AFRICAN AMERICAN PARENTS' ATTITUDES TOWARD HPV VACCINATION

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This study sought to determine knowledge about human papillomaviruses (HPV), vaccination acceptability and intent to vaccinate, and describe the individual characteristics, and sociocultural attitudes that affect African American parents' intent to vaccinate their daughters. Two hundred African Americans completed self-administered surveys that assessed factors that may influence HPV vaccination behavior, HPV and cervical cancer knowledge and risk perception, cultural attitudes, and preferences for location and timing of vaccination. Eligibility criteria included men and women who had a daughter aged 9 to 17 years, whether the daughter had or had not been told that she had an HPV infection. Approximately two-thirds of the African American parents surveyed were aware of HPV and HPV vaccination. Responders were likely to be female, younger, employed, and to have social resources. They were also knowledgeable about HPV, but knowledge did not necessarily lead to vaccination. Among parents knowledgeable about HPV, vaccination status was significantly affected by whether a pediatrician had recommended the vaccine. There were no significant differences in demographic characteristics or sociocultural attitudes between the parents who had vaccinated their daughters and those who had not, although more of the parents who had vaccinated daughters were worried about STIs. (*Ethn Dis*. 2011;21(3): 335–341)

Key Words: African Americans, HPV Vaccination, Cultural Attitudes and Beliefs

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INTRODUCTION

Human papillomaviruses (HPV) are a group of more than 100 virus types,[1] which can be transmitted through sexual contact,[2] and are the most common sexually transmitted infections in the United States.[3] Although most infections clear on their own, persistent genital HPV infection is associated with cervical cancer in women,[2] with types 16 and 18 responsible for approximately 70% of cervical cancers.[4] There are ethnic 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 type 16 among African American women 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 7.9 for White women, and 8.1 for the overall population.[6] Ethnic disparities also exist in cervical cancer mortality; the African American 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 US population (2003–07).[7,8] These prevalence, incidence and mortality rates demonstrate the importance of HPV screening and prevention among African Americans.

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Two HPV vaccines are available for the prevention of cervical cancer; and one vaccine, Gardasil, is available to treat vulvar, and vaginal cancer.[9,10] Gardasil, a quadrivalent vaccine (types 6, 11, 16, and 18) effective for the prevention of both cervical cancer and genital warts, was approved for use in 2006 for females aged 9 through 26;[9] in 2009, it was approved for prevention of genital warts in males.[10] Cervarix, a bivalent vaccine (HPV types 16 and 18) received approval in 2009 for use in females aged 10 to 25.[10] In 2007, the Advisory Committee on Immunization Practices (ACIP) issued vaccination recommendations, which were updated in 2009 when the new vaccine approvals were issued.[12,13] While ACIP current recommendations target vaccination of females and males aged 11 to 13, with catch-up vaccination for females aged 13 to 26, vaccine approval for girls is as young as nine.

Survey data (Health Information National Trends Study, HINTS 2007) suggest that about 32% (unweighted) of those surveyed had not heard of HPV and 30% (unweighted) had not heard of HPV vaccination options.[14] Several studies suggest ethnic variation in vaccination; however these differences have not been significant,[15–17] and rates

vary by state and county. Studies have noted disparities in HPV awareness,[18] with lower intent to vaccinate among African Americans compared to Whites,[19,20] differences in the source of information on HPV vaccination,[19] and more concerns about vaccine side effects.[21]

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 conducted a survey of African American parents of females in the vaccination age range. The primary aims were to: 1) determine knowledge about HPV, cervical cancer screening and HPV vaccination and their relationships to cancer among African American parents; 2) determine acceptability of HPV vaccination and intent to vaccinate among parents of African American girls aged 9 to 17; and 3) describe the individual characteristics, and sociocultural attitudes that affect African American parents' intent to vaccinate.

METHODS

Participants

Participants included 200 African American men and women, recruited in 2009, who were residents of the St. Louis Metropolitan Statistical Area. Eligibility criteria included men and women who had a daughter aged 9 to 17 years, whether the daughter had or 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 recruitment 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 source. A mobile research van permitted recruitment in neighborhoods with large African American populations. Individual homes and businesses were approached and potential participants screened for eligibility, with the parent perceived as having the greatest health care decision making role asked to complete the survey. Eligible individuals who provided informed consent completed a self-administered survey and received a $25 gift card for participation.

Measures

The self-administered survey assessed HPV Awareness of all parents. The first item on the survey asked, "Have you ever heard of HPV?" (2005 HINTS).[22] Demographic items assessed age, sex, insurance status, highest educational level, employment status, income, and marital status. Participants also indicated whether they and their child had a usual source of health care and a regular pediatrician.

The survey then assessed the following variables, which were evaluated for parents who indicated some awareness of HPV. Parents were asked whether they had ever received a physician recommendation to have their daughters vaccinated against HPV. HPV Knowledge was assessed using ten true/false items about viral transmission, consequences, vaccine protection, and cervical cancer consequences. Five additional items addressed knowledge of vaccination eligibility criteria, adapted from a survey by Dempsey et al.[23] 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.[24] The alpha coefficient for the three benefit items (scores ranging from 0 to 12) was .61. The alpha coefficient for the nine items assessing perceived barriers (scores ranging from 0 to 27) was .79.

Participants also completed four items that asked whether they or someone close to them ever experienced an abnormal Pap smear, cervical cancer, genital warts, or a sexually transmitted infection.[23] Finally, using a 5-point Likert scale, 12 items addressed a variety of social and political attitudes about vaccines, HPV, cervical cancer, genital warts, teen sexuality, vaccination strategy, and response to physician recommendations were included to better understand concerns about HPV vaccination.[25]

Parental attitudes toward youth sexuality were assessed using two Likert items from the Parental Attitudes Scale of the Human Sexuality Questionnaire;[26] scores ranged from 0 to 10. The inter-item correlation for this sample was .62. Spirituality was measured by three items;[27] scores ranged from 0 to 12. An alpha coefficient of .88 was obtained for the current sample. Medical mistrust was measured using the Group-Based Medical Mistrust Scale.[28] This scale has a reported internal consistency reliability coefficient of .83, mean of 28.32 (SD= 9.43), and split-half reliability of r=.75. The alpha coefficient for this sample was .70.

Lastly, vaccination status or intent was assessed. Parents were asked whether their daughters 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 sample as a whole and compared for

Table 1. Demographic characteristics of African American parents answering HPV survey, *n* (%)*

	Total Population (*N*=200)	Heard of HPV† (*n*=124)	Had Not Heard of HPV† (*n*=67)	*P*‡
Male	61 (30.5%)	24 (19.4%)	32 (47.8%)	*P*<.001
Age, mean (SD)	40.0 (8.3)	39.0 (7.8)	41.7 (8.4)	*P*<.03
# children care for, mean (SD)	3.3 (1.8)	3.1 (1.4)	3.7 (2.3)	*P*<.03
Employed	124 (62.0%)	90 (72.6%)	30 (44.8%)	*P*<.001
Marital Status				*P*>.05
Single	95 (47.5%)	60 (48.4%)	30 (44.8%)	
Married/living with a partner	58 (29.0%)	36 (29.0%)	19 (28.4%)	
Divorced/separated/widowed	44 (22.0%)	26 (21.0%)	17 (25.4%)	
Education				*P*<.01
High school or less	88 (44.0%)	43 (34.7%)	40 (59.7%)	
Some college	70 (35.0%)	49 (39.5%)	19 (28.4%)	
College degree or higher	40 (20.0%)	30 (24.2%)	8 (11.9%)	
Annual Family Income				*P*<.01
<$20,000	93 (46.5%)	46 (37.1%)	41 (61.2%)	
$20,000–$39,999	54 (27.0%)	34 (27.4%)	18 (26.9%)	
≥ $40,000	49 (24.5%)	41 (33.1%)	7 (10.4%)	
Insurance status				*P*>.05
Insured	80 (40.0%)	57 (46.0%)	21 (31.3%)	
Medicaid/SCHIP	50 (25.0%)	31 (25.0%)	17 (25.4%)	
No insurance	63 (31.5%)	31 (25.0%)	27 (40.3%)	
Healthcare home	150 (75%)	99 (79.8%)	45 (67.2%)	*P*<.05
Regular pediatrician	160 (80%)	108 (87.1%)	45 (67.2%)	*P*<.01
Religiosity Score,§ mean (SD)	9.3 (2.4)	9.2 (2.4)	9.5 (2.4)	*P*>.05
Sex Ed Attitudes Score,‖ mean (SD)	10.4 (2.7)	10.3 (2.7)	10.4 (2.6)	*P*>.05
Medical Mistrust Score,¶ mean (SD)	19.4 (5.4)	19.5 (5.7)	19.3 (5.1)	*P*>.05

* Numbers and percentages many not total 100% due to rounding and missing data.
† *n* = 9 respondents (4 men, 5 women) didn't know if they had heard of HPV.
‡ *t* 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.
§ 3 items, each scored on a 1–4 Likert scale for a maximum score of 12.
‖ 5 items, each scored on a 1–5 Likert scale for a maximum score of 25.
¶ 7 items, each scored on a 1–5 Likert scale for a maximum score of 35; *n*=196 total respondents.

those who had or had not heard of HPV. Subsequent analyses were conducted on the 124 individuals who indicated they had heard of HPV prior to the survey. Within this group, two of 27 individuals who reported HPV vaccination for their daughters answered the intention to vaccinate question in a manner that contradicted their initial answer, and 10 of the remaining 97 individuals reported that they did not know if their daughter had received the HPV vaccine. Thus, analyses that examined differences between those that did or did not vaccinate their daughters were restricted to 112 individuals. Differences between groups were assessed with *t* tests and Chi-Square. Fisher's Exact Test was used when cell sizes were too small for accurate Chi-Square analysis.

RESULTS

Sample Characteristics

Sixty-one males and 137 females (*n*=2 did not report sex), mean age of 40.0 years (8.3 SD) completed the survey. More than half (55%) of participants had at least some college education, yet 46.5% reported a family income<$20,000. Sixty-two percent were employed. Although nearly one-third indicated they had been uninsured in the past 12 months, 80% had a regular pediatrician for their daughters. Only 16.5% had vaccinated their daughters against HPV (Table 1).

HPV Awareness, Knowledge and Attitudes

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 (80.6% vs 52.2%), employed (72.6% vs 44.8%), had at least some college (63.7% vs 40.3%), had an annual income≥ $40,000 (33.1% vs 10.4%), and had a regular pediatrician (87.1% vs 67.2%). They were significantly younger and had fewer children on average than their ''unaware'' counterparts. A significantly greater proportion of aware individuals indicated that they knew someone with an STI (58.1% vs 38.8%) and/or

Table 2. Benefits and barriers to vaccination among 124 African American parents aware of HPV, *n* (%)

	Agree	Disagree	Don't Know
Benefits			
A vaccine against HPV could prevent future problems for my child.	79 (69.7)	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)
Structural Barriers			
The cost would keep me from having my daughter vaccinated.*	26 (21.0)	87 (70.2)	8 (6.5)
I do not know where to go for the vaccine.†	28 (22.6)	80 (64.5)	12 (9.7)
Transportation issues would prevent me from having my daughter vaccinated.	12 (9.7)	107 (86.3)	5 (4.0)
Attitudinal Barriers			
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.‡	12 (9.7)	106 (85.5)	5 (4.0)
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)
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)
I am afraid to have my daughter vaccinated because of side effects.	40 (32.3)	61 (49.2)	23 (18.5)
My daughter does not need the HPV vaccine because no one in our family has had cervical cancer.‡	11 (8.9)	97 (78.2)	15 (12.1)

* n=121.
† n=120.
‡ n=123.

cervical cancer (37.9% vs 19.4%). There were no significant differences with respect to marital status, insurance status, religiosity, or medical mistrust.

When asked about HPV knowledge, 27% (n=34) of aware individuals answered 80% or more of the questions correctly. Another 23.3% (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%).

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. The majority (71% or 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 given that 62.1% (n=77) were against vaccination without parental consent. 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.

Almost half (43.3%) 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 2). Traditional barriers (eg, transportation, cost, not knowing where to go, embarrassment, and fear of increased sexual activity) were not viewed as major deterrents to HPV vaccination. HPV vaccination benefits, such as the ability to prevent future health problems such as cervical cancer and reduce worry about a daughter's health, were viewed positively by more than half the population (Table 2).

Factors Associated with Vaccination Status and Intent

In comparing differences between individuals with and without vaccinated daughters, responses from the 124 aware individuals were examined. In this group, 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. (The 12 remaining were excluded per rationale describe in Methods.) Of these, 15% did not plan to vaccinate their daughters, 31% had never thought of vaccinating, 33% were thinking about vaccination, and 20% were making plans to vaccinate their daughters. Among the subgroup of 112 aware individuals who reported either having daughters who were or were not vaccinated, vaccination status was significantly affected by whether a pediatrician had recommended the vaccine (P<.001). Fifty participants reported that a pediatrician recommended the vaccine; of these, 48% said their daughter was vaccinated, and all individuals whose daughter was vaccinated reported having a pediatrician recommendation. When the mean HPV knowledge score was compared by vaccinated vs not vaccinated (for the aware individuals) there was no significant difference (Table 3). 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

Table 3. Parental characteristics of vaccinated vs not vaccinated daughters, *n* (%)

	Vaccinated (*n*=25)	Not Vaccinated (*n*=87)
Age, mean (SD)*	39.9 (7.2)	38.9 (7.6)
Education†		
High school or less	7 (28.0%)	29 (34.1%)
Some college	9 (36.5%)	35 (41.2%)
College degree or higher	9 (36.5%)	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%)
Health care 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 (5.1)
HPV Knowledge score, mean (SD)	6.3 (1.9)	5.8 (2.1)
Have you or someone close had …		
an abnormal Pap smear¶	14 (70.0%)	53 (63.9%)
cervical cancer#	11 (52.4%)	32 (39.5%)
a sexually transmitted disease**	19 (86.4%)	63 (77.8%)
genital warts††	7 (36.8%)	20 (27.0%)

* *n*=3 ''not vaccinated'' did not answer and were omitted from the analysis.
† *n*=2 ''not vaccinated'' did not answer and were omitted from the analysis.
‡ *n*=4 ''not vaccinated'' did not answer and were omitted from the analysis.
§ *n*=1 ''vaccinated'' and *n*=1 ''not vaccinated'' did not answer and were omitted from the analysis.
‖ *n*=1 ''not vaccinated'' did not answer and was omitted from the analysis.
¶ *n*=5 ''vaccinated'' and *n*=4 ''not vaccinated'' did not answer and were omitted from the analysis.
# *n*=4 ''vaccinated'' and *n*=6 ''not vaccinated'' did not answer and were omitted from the analysis.
** *n*=3 ''vaccinated'' and *n*=6 ''not vaccinated'' answered ''don't know'' and were omitted from the analysis.
†† *n*=6 ''vaccinated'' and *n*=13 ''not vaccinated'' answered ''don't know'' and were omitted from the analysis.

HPV because of side effects (P=.001) and feeling that it was risky to vaccinate their child before all the vaccine's risks were known (P=.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, P=.05).

A greater percentage of parents with vaccinated daughters were worried that their child would one day contract a 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 health care home, having a regular pediatrician, religiosity, 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 3).

DISCUSSION

Several findings from this survey were consistent with those of previous studies. Among the 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 Missouri and is lower than the >1 dose national rates for African American girls (35.7%), but higher than the 3 doses vaccination rate (14.9%).[15] This study surveyed parents/guardians of girls aged 9–17 and did not ask that parents report the number of doses received, while national rates are reported for girls aged 13–17; these differences may explain a portion of the difference in the vaccination rates observed.

Aware individuals were more likely to be female, younger, employed, have social resources, and also reported contact with family or friends previously diagnosed with a STI or 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. Approximately one-third of parents were concerned about their child contracting HPV. Thus, consistent with expectations outlined by Zimet,[25] low perceived susceptibility might explain the low rate of vaccination.

There were few significant differences among parents who had or had not vaccinated their daughters. Consistent with prior research,[27] vaccination status was associated with physician recommendation regardless of education. However, among those receiving a pediatrician's recommendation for

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HPV vaccination, approximately half of the parents had their daughters vaccinated. These data suggest that factors other than physician recommendation likely influence parents' decisions to obtain HPV vaccination for their daughters.

Similar to Scarinci, et al,[21] African American parents who had not had daughters vaccinated expressed concerns about vaccine safety. Parents of non-vaccinated children reported fear 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. Consistent with previous findings,[29] among aware parents who had not vaccinated their daughters; medical mistrust was associated with lack of intent to vaccinate, which may be related to the vaccine concerns of parents with unvaccinated daughters. Unexpectedly, some variables previously associated with African American vaccination attitudes and behaviors were unrelated to vaccine status in this African American sample.[29] Specifically religious beliefs, vaccination at free or community clinics vs private physicians, transportation, and perceptions related to community norms were not significant issues for these parents.

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. Also, assessing the subtle difference between issues such as precancerous lesions and HPV infection may be confusing and may not be important to parental vaccine decision-making. Finally, the underlying construct of some HPV attitudes and beliefs items may have been strengthened by asking parents whether the perception of the item influenced their vaccination decision-making.

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. Based on these data, the most important HPV education activity involves working with the health care community to assure that African American parents have an opportunity to discuss sexual behavior and STIs, including HPV, with their health provider(s). Vaccination efforts should consider strategies that encourage and remind practitioners to discuss teen sexuality, HPV, its relationship to cervical cancer, and vaccination options with parents and teens. These discussions are likely to yield the best results when offered in the context of long-term health care relationships or health care homes, as these are likely to result in trusted relationships and institutions.

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