of any HPV infection was significantly higher among non-Hispanic, African American women [1]. The overall prevalence of HPV 16 among African American women (sero-prevalence estimates based on surveys and serum collected 1991 – 1994) is estimated to be 19.1% compared to 12.5% among White women [5]. The age-adjusted cervical cancer incidence among African Americans is 10.1 per 100,000 population compared to 8.9 per 100,000 for White women, and 8.1 for the overall population [6]. Racial disparities also exist in cervical cancer mortality [7]: in 2003–07, the African American cervical cancer mortality rate per 100,000 was 4.3 (95% CI 4.0, 4.6) compared to 2.4 (95% CI 2.3, 2.5) in the U.S. population (all races). In addition, the Missouri African American cervical cancer incidence and mortality rates per 100,000 were 10.1 and 6.4 compared to 7.8 and 2.5 among White women. [8] Both the higher cervical cancer incidence and mortality demonstrate the importance of HPV screening and prevention among African Americans.

Currently, two HPV vaccines are available for the prevention of cervical, vulvar, and vaginal cancer [9–10]. Gardasil, a quadrivalent vaccine (HPV types 6, 11, 16, and 18) also effective for the prevention of genital warts, was approved for use in June 2006 for females aged 9 through 26 [9]; in 2009, it was approved for prevention of genital warts in males aged 9 to 26 [10]. Cervarix, a bivalent vaccine (HPV types 16 and 18) received approval in October 2009 for use in females aged 10 to 25 [10]. In 2007, the Advisory Committee on Immunization Practices (ACIP) issued vaccination recommendations consistent with FDA approval guidelines. ACIP recommendations were updated in 2009 when new approvals were issued [12–13]. ACIP currently recommends vaccination of females and males aged 11 to 13, with catch up vaccination for females aged 13 to 26.

Survey responses to the 2007 Health Information National Trends Study suggest that about 32% (unweighted) of those surveyed had not heard of HPV and 30% (unweighted) had not heard of HPV vaccination options [14]. The CDC National Immunization Survey--Teen estimates vaccination coverage from a national sample of female adolescents aged 13 to 17 and indicates that African Americans received HPV vaccination at rates similar to Whites [15–16]; however, these rates vary by state and county [15–16]. Although a slightly lower proportion of African Americans have received the full series as compared to Whites that difference is not significant [15]. While national vaccination data are encouraging, localized studies suggest that in some areas vaccination disparities exist or may develop. Studies have noted disparities in HPV awareness [17], with lower intent to vaccinate among African Americans compared to White participants [18–19], differences in the source of information on HPV vaccination [18], and more concerns about vaccine side effects, including those on sexual behavior[20]. Also, even if African American/White vaccination rates are approximately equal, one might want to see them higher in African Americans since the cervical cancer burden is greater compared to Whites.

To address concerns related to cultural issues that might affect HPV vaccine acceptance among African Americans in an urban Midwestern city, researchers from the Community Networks Program to Eliminate Cancer Disparities (PeCAD) conducted a survey of African

American parents of females in the vaccination age range. The primary aims of this project were: 1) to determine knowledge about HPV, cervical cancer screening and HPV vaccination and their relationships to cancer among African American parents; 2) to determine acceptability of HPV vaccination and intent to vaccinate among parents of African American girls aged nine to 17; and 3) to describe the individual characteristics, cultural attitudes and social and environmental factors that affect African American parents' intent to vaccinate.

Methods

Participants

Study recruitment took place from February 2009 to June 2009. Participants included 200 African American men and women who were residents of the St. Louis Metropolitan Statistical Area. Eligibility criteria included men and women who: 1) self-identified as African American and 2) had a daughter nine to 17 years of age who had not been told that she had an HPV infection.

Procedures

The Washington University in St. Louis Institutional Review Board approved this study. Community organizations, including a reproductive health service, a father support center, and two health centers were primary recruitment sites. Each African American patron present during operational hours that permitted access was approached to determine eligibility. In addition, a community sampling strategy was used to diversify the sample and recruit individuals who did not participate in established organizations or seek health care from a usual or emergency source. Using mobile research vans to assist in recruitment, census blocks with over 75% African American populations were selected for sampling. Individual homes and businesses, such as laundry mats and grocery stores, were approached and potential participants screened for eligibility. Eligible individuals who provided informed consent completed a self-administered survey and received a \$25.00 gift card for participation.

Measures

The self-administered survey assessed factors that may influence HPV vaccination behavior: HPV, cervical cancer, Pap and HPV vaccination knowledge; HPV and cervical cancer risk perception; cultural attitudes and beliefs, such as medical mistrust, spirituality/religiosity, attitudes about adolescent sexuality and sexual risk behaviors.

Independent Variables—*HPV Awareness*, the first item on the survey, was assessed using an item from the 2005 Health Information National Trends Survey [21]: “*Have you ever heard of HPV?*” A second item addressed physician recommendation for HPV vaccination. *HPV Knowledge* was assessed using ten true/false items about viral transmission, course and consequences, vaccine protection, and cervical cancer consequences. Five additional items addressed knowledge of vaccination eligibility criteria, adapted from a survey by Dempsey et al. (survey completed before male vaccine approval) [22]. *Parental attitudes toward youth sexuality* were assessed using two Likert items from the Parental Attitudes Scale of the Human Sexuality Questionnaire [23] on a scale ranging from 0 to 10. These items assessed parental attitudes toward sex education and the suppression of early sexuality among youth. The inter-item correlation for this sample was 0.62. *Spirituality* was measured by three items used in previous studies [24] with the African American community; scores ranged from 0 to 12. An alpha coefficient of 0.88 was obtained for the current sample. *Medical Mistrust* [25] was measured using the Group-Based Medical Mistrust Scale [25]. This scale has a reported internal consistency reliability

coefficient of 0.83, mean of 28.32 (SD=9.43), and split-half reliability of $r=0.75$. The alpha coefficient for this scale was 0.70.

HPV Vaccination Attitudes (benefits and barriers) were assessed using items adapted to address vaccination attitudes related to protection against cervical cancer, side effects, discomfort from vaccination, costs, and access to vaccine [26]. The alpha coefficient for the three benefit items (scores ranging from 0 to 12) was 0.61. The alpha coefficient for the nine items assessing perceived barriers (scores ranging from 0 to 27) was 0.79. Participants also completed four items developed by Dempsey et al. [22] that asked whether they or someone close to them ever experienced an abnormal Pap smear, cervical cancer, genital warts, or a sexually transmitted infection. Finally, 12 items that addressed a variety of social and political attitudes about vaccines, HPV, cervical cancer, genital warts, parental beliefs about vaccination, teen sexuality, vaccination strategy, and response to physician recommendations were included to better understand concerns about HPV vaccination [27]. A 5-point Likert Scale was used to indicate item agreement or disagreement.

Demographic variables included age, gender, insurance status, highest educational level, employment status, income, and marital status. Number of children aged 9 to 17 in the home was also recorded. Education responses were collapsed into three categories: “high school or less,” “some college,” and “college degree or higher.” Family income for the previous year was reported in \$10,000 increments and collapsed into three categories: “< \$20,000”; “\$20,000–\$39,999” and “\$40,000.” Insurance status was measured by asking how participants paid for health care during the previous 12 months. Response included “Health Maintenance Organization (HMO)/Preferred Provider Organization (PPO),” “TriCare,” “Some other private insurance company,” “Medicaid or SCHIP,” “Health clinic,” “Personal income (cash, check, credit card),” “no insurance,” and “other,” which they were asked to specify. Responses were later collapsed into three categories: “private insurance,” “Medicaid/SCHIP,” and “uninsured.” Participants also indicated whether they and their child(ren) had a usual source of healthcare and a regular pediatrician.

Dependent Variables—Two items assessed HPV vaccination status and intent to vaccinate. The first asked whether the participant’s daughter had received the HPV vaccine. For those who responded “no” or “don’t know” a second item queried intent to vaccinate: (“do not plan to vaccinate,” “never thought about vaccinating,” “thinking about vaccination,” “making plans to vaccinate,” “attempting to have daughter vaccinated”).

Data Analysis

Demographics were examined for the entire sample and compared for those who had and had not heard of HPV. The remainder of the analysis (e.g., HPV knowledge, vaccine attitudes, and vaccination barriers) was conducted on the 124 individuals who indicated they had heard of HPV prior to the survey. Within this group, two of the 27 individuals who reported HPV vaccination for their daughters answered the “intention to vaccinate” question in a manner that contradicted their initial answer. Additionally, 10 of the remaining 97 individuals reported that they “didn’t know” if their daughter had received the HPV vaccine. Thus, analyses that examined differences between those that did and didn’t vaccinate their daughters were restricted to 112 individuals ($n=25$ vaccinated, $n = 87$ not vaccinated). Differences between groups were assessed with t-tests (mean responses, e.g. age and medical mistrust score) and Chi-Square (categorical variables, e.g. marital status and level of education); Fisher’s Exact Test was used when cell sizes were too small for accurate Chi-Square analysis. Missing values and “don’t know” responses were omitted for the purpose of t-test and Chi-Square analysis. SPSS Statistics 17.0 was used for all analyses.

Results

A total of 200 participants were surveyed, 61 males and 137 females (n=2 did not report gender). The mean age for the sample was 40.0 years (8.3 SD). More than half (n=110, 55.6%) of participants had at least some college education, yet 47.4% (n=93) reported a family income under \$20,000. Approximately sixty-four percent of participants responding were employed. Although nearly one-third (n=63) indicated they had been uninsured in the past 12 months, 80.4% (n=160) had a regular pediatrician for their daughters. Only 16.5% (n=33) had vaccinated their daughters against HPV (Table 1).

Only 124 (62%) participants had heard of HPV (“aware”) prior to the survey (Table 1). Compared to those who had not heard of HPV, a significantly greater proportion of aware individuals were female (80.3% vs. 52.2%, $p < 0.001$), employed (75.0% vs. 45.7%, $p < 0.001$), had at least some college (64.8% vs. 40.3%, $p < 0.01$), had an annual income \$40,000 (33.9% vs. 10.6%, $p < 0.01$), and had a regular pediatrician (87.8% vs. 67.2%, $p < 0.01$). They were significantly younger (39.0 years \pm 7.8 SD vs. 41.7 years \pm 8.4 SD, $p < 0.03$) and had fewer children on average (3.1 \pm 1.4 SD vs. 3.7 \pm 2.3 SD, $p < 0.03$) than their “unaware” counterparts. A significantly greater proportion of aware individuals indicated that they knew someone with cervical cancer (42.7% vs. 25.5%, $p < 0.05$). There were no significant differences with respect to marital status, insurance status, religiosity, medical mistrust, or attitudes towards sex education.

When asked about HPV knowledge, 27% (n=34) of aware individuals answered 80% or more of the questions correctly. Another 23.4% (n=29) knew less than 50% of the correct answers. A substantial portion indicated that they “didn't know” whether HPV causes genital warts (45.2%) and herpes (39.5%), or whether a Pap test can always detect HPV (29.8%) (Table 2).

Although nearly half (46.8%, n=58) of aware parents worried that their child would one day get a sexually transmitted infection, only 36.3% worried about their child contracting HPV (Table 3). The majority (71%, n=88) felt that vaccines were a good way to protect their child's health, but nearly half (48%, n=60) were concerned that new vaccines can be dangerous. The potential for teens to get the HPV vaccine or STD treatment without parental consent was not well-received (Table 3). While nearly 70% (n=86) of parents indicated that they generally do what their child's doctor recommends, only 54% (n=25) of those whose pediatrician recommended HPV vaccination (n=46) actually vaccinated their daughters (data not shown).

Almost half (43.3%, n=54) of the aware parents indicated that they believed it is risky to vaccinate their daughters before all of the vaccine side effects are known (Table 4). Traditional barriers (e.g. transportation, cost, not knowing where to go, embarrassment, and fear of increased sexual activity) were not viewed as major barriers to HPV vaccination. HPV vaccination benefits such as the ability for HPV vaccination to prevent future health problems, including cervical cancer, and reduce worry about a daughter's health, were viewed positively by more than half the population (Table 4).

In comparing differences between individuals with and without vaccinated daughters, responses from the 124 aware individuals were examined. In this group, 27 (21.8%) indicated their daughters had been vaccinated against HPV; because two of these participants later provided answers that led us to question vaccination status, only 25 individuals were considered to have vaccinated daughters for the remainder of the analysis. Eighty-seven individuals reported that their daughter had not received the HPV vaccine. Of these, 15% (n=13) did not plan to vaccinate their daughters, 31% (n=27) had never thought of vaccinating, 33% (n=29) were thinking about vaccination, and 20% (n=17) were making

plans to vaccinate their daughters. Ten aware individuals did not know their daughter's vaccination status.

Among the subgroup of 112 aware individuals who reported having daughters that were and were not vaccinated, vaccination status was significantly affected by whether a pediatrician had recommended the vaccine ($p < 0.001$). Forty-three participants reported that a pediatrician recommended the vaccine; of these, 24 (55.8%) said their daughter was vaccinated, and all individuals but one whose daughter was vaccinated reported having a pediatrician recommendation (data not shown). When the mean HPV knowledge score was compared by vaccinated vs. not vaccinated (for the aware individuals) there was no significant difference: aware score = 6.3 (SD 1.9) vs. unaware score = 5.8 (SD 2.1), $p > 0.05$ (Table 5). Although parents of vaccinated and non-vaccinated daughters did not have significant differences in attitudes towards vaccination in general, a greater proportion of those with non-vaccinated daughters felt that giving their child a new vaccine was like experimenting on him/her. A significant number of parents of non-vaccinated children reported being afraid to vaccinate their daughter against HPV because of side effects (47.1% vs. 8.7%, $p = 0.001$) and feeling that it was risky to vaccinate their child before all the vaccine's risks were known (58.1% vs. 31.6%, $p = 0.04$). The proportion of parents with vaccinated children who believed that a vaccine against HPV could prevent future problems for their child was substantial (95% vs. 76.1% non-vaccinated) but not significant ($p = 0.06$).

A greater percentage of parents with vaccinated daughters were worried that their child would one day contract an STI and also indicated that they generally do what their doctor recommends. However, there were no significant differences between the vaccinated and non-vaccinated groups with respect to demographics, having a healthcare home, having a regular pediatrician, religiosity, sex education attitudes, medical mistrust, HPV knowledge, and history of parent or close friend having a medical history of abnormal Paps, cervical cancer, STIs, and/or genital warts (Table 5).

Discussion

Several findings from this survey were consistent with those of previous studies. Among the 200 African American parents surveyed, just over one-third remained unaware of HPV, a rate similar to 2007 HINTS data (unweighted) [14]. Among aware individuals, the HPV vaccination rate was 21.8%, which is lower than that of MO at 31.6% (95% CI 23.9–40.6) [15]. In addition, when compared to Stokely et al.'s findings, the vaccination rates for this African American sample are lower than the >1 dose national rates for African American girls (35.7% (95% CI 29.5–42.4), but higher than the ≥ 3 doses vaccination rate (14.9% (95% CI 9.7–22.3) [15]. Our study surveyed parents/guardians of girls 9–17 and national rates are reported for girls aged 13–17. In addition, the survey did not ask that parents report the number of doses received. These variations in reporting may explain a portion of the difference in the vaccination rates observed.

HPV aware individuals were more likely to be female, younger, employed, and to have social resources (education, income, and a regular physician for their child). They also reported contact with family or friends previously diagnosed with cervical cancer, which may have served to heighten HPV awareness. Individuals who were aware of HPV were also somewhat knowledgeable about HPV, but this awareness and knowledge did not necessarily lead to vaccination. Interestingly, only approximately one-third were concerned about their child contracting HPV, which might explain the low rate of vaccination (i.e. the viral infection is perceived as low risk) consistent with expectations outlined by Zimet [27].

There were few significant differences among parents who had vaccinated and those who had not vaccinated their daughters. Consistent with prior research [22], vaccination status was associated with physician recommendation regardless of education. However, among those receiving a pediatrician's recommendation for HPV vaccination, only approximately half of the parents had obtained the vaccine for their eligible daughters. Thus, physician recommendation is important and necessary, but not sufficient in efforts to encourage HPV vaccination.

Similar to Scarinci, et al. [20], African American parents who had not had age-eligible daughters vaccinated expressed concerns about vaccine safety. Parents of non-vaccinated children reported being afraid to vaccinate their daughter against HPV because of side effects and feeling that it was risky to vaccinate their child before all the vaccine's risks were known. Parents in this sample also expressed negative attitudes toward mandatory vaccination and the possibility of teens receiving the HPV vaccine without parental consent. Unexpectedly, variables previously associated with African American vaccination attitudes and behaviors were unrelated to vaccine status in this African American sample [28–30]. Specifically religious beliefs, vaccination at free or community clinics versus private physicians, transportation, and perceptions related to community norms and attitudes were not significant issues for these African American parents. In addition, unlike the issues outlined by Zimet, these parents did not express concerns that the vaccine might encourage earlier sexuality [27]. This finding may indicate a current lack of clear community sentiment.

Limitations

The limitations of these findings must be considered. While recruited in the community at diverse locations, this is a convenience sample, and results may not be generalizable beyond this study. However, the data suggest that cultural issues, as conceptualized, may not be salient in the context of HPV vaccination and suggest that we consider more traditional issues and variables that influence vaccination utilization.

Implications

It is important to examine attitudes related to health issues in each community, as cultural and social attitudes and norms differ by health issue and evolve rapidly. These data suggest that this may be the case in the African American community. We believe that by working with community partners, researchers can develop health communication materials and other interventions that address current knowledge needs and dominant concerns that African American parents have related to HPV and its relationship to cervical cancer in the African American community, as well as HPV surveillance and vaccination options. This is particularly important because of the inclusion of males in vaccination guidelines and the approval of a new HPV vaccine. The most important HPV education activity will be working with the healthcare community to assure that African American parents and their age eligible children have an opportunity to discuss sexual behavior and STIs, including HPV, with their provider to facilitate informed decision making and action.

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Key Messages

The data suggest that:

1. There is a need for continued HPV promotion and education efforts in the African American community.
2. HPV vaccination efforts should consider strategies that encourage and remind pediatric and family practitioners to discuss HPV, its relationship to cervical cancer, and vaccination options with parents and teens.
3. HPV promotion and education materials should include the most recent and accurate information on the side effect profile of HPV vaccines now available.

Table 1Demographic Characteristics of African American parents who answered HPV survey questions.^a

| | Total Population (n=200) | Heard of HPV ^b (n=124) | Had not heard of HPV ^b (n=67) | p-value ^c |
|--|--------------------------|-----------------------------------|--|----------------------|
| Male | 61 (30.8%) | 24 (19.7%) | 32 (47.8%) | <i>p</i> < 0.001 |
| Age, mean (SD) | 40.0 (8.3) | 39.0 (7.8) | 41.7 (8.4) | <i>p</i> < 0.03 |
| # children care for, mean (SD) | 3.3 (1.8) | 3.1 (1.4) | 3.7 (2.3) | <i>p</i> < 0.03 |
| Employed | 124 (63.6%) | 90 (75.0%) | 30 (45.7%) | <i>p</i> < 0.001 |
| Marital Status | | | | <i>p</i> > 0.05 |
| Single | 95 (48.2%) | 60 (49.2%) | 30 (45.5%) | |
| Married/living with a partner | 58 (29.4%) | 36 (29.5%) | 19 (28.8%) | |
| Divorced/separated/widowed | 44 (22.3%) | 26 (21.3%) | 17 (25.8%) | |
| Education | | | | <i>p</i> < 0.01 |
| High school or less | 88 (44.4%) | 43 (35.2%) | 40 (59.7%) | |
| Some college | 70 (35.4%) | 49 (40.2%) | 19 (28.4%) | |
| College degree or higher | 40 (20.2%) | 30 (24.6%) | 8 (11.9%) | |
| Annual Family Income | | | | <i>p</i> < 0.01 |
| <\$20,000 | 93 (47.4%) | 46 (38.0%) | 41 (62.1%) | |
| \$20,000–\$39,999 | 54 (27.6%) | 34 (28.1%) | 18 (27.3%) | |
| \$40,000 | 49 (25.0%) | 41 (33.9%) | 7 (10.6%) | |
| Insurance Status | | | | <i>p</i> > 0.05 |
| Insured | 80 (41.5%) | 57 (47.9%) | 21 (32.3%) | |
| Medicaid/SCHIP | 50 (25.9%) | 31 (26.1%) | 17 (26.2%) | |
| No insurance | 63 (32.6%) | 31 (26.1%) | 27 (41.5%) | |
| Healthcare home | 150 (75.4%) | 99 (80.5%) | 45 (67.2%) | <i>p</i> < 0.05 |
| Regular pediatrician | 160 (80.4%) | 108 (87.8%) | 45 (67.2%) | <i>p</i> < 0.01 |
| Religiosity Score^d, mean (SD) | 9.3 (2.4) | 9.2 (2.4) | 9.5 (2.4) | <i>p</i> > 0.05 |
| Sex Ed Attitudes Score^e, mean (SD) | 10.3 (2.7) | 10.3 (2.7) | 10.4 (2.6) | <i>p</i> > 0.05 |
| Medical Mistrust Score^f, mean (SD) | 19.4 (5.4) | 19.5 (5.7) | 19.3 (5.1) | <i>p</i> > 0.05 |

^aNumbers may not total 100% due to rounding, missing data excluded from percentage calculations;^bn = 9 respondents (4 women, 5 men) “didn't know” if they had heard of HPV;^ct-test for age, number of children, religiosity, sex education attitudes, and medical mistrust for those that have and have not heard of HPV; Chi-Square to compare all other variables;^d3 items, each scored on a 1–4 Likert scale for a maximum score of 12;^e5 items, each scored on a 1–5 Likert scale for a maximum score of 25;^f7 items, each scored on a 1–5 Likert scale for a maximum score of 35.

Table 2HPV Knowledge among 124 African American Parents Who Had Heard of HPV.^a

| | True n(%) | False n(%) | Don't know n(%) |
|---|------------|------------|-----------------|
| Genital warts are caused by some types of HPV. | 45 (36.3) | 22 (17.7) | 56 (45.2) |
| People who have been infected with HPV might not have symptoms. | 90 (72.6) | 8 (6.5) | 26 (21.0) |
| Condoms can prevent the spread of HPV from person to person. | 65 (52.4) | 37 (29.8) | 22 (17.7) |
| HPV is the virus that causes herpes. ^b | 21 (16.9) | 52 (41.9) | 49 (39.5) |
| HPV infection can cause abnormal Pap smears. | 100 (80.6) | 3 (2.4) | 19 (15.3) |
| Your chances of getting cervical cancer are higher if you are infected with HPV 16 or 18. | 72 (58.1) | 10 (8.1) | 41 (33.1) |
| One of the warning signs of cervical cancer is an abnormal Pap smear. | 103 (83.1) | 8 (6.5) | 13 (10.5) |
| If cervical cancer is diagnosed early there is a good chance that it can be cured. | 108 (87.1) | 7 (5.6) | 9 (7.3) |
| Pap smears will almost always detect HPV. ^b | 38 (30.6) | 47 (37.9) | 37 (29.8) |
| HPV is a sexually transmitted disease. | 50 (40.3) | 52 (41.9) | 22 (17.7) |
| <i>The HPV Vaccine is Recommended for ...</i> | | | |
| Teen girls (13–17 years) | 107 (86.3) | 4 (3.2) | 13 (10.5) |
| Pre-teen girls (9–12 years) | 84 (67.7) | 13 (10.5) | 24 (19.4) |
| Adult women who may require additional doses or who are not sexually active or infected | 44 (35.5) | 20 (16.1) | 57 (46.0) |

^aNumbers may not add to 124 due to missing data^bCorrect answer is “false”

Table 3

Vaccine Attitudes and Beliefs among 124 African American Parents Who Had Heard of HPV

| | Disagree n(%) | Neutral n (%) | Agree n (%) | Don't know n (%) |
|---|---------------|---------------|-------------|------------------|
| I worry that my child will get infected with HPV. | 40 (32.3) | 28 (22.6) | 45 (36.3) | 11 (8.9) |
| Newly available vaccines can be dangerous. ^a | 16 (12.9) | 30 (24.2) | 60 (48.4) | 17 (13.7) |
| A teenager should be allowed to get a vaccine against HPV without a parent's consent. ^a | 77 (62.1) | 13 (10.5) | 30 (24.2) | 3 (2.4) |
| Most people I know think it is good to get children vaccinated against HPV before they are teenagers. | 21 (16.9) | 37 (29.8) | 40 (32.3) | 26 (21.0) |
| Shots are extremely painful for my child. | 56 (45.2) | 22 (17.7) | 35 (28.2) | 11 (8.9) |
| Giving my child new vaccine is like performing an experiment on them. | 41 (33.1) | 35 (28.2) | 40 (32.3) | 8 (6.5) |
| Getting vaccines is a good way to protect my child's health. ^a | 10 (8.1) | 18 (14.5) | 88 (71.0) | 7 (5.6) |
| Teenagers should be allowed to get treatment for STDs without their parents' consent. ^a | 56 (45.2) | 13 (10.5) | 50 (40.3) | 4 (3.2) |
| Cervical cancer is a deadly disease. ^b | 9 (7.3) | 11 (8.9) | 90 (72.6) | 11 (8.9) |
| Having genital warts makes it really hard to find a sexual partner. ^a | 20 (16.1) | 20 (16.1) | 61 (49.2) | 22 (17.7) |
| I worry that my child will get an STD someday. | 34 (27.4) | 22 (17.7) | 58 (46.8) | 10 (8.1) |
| Generally, I do what child's doctor recommends. | 14 (11.3) | 15 (12.1) | 86 (69.4) | 9 (7.3) |

^a
n=123^b
n=121

Table 4**Benefits and Barriers to Vaccination among 124 African American Parents Who Had Heard of HPV**

| | Agree | Disagree | Don't know |
|--|--------------|-----------------|-------------------|
| A vaccine against HPV could prevent future problems for my child. | 79 (63.7) | 20 (16.1) | 25 (20.2) |
| Getting an HPV vaccine will reduce my worry about my daughter's health. | 67 (54.0) | 44 (35.5) | 13 (10.5) |
| Getting an HPV vaccine will prevent cervical cancer by eliminating HPV infection. | 65 (52.4) | 26 (21.0) | 33 (26.6) |
| I am afraid to have my daughter vaccinated because of side effects. | 40 (32.3) | 61 (49.2) | 23 (18.5) |
| An HPV vaccine for my daughter is embarrassing because someone might think she's having sex. | 12 (9.7) | 102 (82.3) | 10 (8.1) |
| The cost would keep me from having my daughter vaccinated. ^a | 26 (21.0) | 87 (70.2) | 8 (6.5) |
| I do not know where to go for the vaccine. ^b | 28 (22.6) | 80 (64.5) | 12 (9.7) |
| My daughter doesn't need vaccine because she isn't sexually active. | 25 (20.2) | 84 (67.7) | 15 (12.1) |
| I do not want to vaccinate my daughter against HPV because it might make her more likely to have sex. ^c | 12 (9.7) | 106 (85.5) | 5 (4.0) |
| It is risky to have my daughter vaccinated against HPV early before all of the vaccine risks are known. | 54 (43.3) | 47 (37.9) | 23 (18.5) |
| My daughter does not need the HPV vaccine because no one in our family has had cervical cancer. ^c | 11 (8.9) | 97 (78.2) | 15 (12.1) |
| Transportation issues would prevent me from having my daughter vaccinated. | 12 (9.7) | 107 (86.3) | 5 (4.0) |

^a
n=121^b
n=120^c
n=123

Table 5Parental Characteristics of Vaccinated vs. Not Vaccinated Daughters^a

| | Vaccinated (n=25) | Not Vaccinated (n=87) |
|---|-------------------|-----------------------|
| Male | 4 (16.0%) | 13 (15.3%) |
| Age, mean (SD) | 39.9 (7.2) | 38.9 (7.6) |
| # children care for, mean (SD) | 3.5 (1.4) | 3.0 (1.4) |
| Employed | 19 (76.0%) | 67 (80.7%) |
| Marital Status | | |
| Single | 10 (40.0%) | 43 (50.6%) |
| Married/living with a partner | 8 (32.0%) | 25 (29.4%) |
| Divorced/separated/widowed | 7 (28.0%) | 17 (20.0%) |
| Education | | |
| High school or less | 7 (28.0%) | 29 (34.1%) |
| Some college | 9 (36.0%) | 35 (41.2%) |
| College degree or higher | 9 (36.0%) | 21 (24.7%) |
| Annual Family Income | | |
| <\$20,000 | 7 (28.0%) | 31 (36.9%) |
| \$20,000–\$39,999 | 8 (32.0%) | 23 (27.4%) |
| \$40,000 | 10 (40.0%) | 30 (35.7%) |
| Insurance Status | | |
| Insured | 11 (44.0%) | 44 (53.0%) |
| Medicaid/SCHIP | 10 (40.0%) | 17 (20.5%) |
| No insurance | 4 (16.0%) | 22 (26.5%) |
| Healthcare home | 24 (96.0%) | 68 (79.1%) |
| Regular pediatrician | 23 (92.0%) | 75 (87.2%) |
| Religiosity Score, mean (SD) | 9.1 (2.3) | 9.4 (2.1) |
| Sex Ed Attitudes Score, mean (SD) | 10.4 (3.0) | 10.6 (2.5) |
| Medical Mistrust Score, mean (SD) | 19.4 (6.1) | 19.3 (5.2) |
| HPV Knowledge Score, mean (SD) | 6.3 (1.9) | 5.8 (2.1) |
| Have you or someone close had ... | | |
| An abnormal Pap smear^g | 14 (70.0%) | 53 (63.9%) |
| Cervical Cancer^h | 11 (52.4%) | 32 (39.5%) |
| A sexually transmitted diseaseⁱ | 19 (86.4%) | 63 (77.8%) |
| Genital warts^j | 7 (36.8%) | 20 (27.0%) |

^aMissing data excluded from percentage calculations